

FINAL REPORT



**Tahoe City Public Utility District
Comprehensive Water & Sewer
Rate Study
August 2019**





November 11, 2019

Mr. Sean Barclay
General Manager
Tahoe City Public Utility District
221 Fairway Drive
Tahoe City, CA 96145

Subject: 2019 Water & Sewer Comprehensive Rate Study Final Report

Dear Mr. Barclay:

HDR Engineering, Inc. (HDR) is pleased to present to the Tahoe City Public Utility District (District) the final report for the 2019 Comprehensive Water and Sewer Rate Study (Study). The Study objectives were to provide an independent review of the five-year financial plan, develop cost-based and equitable rate structure alternatives for Board consideration, and develop a five-year rate schedule that will result in sufficient revenue to fund the operating and capital needs of the water and sewer utilities. This report outlines the approach, methodology, findings, and conclusions of the comprehensive rate study process.

The costs associated with providing water and sewer services to the District's customers was developed based on the District's specific information and is included within the development of the proposed rates. This study was developed utilizing industry recognized generally accepted rate setting principles and methodologies as outlined in the American Water Works Association M1 Manual and the Water Environment Federation's Manual of Practice No. 27. This report provides the basis for developing and implementing water and sewer rates which are cost-based, equitable, and legally defensible to the District's customers.

We appreciate the assistance provided by the District's project team in the development of this study. More importantly, HDR appreciates the opportunity to provide these technical and professional services to the District.

Sincerely yours,
HDR Engineering, Inc.

A handwritten signature in black ink, appearing to read 'Shawn Koorn', written over a light blue horizontal line.

Shawn Koorn
Associate Vice President

hdrinc.com

900 108th Ave NE, Suite 1200, Bellevue, WA 98004
T 425-450-6200



Table of Contents

Table of Contents	i
1 Executive Summary	1
Introduction	1
Overview of the Rate Study Process	1
Key Water and Sewer Rate Study Results	2
Summary of the Water Revenue Requirement Analysis.....	3
Summary of the Water Cost of Service Analysis.....	5
Summary of the Water Rate Design	6
Summary of the Sewer Revenue Requirement Analysis.....	8
Summary of the Sewer Cost of Service Analysis.....	11
Summary of the Sewer Rate Designs	11
1 Introduction & Overview	13
1.1 Introduction.....	13
1.2 Goals and Objectives	13
1.3 Overview of the Rate Study Process.....	14
1.4 Organization of the Study	14
1.5 Summary	15
2 Overview of the Rate Setting Process	16
2.1 Introduction.....	16
2.2 Generally Accepted Rate Setting Principles.....	16
2.3 Determining the Revenue Requirement.....	16
2.4 Analyzing Cost of Service	17
2.5 Designing Utility Rates	18
2.6 Economic Theory and Rate Setting.....	18
2.7 Summary	18
3 Development of the Water Rate Study	19
3.1 Water Revenue Requirement.....	19
3.1.1 Determining the Water Revenue Requirement.....	19
3.1.2 Establishing a Time Frame and Approach	19
3.1.3 Projecting Rate and Other Miscellaneous Revenues	20



3.1.4	Projecting Operation and Maintenance Expenses.....	21
3.1.5	Projecting Capital Funding Needs	22
3.1.6	Projection of Debt Service	24
3.1.7	Reserve Funding.....	24
3.1.8	Summary of the Revenue Requirement.....	24
3.1.9	Reserve Fund Levels	25
3.1.10	Revenue Requirement Summary	26
3.2	Water Cost of Service	27
3.2.1	Objectives of a Cost of Service Study	27
3.2.2	Determining the Customer Classes of Service	28
3.2.3	General Cost of Service Procedures	28
3.2.4	Development of Distribution Factors.....	30
3.2.5	Functionalization and Allocation of Plant in Service.....	31
3.2.6	Functionalization and Allocation of Operating Expenses.....	33
3.2.7	Major Assumptions of the Cost of Service Study.....	34
3.2.8	Summary Results of the Cost of Service Analysis	34
3.2.9	Consultant’s Conclusions and Recommendations	36
3.2.10	Summary of the Cost of Service Analysis	36
3.3	Water Rate Design	36
3.3.1	Rate Design Criteria and Considerations	36
3.3.2	Development of Cost-Based Water Rates	37
3.3.3	Determination of Sizing and Number of Tiers	38
3.3.4	Establishing the Cost-Basis for Pricing Tiers	39
3.3.5	Development of the Unit Costs for Rate Designs	40
3.3.6	Summary of the Present and Proposed Water Rates	47
3.3.7	Acquisition Customer Rate Transition Plan	50
3.4	Summary of the Water Rate Study.....	51
4	Development of the Sewer Rate Study Update	53
4.1	Sewer Revenue Requirement.....	53
4.1.1	Determining the Revenue Requirement	53
4.1.2	Establishing a Time Frame and Approach	53
4.1.3	Projecting Rate and Other Miscellaneous Revenues.....	54
4.1.4	Projecting Operation and Maintenance Expenses.....	55
4.1.5	Projecting Capital Funding Needs	55
4.1.6	Projection of Debt Service	57

4.1.7	Reserve Funding	57
4.1.8	Summary of the Sewer Revenue Requirement	57
4.1.9	Reserve Fund Levels	58
4.1.10	Consultant’s Conclusions	59
4.1.11	Summary of the Sewer Revenue Requirement	60
4.2	Sewer Cost of Service.....	60
4.2.1	Objectives of a Cost of Service Study	60
4.2.2	Determining the Customer Classes of Service	60
4.2.3	General Cost of Service Procedures	61
4.2.4	Summary of the Sewer Cost of Service Analysis	63
4.2.5	Consultant’s Conclusions and Recommendations	65
4.2.6	Summary of the Sewer Cost of Service Analysis	65
4.3	Sewer Rate Design	66
4.3.1	Rate Design Criteria and Considerations	66
4.3.2	Development of Cost-Based Sewer Rates	66
4.3.3	Overview of the Current Sewer Rate Structure	67
4.3.4	Overview of the Proposed Sewer Rate Structure	67
4.4	Summary of the Sewer Rate Design	68
Technical Appendix A – Water Analysis		70
Technical Appendix B – Sewer Analysis		71



1 Executive Summary

Introduction

HDR Engineering, Inc. (HDR) was retained by Tahoe City Public Utility District (District) to conduct a comprehensive water and sewer rate study (Study). The main objectives of the Study are:

- Develop a projection of water and sewer revenues to support the District's operating and capital costs
- Proportionally allocate the costs of providing water and sewer services to those customers receiving service
- Propose cost-based and equitable rates for a multi-year time period

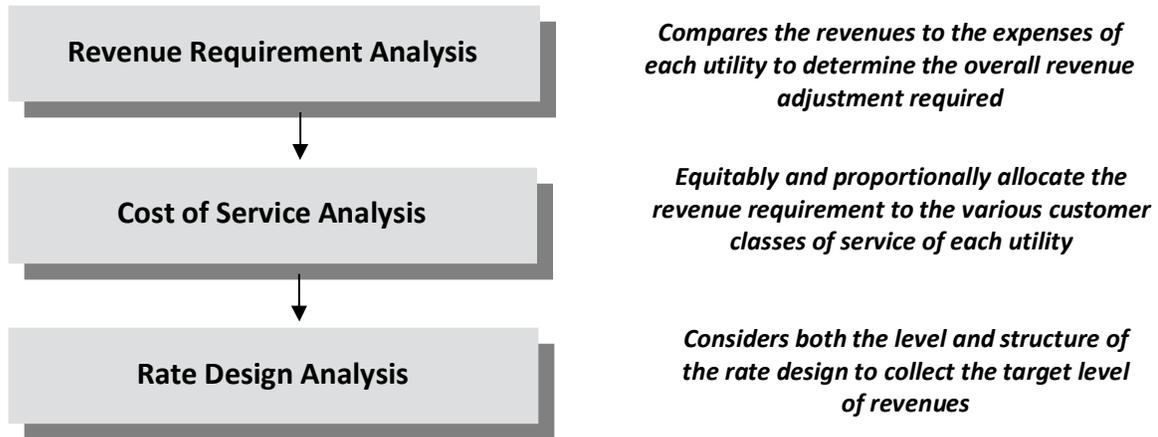
Since the completion of the 2014 study there have been changes to the District's customers and costs that resulted in the need to update the Study. It is important to note that the results shown in this report are based on information available at 'a point in time'. That is to say that if the information available at a later date has changed then the results of the analysis would likely also change or differ from those presented in this report.

The District owns, operates, and maintains the water and sewer systems which provide services to its customers. The costs associated with providing water and sewer services to District's customers has been developed based on the provided information and is included within the development of the proposed rates.

Overview of the Rate Study Process

A comprehensive rate study uses three interrelated analyses to address the adequacy and equity of each utility's rates. These three analyses are a revenue requirement analysis, a cost of service analysis, and a rate design analysis. These three analyses are illustrated below in Figure ES - 1.

Figure ES – 1 Overview of the Comprehensive Rate Analyses



Above is the basic framework that was utilized in the development of the Study for reviewing and evaluating the District’s water and sewer rates. A key aspect of the approach is utilizing generally accepted approaches and tailoring it to the District’s specific customer and system characteristics. The result of each task of the comprehensive rate study - for both the water and sewer utilities - were used as the basis for establishing cost-based and equitable rates for the District’s customers.

Key Water and Sewer Rate Study Results

The water and sewer rate study’s technical analyses were developed based on the operating and capital costs necessary to provide service to District’s customers. The analyses performed resulted in the following findings, conclusions, and recommendations.

- A revenue requirement analysis was developed for the water utility and for the sewer utility for the projected time period of 2020 through 2024
- The District’s adopted 2019 budget for the water utility and for the sewer utility was used as the starting point of the analyses
- Operation and maintenance expenses are projected to increase at inflationary levels with no assumed changes to levels of service or anticipated extraordinary expenses
- The District’s five-year capital improvement plan for the water utility, and for the sewer utility, were used to develop a capital funding plan
- A five-year rate transition plan was developed to adequately fund the operating and capital needs of each utility.
- For both the water and sewer utility, annual revenue adjustments are necessary to fund the operating and capital needs of each utility
- A cost of service analysis was developed for each utility to determine the appropriate level of revenue to collect from each customer class of service (and tier, if applicable)

- Proposed rates were developed, for each utility, for 2020 through 2024 that reflected the equity and proportionality as developed in the cost of service analysis while collecting the target level of revenues from the revenue requirement analyses

Summary of the Water Revenue Requirement Analysis

A revenue requirement analysis is the first analytical step in the development of the water rate study. This analysis determines the adequacy of the level of current water rates for the District. From this analysis, a determination can be made as to the overall level of water revenue adjustments needed to provide adequate and prudent funding for both operating and capital needs.

For the revenue requirement analysis, a “cash basis” approach was utilized. The “cash basis” approach is the most commonly used methodology by municipal utilities to establish the revenue requirement and is the approach used in the District’s previous rate studies (2009 and 2014). The cash basis approach includes an analysis of operation and maintenance (O&M) expenses, transfers, annual debt service, and rate funded capital. The primary financial inputs in the development of the revenue requirement analysis were the District’s 2019 adopted water budget, historical billed customer and consumption data, and the current water system capital improvement plan.

The water revenue requirement was developed from the adopted 2019 water utility budget for a projected time period (2020 – 2024). A multi-year time frame is recommended in order to better anticipate future financial requirements and allow the District to begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates. A good example of this is the planned debt issuance in 2021 for the West Lake Tahoe Regional Water Treatment Plant (WTP) which is not shown in the current budget but can be anticipated and, therefore, incorporated into the 2021 revenue requirement total.

Once the operating and maintenance expenses were developed for the projected time period, based on budgeted expenses and historical inflationary factors, the next step was to develop the capital funding plan. The proper and adequate funding of capital projects is important in helping to minimize rates over time. A general financial guideline states that, at a minimum, a utility should fund an amount equal to or greater than annual depreciation expense through rates. For this Study, the District’s current capital improvement plan was used which was based on the needs of the water system. This plan identified the projects necessary to maintain the water system, as well as projects necessary to upgrade recently acquired water systems to bring them up to the District’s levels of service. The capital funding plan developed for the District’s water utility has placed the rate funded capital level at \$2.5 million in 2020 through 2024. This level of funding was established based on the long-term need to prudently fund replacement and repair of the existing water system. Any difference between annual capital needs and rate funded capital, is funded through other funding sources. The District prioritizes “cash financing” capital projects as evident through the level of annual rate funded capital. This level of “pay-as-you-go” funding creates a more stable level of funding over time for capital projects, more predictable

rates for customers, and can also provide the District with increased financial flexibility into the future. The other funding sources include reserve funds and long-term debt issuance, however the District prefers to limit debt issuances if at all possible. However, given the nature and extent of the necessary capital projects, additional long-term debt is projected during the next five-year time period for the WTP and will be addressed during the District’s long term financial planning process. In developing the sewer capital funding plan, HDR is not acting in a municipal advisory role to the District.

The revenue requirement analysis for the District’s water utility was developed to determine the necessary revenues to meet the costs of providing water service to the customers based on the specific O&M and capital costs of the District’s water utility. Provided below, in Table ES – 1, is a summary of the water revenue requirement analysis. A more detailed analysis of the water revenue requirements can be found in Section 3.1 of this report.

Table ES - 1						
Summary of the Water Revenue Requirement Analysis (\$000s)						
	2019	2020	2021	2022	2023	2024
Revenues						
Rate Revenues	\$5,616	\$5,644	\$5,672	\$5,701	\$5,729	\$5,758
Other Revenues	<u>1,281</u>	<u>1,216</u>	<u>1,357</u>	<u>1,437</u>	<u>1,512</u>	<u>1,604</u>
Total Revenues	\$6,897	\$6,860	\$7,029	\$7,137	\$7,241	\$7,362
Expenses						
Total O & M	\$4,474	\$4,795	\$5,240	\$5,557	\$5,791	\$6,124
Rate Funded Capital	2,325	2,500	2,500	2,500	2,500	2,500
Net Debt Service	65	22	390	368	368	368
Reserve Funding	<u>33</u>	<u>(118)</u>	<u>(8)</u>	<u>218</u>	<u>530</u>	<u>790</u>
Total Revenue Requirement	\$6,897	\$7,199	\$8,121	\$8,643	\$9,189	\$9,782
Total Bal. / (Def.) of Funds	\$0	(\$339)	(\$1,092)	(\$1,505)	(\$1,947)	(\$2,420)

As illustrated above, the water revenue requirement has summed the annual O&M expenses, rate funded capital, net debt service, and reserve funding. The total revenue requirement is then compared to the total sources of funds which are the rate revenues, at present rate levels, and other miscellaneous revenues. From this comparison a balance or deficiency of funds in each year can be determined. It is important to note the “Bal. / (Def.) of Funds” row is cumulative. That is, any adjustment to rate revenues in the initial years will reduce the deficiency in the later years, assuming expenses remain the same. Over the five-year projected period, the level of water rate revenues will need to be adjusted to fund the District’s projected operating and capital needs for the water utility.

Based on the water revenue requirement analysis developed herein, HDR has concluded that the District will need to adjust the level of water revenues received over the next five years (2020 – 2024). HDR has reached this conclusion for the following reasons:

- Adjustments are necessary to fund annual water utility operating and capital needs
- Adjustments are necessary to maintain prudent funding of annual renewal and replacement of the water system
- The proposed adjustments maintain the strong financial health of the District’s water utility (e.g., reserve levels, debt service coverage ratios) and provide long-term, sustainable funding levels

In reaching this conclusion, HDR recommends that the District adopt revenue adjustments for 2020 through 2024. This is in order to provide sufficient funding for all the O&M and capital improvement needs over this Study time period. A detailed discussion of the development of the revenue requirement is provided in Section 3.1 of this report and the technical analysis is provided in Exhibit 1 through Exhibit 6 of the Technical Appendix A - Water Analysis.

Summary of the Water Cost of Service Analysis

A cost of service analysis determines the proportional and equitable allocation of the revenue requirement to the various water customer classes of service. Whereas the revenue requirement analysis determines the utility’s overall revenue needs, the cost of service analysis determines the proportional and equitable manner in which to distribute the cost of service and collect that revenue requirement for the proposed time period. The cost of service analysis is based on generally accepted methodologies as outlined in the American Water Works Association M1 Manual, Principles of Water Rates, Fees, and Charges. For the District’s Study, the revenue requirement for 2020 was used as the ‘test year’ for the water utility in order to develop the cost of service analysis.

In summary form, the cost of service analysis began by functionalizing the revenue requirement. As explained in more detail later in this report, the functionalized revenue requirement was then allocated to the various cost components. The individual allocation totals were then proportionally distributed to the various customer class of service based upon each customer class’s use of, or demand, placed on the water system (via the distribution factors). The distributed expenses for each customer class were then aggregated (summed) to determine each customer class’s overall revenue responsibility. Table ES - 2 provides the summary of the cost of service analysis based on the water system specific costs and each of the District’s water customer class of service characteristics. The detailed cost of service analysis is provided in Exhibit 7 through Exhibit 18 of the Technical Appendix A - Water Analysis and further discussed in Section 3.2 of this report.

Table ES - 2
Summary of the Water 2020 Cost of Service Analysis (\$000s)

Class of Service	Present Revenues	Allocated Costs	\$ Difference
Residential	\$4,571	\$4,945	(\$374)
Commercial	845	798	47
Fireline	<u>229</u>	<u>240</u>	<u>(12)</u>
Total System	\$5,644	\$5,983	(\$339)

The results of the cost of service analysis show differences between the customer classes of service. This is not uncommon given the nature of how customer water consumption patterns change over time. Additionally, this analysis is a snapshot in time and there are many other variables that can affect the results and that can change from year to year.

Given the requirement of California Constitution Article XIII D, Section 6 (commonly referred to as Proposition 218) the results of the water cost of service analysis are used to establish the proposed rates. As noted in the cost of service section of this report, the implementation of cost of service adjustments will impact the overall customer bill and revenue generation. As noted, a detailed discussion of the development of the cost of service analysis is provided in Section 3.2 of this report and in Exhibit 7 through Exhibit 18 of the Water Technical Appendices.

Summary of the Water Rate Design

The third and final step of the comprehensive rate study process is the design of the water rates to collect the targeted levels of revenue, based on the results of the revenue requirement and cost of service analyses. The revenue requirement analysis provided a set of recommendations related to annual revenue adjustments, while the cost of service results in the need to make interclass adjustments.

The District currently has three customer classes of service: Residential, Commercial, and Fireline. All customer classes are currently charged a different fixed base charge schedule which varies based on the service meter size. For the consumption charge, Residential is currently charged on a 4-tiered structure on a per thousand gallon (1,000 gal) basis. Commercial customers are charged a uniform consumption charge on a per 1,000 gallon basis. Lastly, Fireline customers are charged only on a fixed charge basis.

After reviewing the current rate structure with the District staff, it was determined that the current base (or fixed meter) charge structure would be altered so that Residential and Commercial are charged the same base rate, with the level of the proposed charge based on the unit costs developed in the cost of service analysis. The base charge structure would still vary by service meter size but the equivalencies would be updated to match the AWWA safe operating

capacity ratios which is an industry standard approach. The Fireline base charge will be calculated on a stand-alone basis.

After a review of the customer consumption patterns, and discussion with the District, it was recommended that the tiered rate structure be maintained for Residential customers and the uniform consumption charge be maintained for Commercial customers. Given this, and the result of the prior analyses – the revenue requirement and cost of service – the proposed rates were developed for the five year period of 2020 through 2024. The proposed rates were designed to reflect the proportional allocation of the costs of providing service to each customer class and overall revenue needs of the water utility over the projected time period. Provided in Table ES – 3 is a summary of the present and proposed residential rates for the District’s water utility.

Table ES - 3						
Summary of the Monthly Present and Proposed Residential Water Rates						
	<i>Present Rates</i>	2020	2021	2022	2023	2024
Base Charge	\$ / Mo.					
3/4"	\$74.50	\$79.31	\$84.07	\$87.43	\$90.93	\$94.57
1"	\$112.25	\$132.45	\$140.40	\$146.01	\$151.85	\$157.93
1 1/4"	\$145.00	\$198.28	\$210.17	\$218.58	\$227.33	\$236.42
1 1/2"	\$172.25	\$264.10	\$279.95	\$291.14	\$302.80	\$314.92
2"	\$232.00	\$422.72	\$448.09	\$466.00	\$484.66	\$504.06
3"	\$350.75	\$793.10	\$840.70	\$874.30	\$909.30	\$945.70
4"	\$462.00	\$1,322.10	\$1,401.45	\$1,457.46	\$1,515.80	\$1,576.48
6"	\$693.50	\$2,643.40	\$2,802.05	\$2,914.04	\$3,030.70	\$3,152.02
8"	--	\$4,229.60	\$4,483.45	\$4,662.64	\$4,849.30	\$5,043.42
Unmetered	\$93.10	\$97.13	\$102.97	\$107.11	\$111.39	\$115.87
Consumption Charge	\$ / 1,000 gal					
0 - 8,000 gal	\$2.68	\$2.97	\$3.15	\$3.28	\$3.41	\$3.55
8,000 - 20,000 gal	\$3.64	\$3.88	\$4.12	\$4.28	\$4.45	\$4.64
20,000 - 40,000 gal	\$5.32	\$5.59	\$5.93	\$6.17	\$6.42	\$6.68
40,000 + gal	\$8.25	\$11.05	\$11.72	\$12.20	\$12.69	\$13.21

Table ES – 3 shows, for residential customers, the present rate structure has been revised slightly and the level of rates have been adjusted in order to meet target revenue levels and the unit costs as developed in the cost of service analysis. The 2020 rates are based on the unit cost from the cost of service analysis. The proposed rates are projected to be effective January 1 of each year starting January 1, 2020.

Table ES – 4 provides a summary of the present and proposed commercial rates. As noted, Commercial customers will have the same proposed base charge as residential customers now.

Additionally, the present uniform consumption charge structure will remain and only the pricing of the uniform rate has been revised to reflect the unit costs as developed in the cost of service analysis.

Table ES - 4
Summary of the Monthly Present and Proposed Commercial Water Rates

	<i>Present Rates</i>	2020	2021	2022	2023	2024
Base Charge	<i>\$ / Acct. / Mo.</i>					
3/4"	\$89.50	\$79.31	\$84.07	\$87.43	\$90.93	\$94.57
1"	\$143.25	\$132.45	\$140.40	\$146.01	\$151.85	\$157.93
1 1/4"	\$173.75	\$198.28	\$210.17	\$218.58	\$227.33	\$236.42
1 1/2"	\$208.75	\$264.10	\$279.95	\$291.14	\$302.80	\$314.92
2"	\$279.50	\$422.72	\$448.09	\$466.00	\$484.66	\$504.06
3"	\$418.75	\$793.10	\$840.70	\$874.30	\$909.30	\$945.70
4"	\$553.75	\$1,322.10	\$1,401.45	\$1,457.46	\$1,515.80	\$1,576.48
6"	\$829.75	\$2,643.40	\$2,802.05	\$2,914.04	\$3,030.70	\$3,152.02
8"	\$1,110.50	\$4,229.60	\$4,483.45	\$4,662.64	\$4,849.30	\$5,043.42
Consumption Charge	<i>\$ / 1,000 gal</i>					
All Usage	\$6.74	\$4.20	\$4.45	\$4.63	\$4.82	\$5.01

As part of the Study, HDR also assisted in the development of a rate transition plan for the recently acquired water systems - Timberland, Tahoe Cedars and Madden Creek. Given the timing of improvements, and current rate levels, Timberland customers will transition to the District's adopted rates on January 1, 2020. The Tahoe Cedars and Madden Creek systems currently have rates that are significantly less than the District's current rate levels. Given this, the District Board determined a rate transition plan was necessary to minimize impacts to these customers. The Study developed a rate transition plan for these customers so that rates would smoothly adjust until equalizing to the District's proposed rates in 2024. The Board authorized staff to fund the difference in the rates through annual property tax revenue transferred to the water fund. In this way, existing customer rate revenue will not provide funding for the transition of the Tahoe Cedars and Madden Creek customers. The rate schedules for the Tahoe Cedars and Madden Creek water systems as well as Fireline customers are included in Section 3.3 of this Study.

Summary of the Sewer Revenue Requirement Analysis

The District's sewer utility revenue requirement analysis is the first analytical step in the comprehensive rate study process, just as was the case with the water utility. The revenue requirement analysis determines the adequacy of the current sewer rates to fund current and future costs related to both O&M and capital needs. From this analysis, a determination can be made as to the overall level of sewer revenue adjustments needed to provide adequate and prudent funding for the sewer utility.

For this Study, the revenue requirement was developed for the budgeted year 2019 and a projected time period (2020 –2024). As a practical matter, a multi-year time frame is recommended in an attempt to identify any major expenses that may be on the horizon. By anticipating future financial requirements, the District may begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rate levels. As with the water rate study, the focus of this study is on the next five-year period of 2020 through 2024.

For the sewer revenue requirement analysis, a “cash basis” approach was utilized, the same approach used for the water revenue analysis. The “cash basis” approach is the most commonly used methodology by municipal utilities to set their revenue requirement. Under this approach the revenues of the utility must be sufficient to recover all cash needs, including annual O&M expenses, rate funded capital, net debt service, and reserve funding (transfers). The primary financial inputs in the development of the revenue requirement were the District’s adopted 2019 budget documents, historical billed customer and usage data, and the District’s sewer capital improvement plan. Budgeted O&M expenses were projected using inflationary factors for the District’s various expenses to provide sewer collection and conveyance services over the review period. These inflationary factors were based on specific historical District increases in costs and projected changes based on planning and financial analysis.

For the projected time period, the next step is the development of the capital funding plan for the sewer utility. The proper and adequate funding of capital projects is important to help minimize rate increases over time. General financial guidelines state that, at a minimum, a utility should fund an amount equal to, or greater than, the annual depreciation expense through rates. As with the water analysis, the District maintained its “pay-as-you-go” (rate) funding approach as part of the capital improvement plan to maintain the sewer system (e.g., renewal and replacement needs). This capital funding plan has placed the District’s rate funding for capital improvements at \$1.5 million annually and remains at that level to prudently fund capital renewal and replacement needs. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the necessary capital improvement plan projects. HDR has worked with the District’s staff to develop the proposed capital funding plan. In developing the sewer capital funding plan, HDR is not acting in a municipal advisory role to the District.

Given a projection of O&M and capital expenses, a summary of the sewer revenue requirement analysis was developed. Provided below in Table ES - 5 is a summary of the revenue requirement analysis for the District’s sewer utility.

Table ES - 5
Summary of the Sewer Revenue Requirement Analysis (\$000)

	2019	2020	2021	2022	2023	2024
Revenues						
Rate Revenues	\$4,976	\$4,976	\$4,976	\$4,976	\$4,976	\$4,976
Other Revenues	103	112	124	123	119	118
Total Revenues	\$5,079	\$5,088	\$5,100	\$5,099	\$5,095	\$5,094
Expenses						
Total O & M	\$3,685	\$3,948	\$4,205	\$4,483	\$4,670	\$4,973
Net Debt Service	0	0	0	0	0	0
Rate Funded Capital	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Reserve Funding	(106)	(61)	10	(18)	54	26
Total Expenses	\$5,079	\$5,387	\$5,715	\$5,965	\$6,224	\$6,499
Bal./ (Def.) of Funds	(\$0)	(\$299)	(\$615)	(\$867)	(\$1,130)	(\$1,404)

As can be seen, the revenue requirement has summed the annual O&M expense, rate funded capital, net debt service, and reserve funding. The total revenue requirement is then compared to the total sources of funds which include the rate revenues, at present rate levels, and other miscellaneous revenues. From this comparison, a balance or deficiency of funds in each year can be determined. The “Bal. / (Def.) of Funds” row is cumulative. That is, any adjustment to rate revenues in the initial years will reduce the deficiency in the later years, assuming expenses remain the same. Over this Study time period, revenues are deficient annually in 2020 through 2024 prior to any rate revenue adjustments.

Based on the revenue requirement analysis developed herein, HDR has concluded that the District will need to adjust the level of sewer revenues received over the next five years (2020 – 2024). HDR has reached this conclusion for the following reasons:

- Adjustments are necessary to fund the District’s annual sewer O&M expenses
- Adjustments are necessary to maintain prudent funding of annual renewal and replacement of the sewer utility system.
- The proposed adjustments maintain the strong financial health of the District’s sewer utility (e.g., debt service coverage ratios, reserves) and provide long-term, sustainable funding levels for the District

In reaching this conclusion, HDR recommends that the District adopt revenue adjustments for 2020 through 2024 to provide sufficient funding for all the O&M and capital improvement needs over this Study time period. A detailed discussion of the development of the revenue requirement is provided in Section 4.1 of this report.

Summary of the Sewer Cost of Service Analysis

A cost of service analysis determines the equitable and proportional allocation of the revenue requirement to the various customer classes of service. Whereas the revenue requirement analysis determines the utility’s overall revenue needs, the cost of service analysis determines the equitable manner in which to proportionately allocate costs of service and collect the required revenue over the proposed time period. In this case, the sewer revenue requirement for 2020 was used for establishing the cost of service analysis for the District.

In summary form, the cost of service analysis began by functionalizing the revenue requirement for the sewer system. As explained in more detail later in this report, the functionalized revenue requirement was then allocated into their various cost components as outlined in the Water Environment Federation Manual of Practice Number 27, Financing and Charges for Wastewater Systems. The individual functional allocation totals were then equitably and proportionately distributed to the various customer class of service based upon each customer class’s use of, or demand, placed on the system. The distributed expenses for each customer class were then aggregated to determine each customer class’s overall revenue responsibility. Table ES - 6 provides the summary of the cost of service analysis completed for the District’s sewer utility customers. The development of the sewer cost of service is detailed in Section 4.2 of this report and Exhibits 6 through 14 of the Technical Appendix B - Sewer Analysis.

Table ES - 6 Summary of the Sewer Cost of Service Analysis (\$000)			
Class of Service	Current Revenues	Allocated Costs	\$ Difference
Residential	\$4,136	\$4,384	(\$248)
Non-Residential	840	891	(50)
Total	\$4,976	\$5,275	(\$299)

The results of the cost of service analysis indicate cost differences between the customer classes of service. Given the requirement of California Constitution Article XIII D, Section 6 (commonly referred to as Proposition 218) the results of the sewer cost of service analysis are used to establish the proposed rates. As noted in the cost of service chapter of this report, the implementation of cost of service adjustments will impact the overall customer bill and revenue generation for the sewer utility. A detailed discussion of the development of the cost of service analysis is provided in Section 4.2 of this report.

Summary of the Sewer Rate Designs

The final step of the comprehensive rate study process is the design of the sewer rates to collect the desired levels of revenue, based on the results of the revenue requirement and cost of service analyses. The rate design incorporates the revenue requirement analysis recommendations

related to annual revenue adjustments and the cost of service analysis results and interclass adjustments.

The District currently has a rate structure for each of the customer classes of service. For residential customers a monthly flat rate is charged on a per equivalent dwelling unit (EDU) basis. Each customer class has a separate rate given the different characteristics as outlined in the cost of service analysis. Within the non-residential customer class, subclasses of customers are based on the type of commercial activity and the relationship to 1 EDU based on industry standard characteristics. These customers are charged a fixed charge based on the number of units based on the subclass.

Given the result of the revenue requirement and cost of service analyses, proposed rates have been developed that reflect the proportional allocation of the costs of providing service. The rate structures for residential and non-residential are recommended to be maintained. Provided in Table ES – 7 is a summary of the present and proposed rates for the residential customer class.

Table ES – 7 Summary of the Monthly Present and Proposed Residential Sewer Rates						
	Present Rates	2020	2021	2022	2023	2024
Residential						
Fixed Charge	\$44.14	\$46.79	\$49.60	\$51.83	\$54.16	\$56.60

The proposed rates for 2020 are based on the unit costs as developed in the cost of service study. The rates thereafter are increased by the annual revenue requirement adjustment. Similar to how the residential customer class rates were developed, the non-residential rates were increased according to the results of the cost of service analysis. The development of the rate designs is outlined in detail in Section 4.3 of this report.



1 Introduction & Overview

1.1 Introduction

HDR was retained by the Tahoe City Public Utility District (District) to conduct a comprehensive water and sewer rate study. The objective of the rate study was to review the District’s operating and capital costs in order to develop a projection of revenue needs and cost-based rates for the water and sewer system customers. This study determined the adequacy of the existing rates and provides the framework and cost basis for any needed future adjustments.

The District owns and operates the water and sewer systems. The water system consists of supply, transmission, and distribution services. The District receives source water from local ground water resources via wells and a temporary surface water plant. The costs associated with providing water supply, plus the costs of distributing water to customers, has been developed based on District provided information and included within the development of the proposed rates. The sewer system - which the District owns and operates - includes the collection and conveyance of wastewater and treatment services are handled by Tahoe-Truckee Sanitary Agency (TTSA).

1.2 Goals and Objectives

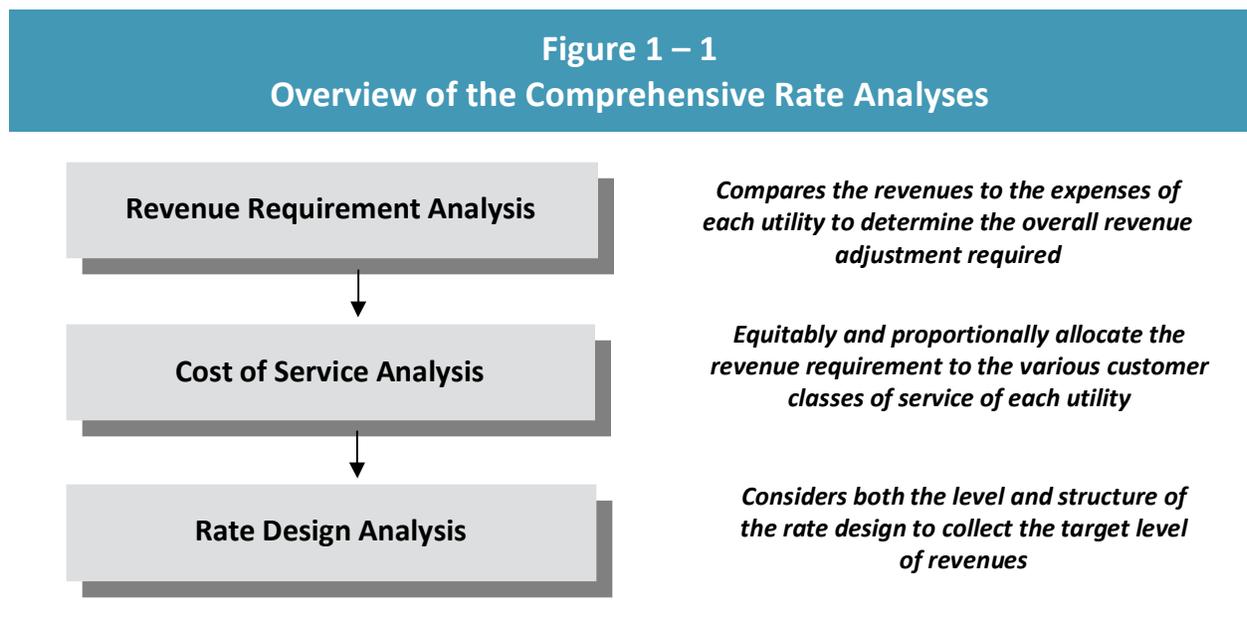
The District had a number of key objectives in developing the water and sewer rate study. These key objectives provided a framework for policy decisions in the analysis that follows. These key objectives were as follows:

- Develop the water study in a manner that is consistent with the principles and methodologies established by the American Water Works Association (AWWA), M1 Manual, Principles of Water Rates, Fees, and Charges.
- Develop the sewer study in a manner that is consistent with the principles and methodologies established by the Water Environment Federation (WEF), Manual of Practice No. 27, Financing and Charges for Sewer Systems.
- In financial planning and establishing the District’s rates, review and utilize best industry practices, while recognizing and acknowledging the specific and unique characteristics of the District’s systems.
- Review the District’s rates utilizing “generally accepted” rate making methodologies to determine adequacy and equity of the utility rates.
- Meet the long-term financial planning criteria and goals of the District. For example debt service coverage ratios, adequate funding of capital infrastructure, and maintenance of adequate and prudent reserve levels.
- Develop a final proposed financial plan which adequately supports the utility’s funding requirements, while attempting to minimize overall impacts to rates.
- Develop a proportional and equitable distribution of costs to the District’s water and sewer customers.

- Provide proposed rates designed to meet the legal requirements of Article XIII D and recent legal decisions related to Article XIII D.

1.3 Overview of the Rate Study Process

User rates must be set at a level where a utility’s operating and capital expenses are met with the revenues received from customers. This is an important point, as failure to achieve this objective may lead to insufficient funds to maintain system integrity. To evaluate the adequacy of the water and sewer rates, each on a standalone basis, a comprehensive rate study is often performed. A comprehensive rate study consists of three interrelated analyses. Figure 1 – 1 provides an overview of these analyses.



The above framework for reviewing and evaluating rates was utilized for the District’s water and sewer systems.

1.4 Organization of the Study

This report is organized in a sequential manner that first provides an overview of utility rate setting principles, followed by sections that detail the specific steps used to review the District’s water and sewer rates. The following sections comprise the District’s water and sewer rate study report:

- **Section 2** – Overview of Rate Setting Principles
- **Section 3** – Development of the Water Rate Study
- **Section 4** – Development of the Sewer Rate Study

Technical Appendices are attached at the end of this report, which detail the various technical analyses that were undertaken in the preparation of this study.

1.5 Summary

This report will review the comprehensive water and sewer cost of service study prepared for Tahoe City Public Utility District. This report has been prepared utilizing “generally accepted” and “industry standard” water and sewer rate setting techniques as outlined in the AWWA M1 Manual and WEF MOP #27.



2 Overview of the Rate Setting Process

2.1 Introduction

This section of the report provides background information about the rate setting process, including descriptions of generally accepted principles, types of utilities, methods of determining a revenue requirement, the cost of service analysis, and rate design. This information is useful for gaining a better understanding of the details presented in Sections 3 and 4 of this report.

2.2 Generally Accepted Rate Setting Principles

As a practical matter, all utilities should consider setting their rates around some generally accepted or global principles and guidelines. Utility rates should be:

- Cost-based, equitable, and set at a level that meets the utility's full revenue requirement
- Easy to understand and administer
- Designed to conform to "generally accepted" rate setting techniques
- Stable in their ability to provide adequate revenues for meeting the utility's financial, operating, and regulatory requirements
- Established at a level that is stable from year-to-year from a customer's perspective

2.3 Determining the Revenue Requirement

Most public utilities use the "cash basis" approach for establishing their revenue requirement and setting rates. This approach conforms to most public utility budgetary requirements and the calculation is easy to understand. A public utility totals its cash expenditures for a period of time to determine required revenues. The revenue requirement for a public utility is usually comprised of the following costs or expenses:

- **Total Operating Expenses:** This includes a utility's operation and maintenance (O&M) expenses, plus any applicable taxes or transfer payments. Operation and maintenance expenses include the materials, electricity, labor, supplies, etc., needed to keep the utility functioning.
- **Total Capital Expenses:** Capital expenses are calculated by adding debt service payments (principal and interest) to capital improvements financed with rate revenues. In lieu of including capital improvements financed with rate revenues, a utility sometimes includes depreciation expense to stabilize the annual revenue requirement.

Under the "cash basis" approach, the sum of the total O&M expenses plus the total capital expenses equals the utility's revenue requirement during any selected period of time (historical or projected).

Note that the two portions of the capital expense component (debt service and rate funded capital) are necessary under the cash basis approach because utilities generally cannot finance all their capital facilities with long-term debt. At the same time, it is often difficult to pay for

capital expenditures on a “pay-as-you-go” basis given that some major capital projects may have significant rate impacts upon a utility and its customers, even when financed with long-term debt. Many utilities have found that some combination of pay-as-you-go funding and long-term financing will often lead to minimization of rate increases over time.

Public utilities typically use the “cash basis”¹ approach to establish their revenue requirements. An exception occurs if a public utility provides service to a large wholesale or contract customer. In this situation, a public utility could use the “utility basis” approach (see Table 2 - 1) regarding earning a fair return on its investment.

Table 2 – 1 Cash versus Utility Basis Comparison			
Cash Basis		Utility Basis (Accrual)	
+	O&M Expenses	+	O&M Expenses
+	Taxes/Transfer Payments	+	Taxes/Transfer Payments
+	Capital Improv. Funded From Rates (≥ Depreciation Expense)	+	Depreciation Expense
+	Debt Service (Principal + Interest)	+	Return on Investment
=	Total Revenue Requirement	=	Total Revenue Requirement

2.4 Analyzing Cost of Service

After the total revenue requirement is determined, it is equitably and proportionally allocated to the users (i.e., customer classes) of the service. The allocation, analyzed through a cost of service analysis, reflects the cost relationships for providing water and sewer services. A cost of service analysis requires three analytical steps:

1. Costs are **functionalized** or grouped into the various cost categories related to providing service. For water this typically includes supply, treatment, distribution, pumping, etc. For a sewer utility this generally includes collection, pumping, and treatment. This step is largely accomplished by the utility’s accounting system.
2. The functionalized costs are then **allocated** to specific cost components. Allocation refers to the arrangement of the functionalized data into cost components. For example, a utility’s water costs are typically allocated as average day, peak day, or customer-related. For sewer the manuals discuss the classification of costs, which includes volume, strength, and customer related.

¹ “Cash basis” as used in the context of rate setting is not the same as the terminology used for accounting purposes and recognition of revenues and expenses. As used for rate setting, “cash basis” simply refers to the specific cost components to be included within the revenue requirement analysis.

3. Once the costs are allocated or classified into components, they are proportionally ***distributed*** to the customer classes of service (e.g., Residential, Commercial). The distribution is based on each customer class’s relative contribution to the cost component (i.e., benefits received from and burdens placed on the system and its resources). For example, customer-related costs are distributed to each class of service based on the total number of customers in that class of service. Once costs are distributed, the revenues from each customer class of service required to achieve cost-based rates can be determined.

2.5 Designing Utility Rates

Rates that meet the utility’s objectives are designed based on both the revenue requirement and the cost of service analysis. This approach results in rates that are strictly cost-based and does not consider other non-cost based goals and objectives (conservation, economic development, ability to pay, revenue stability, etc.). In designing the final proposed rates, factors such as ability to pay, continuity of past rate philosophy, economic development, ease of administration, and customer understanding may typically be taken into consideration. However, the proposed rates must take into consideration each customer class’s proportional share of costs allocated through the cost of service analysis to meet the legal requirements of California Constitution Article XIII D, commonly referred to as Proposition 218.

2.6 Economic Theory and Rate Setting

One of the major justifications for a comprehensive rate study is founded in economic theory. Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained. This statement’s implications on utility rate designs are significant. For example, a water utility usually incurs capacity-related costs to meet summer lawn watering needs. It follows that the customers who create excessive peak demands on the system and create the need for upsizing of the distribution system should pay for those over-sized facilities in proportion to their contribution to total peaking requirements. When costing and pricing techniques are refined, consumers have a more accurate understanding of what the commodity costs to produce and deliver. The same principals discussed are applicable to sewer also but the example of such was only given for illustration purposes. This price-equals-cost concept provides the basis for the subsequent analysis and comments.

“Economic theory suggests that the price of a commodity must roughly equal its cost if equity among customers is to be maintained.”

2.7 Summary

This section of the report has provided a brief introduction to the general principles, techniques, and economic theory used to set water and sewer rates. These principles and techniques will become the basis for the District’s comprehensive rate studies.



3 Development of the Water Rate Study

3.1 Water Revenue Requirement

This section describes the development of the revenue requirement for the District’s water utility. The District has provided detailed revenue, expenses, and customer billing data for the water system that allowed for the development of the revenue requirement. The revenue requirement analysis is the first analytical step in the comprehensive water rate study process. This analysis determines the adequacy of the District’s overall water revenues at current rate levels. From this analysis, a determination can be made as to the overall level of revenue (rate) needed to provide adequate and prudent funding for both operating and capital needs. HDR developed an independent analysis based on information provided by the District as part of the review of proposed rate adjustments.

3.1.1 Determining the Water Revenue Requirement

In developing the District’s water revenue requirement, the water utility, as an enterprise fund, must financially “stand on its own” and be properly funded. That is, no transfers from other District funds occur to support the District’s water utility. As a result, the revenue requirement analysis, as developed herein, assumes the full and proper funding needed to operate and maintain the water system on a financially sound and prudent basis.

3.1.2 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement for the District’s water utility was to establish a time frame for the revenue requirement analysis. For this study, the revenue requirement was developed for a 10-year time period (2020 through 2029). Reviewing a multi-year time period is recommended since it attempts to identify any major expenses that may be on the horizon. By anticipating future financial requirements, the District can begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates. For purposes of setting rates, the study focuses on the next five years as the rate setting period of 2020 through 2024.

The second step in determining the revenue requirement was to decide on the basis of accumulating costs. In this particular case, for the revenue requirement analysis a “cash basis” approach was utilized. The “cash basis” approach is the most common methodology used by municipal utilities to set their revenue requirement. This is also the methodology that the District has historically used to establish its water revenue requirement. Table 3 - 1 provides a summary of the “cash basis” approach and cost components used to develop the District’s water revenue requirement.

Table 3 – 1
Overview of the Water Utility’s “Cash Basis” Revenue Requirements

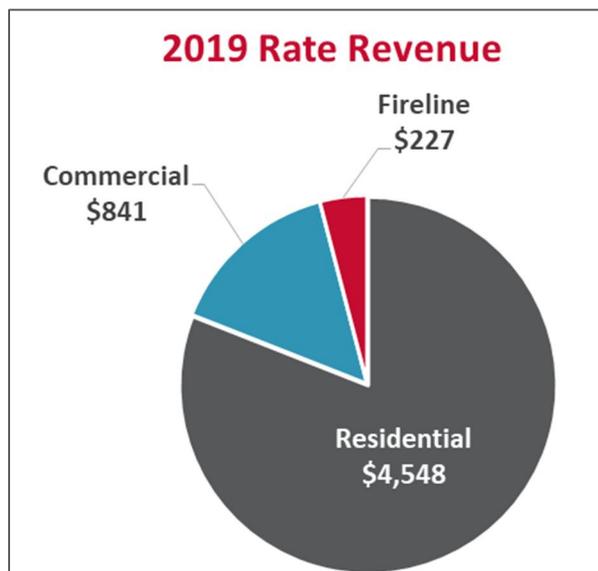
+	Water Operation and Maintenance Expenses
+	Rate Funded Capital
+	Net Debt Service (Principal + Interest)
<u>±</u>	<u>Reserve Funding</u>
=	Total Water Revenue Requirement
<u>-</u>	<u>Miscellaneous Revenues</u>
=	Net Revenue Requirement (Bal. Req’d from Rates)

Given a time period around which to develop the revenue requirement and a method to accumulate the costs, the focus shifts to the development and projection of the revenues and expenses of the District’s study.

The primary financial inputs in the development of the revenue requirement are the District’s adopted budget documents, recent and historical billed customer and consumption data, and the water capital improvement plan. Presented below is a detailed discussion of the steps and key assumptions contained in the development of the projections of the District’s water revenue requirement analysis.

3.1.3 Projecting Rate and Other Miscellaneous Revenues

The starting point of the revenue requirement is to develop a projection of the water rate revenues, at present rate levels. In general, this process involved developing projected billing units for each customer group (e.g., Residential, Commercial). For the water utility, the billing units were the number and size of meters for the fixed charge and the monthly metered consumption for each customer for the consumption charge. The billing units for each customer group were then multiplied by the applicable current water rates. This method of independently



calculating revenues links the projected revenues used within the analysis to the projected billing units. It also helps to confirm that the billing units used within the study are reasonable for purposes of projecting future revenues, distributing costs, and ultimately, establishing proposed rates.

The District currently has a rate structure for each customer class, Residential, Commercial, and Fireline. As noted above, the projection of revenues - and subsequent cost distribution - is based on specific customer classes of service. Given this, a revenue projection was developed for each of the customer classes of service. The

majority of the District’s rate revenues are derived from the Residential customer class. The District also has customer classes for Commercial and Fireline customers. In total, and at current rate levels, the District is projected to receive approximately \$5.6 million in rate revenue in 2019, based on the projection of customers and metered consumption. Over time, the study has assumed a conservative level of customer growth of 0.5% per year. This results in rate revenues increasing to approximately \$5.8 million, at present rate levels, in 2024 as a result of the estimated growth on the system.

In addition to rate revenues, the District receives other revenues from operations. These are revenues related to penalties, interest earnings, rental income, and revenues from the acquisition water systems along with other operating revenues. In total, the District is projected to receive approximately \$1.3 in other revenues in 2019. This amount is anticipated to increase to \$1.6 million by 2024. It is important to note that the Study assumes that the water acquisition systems are treated as a miscellaneous or other revenue. This has been done during the time that they transition to the full District rates and is discussed in Section 3.3.

On a combined basis, taking into account rate revenues and other revenues, the District’s water utility has total projected revenues of approximately \$6.9 million in 2019, increasing to approximately \$7.4 million by 2024. Again, this does not include any proposed revenue adjustments, only increases in revenues due to customer growth and annual changes in miscellaneous revenues.

3.1.4 Projecting Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the District to provide water service (supply, treatment, and distribution) as well as to operate and maintain the existing infrastructure. As mentioned, the District provided detailed O&M expenses based on the 2019 adopted budget. The budgeted O&M expenses were projected over the time period based on historical inflationary factors experienced by the District and the general economy. Provided in Table 3-2 is a summary of the primary escalation factors used to develop the projection of O&M expenses.

Table 3 – 2 Summary of the O&M Escalation Factors						
	2020	2021	2022	2023	2024	
Salaries	7.0%	7.0%	7.0%	7.0%	7.0%	
Benefits	4.0%	4.0%	4.0%	4.0%	4.0%	
Professional Services	3.5%	3.5%	3.5%	3.5%	3.5%	
Materials & Supplies	2.7%	2.7%	2.7%	2.7%	2.7%	
Equipment	4.0%	4.0%	4.0%	4.0%	4.0%	
Miscellaneous	2.7%	2.7%	2.7%	2.7%	2.7%	
Utilities	4.5%	4.5%	4.5%	4.5%	4.5%	
Flat	0.0%	0.0%	0.0%	0.0%	0.0%	

Each of the budgeted O&M expenses were reviewed and the applicable escalation factor applied to develop the O&M for the projected time period. Exhibit 2 of the Water Technical Appendices provides a more detailed summary of the assumptions used to develop the projection of revenues and escalation of the O&M expenses.

Based on the 2019 adopted budget, the total O&M expenses for the District are \$4.5 million. Over the planning horizon, total O&M expenses for the District are projected to increase to approximately \$6.1 million by 2024 based on the noted escalation factors. This reflects an average inflationary increase of 6.5% per year over the projected time period. The District's O&M expenses fluctuate from year to year based on the cyclical nature of some expenses. The largest new item is the addition of the water treatment plant O&M expenses starting in 2021.

3.1.5 Projecting Capital Funding Needs

A key component in the development of the water revenue requirement was properly and adequately funding capital improvement needs. One of the major issues facing utilities across the U.S. is the amount of deferred capital projects and the funding pressure from growth/expansion-related improvements. The proper and adequate funding of capital projects is an important issue for all water utilities and is not just a local issue or concern of the District.

In general, there are three types of capital projects that a utility may need to fund. These include the following types:

- Renewal & replacement projects
- Growth / capacity expansion projects
- Regulatory-related projects

A renewal and replacement project is essentially a project required for maintaining the existing system that is in place today. As the existing plant or pipelines become worn out, obsolete, etc., the utility should be making continuous investments to maintain the integrity of the facilities. In contrast to this, a utility may make capital investments to expand the capacity of facilities to accommodate future capacity needs (customers). Finally, certain projects may be a function of a regulatory requirement in which the Federal or State government mandates the need for an improvement to the system to meet a regulatory standard. Understanding these different types of capital projects is important because it may help to explain why costs are increasing and the cost drivers for any needed revenue adjustments. In addition, and more importantly, the way in which projects are funded may vary by the type of capital project. For example, renewal and replacement projects should be paid for via rates and funded on a "pay-as-you-go basis." In contrast to this, growth or capacity expansion projects may be funded via the collection of development or connection fees (i.e., growth-related charges) in which new development pays an equitable share of the cost of facilities necessary to serve their development (impact). Finally, regulatory projects may be funded by a variety of different means, which may include rates, long-term debt, grants, etc.

While the above discussion appears to neatly divide capital projects into three clearly defined categories, the reality of working with specific capital projects may be more complex. For

example, a pump may be replaced, but while being replaced, it is up-sized to accommodate greater capacity to serve increasing demands or new development. There are many projects that share these “joint” characteristics. At the same time, projects may not be “replacement” related, but rather “improvement” related.

For purposes of developing the capital funding plan the District provided its capital improvement plan (CIP) which has been summarized in Table 3 - 3 along with the expected funding sources developed as part of the rate study.

Table 3 – 3 Summary of the Water Capital Improvement Plan (\$000s)						
	2019	2020	2021	2022	2023	2024
Total Capital Projects	\$5,543	\$12,986	\$4,715	\$4,662	\$2,738	\$2,627
Other Funding Sources						
Unfunded	\$3,218	\$2,486	\$0	\$300	\$238	\$127
Reserves	0	0	0	77	0	0
Long-Term Debt	<u>0</u>	<u>8,000</u>	<u>2,215</u>	<u>1,785</u>	<u>0</u>	<u>0</u>
Total Other Funding Sources	\$3,218	\$10,486	\$4,000	\$2,162	\$238	\$127
Rate Funded Capital	\$2,325	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500

The capital improvements are a mix of renewal and replacement of aging water system infrastructure, equipment replacement, and improvements related to the water treatment plant. While the total amount required to fund projects may vary from year-to-year, the rate study capital funding plan has developed a plan to provide a consistent funding source for capital improvements.

The capital funding plan developed for the District’s water utility has placed the rate funded capital level at \$2.5 million in 2020 through 2024 based on discussion with District staff and Board. This level of funding was established based on the long-term need to prudently fund replacement and repair of the existing water system. As can be seen, the difference between annual capital needs and rate funded capital, when apparent, is being funded through other funding sources. The District prioritizes “cash financing” capital projects as evident through the level of annual rate funded capital. This level of pay-as-you-go funding can create a more stable level of funding over time for capital projects, more predictable rates for customers, and may also provide the District with increased financial flexibility into the future. The other funding sources include reserve funds and long-term debt issuance, however the District prefers to limit debt issuances if at all possible. However, given the nature, and level, of the capital projects, additional long-term debt is projected during the next five-year time period for the WTP.

A desirable and recommended minimum funding target for rate funded capital is an amount equal to or greater than annual depreciation expense. For the District, in 2019 annual

depreciation expense estimated at \$934,000 for the water utility. As can be seen, this financial plan provides the District with funding an amount greater than annual depreciation expense. This is critical as the replacement cost of an asset may be many times the original costs reflected through annual depreciation expense. This funding level will remain important to fund as the District's water system continues to age and the demand for funding renewal and replacement projects increases. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the necessary capital improvement projects. It should be noted that the capital contemplated in the Study does not fully reflect the total capital needs of the District's water utility.

3.1.6 Projection of Debt Service

Starting in 2020, the District has one (1) outstanding debt issue for the water utility; Zion Bank Loan, which is retired in 2021. The total annual debt service payment is approximately \$45,000 in 2020 and \$23,000 in 2021, half of which is offset by District property tax revenues in both years. The only assumed additional long-term debt is the long-term loan for the WTP in 2021. The annual debt service payment is assumed at \$735,000 but half is assumed to be paid from property tax resulting in net annual debt service of \$368,000. The use of property tax to fund annual debt service is based on the District's policies and philosophy of the use of property tax.

As part of this study, HDR is not providing municipal advice to the District as it relates to long-term borrowing, terms of borrowing, or structures of long-term debt issuance. Rather, this study is simply identifying the existing annual debt service payments and District provided estimates of additional long-term debt for rate setting purposes.

3.1.7 Reserve Funding

The final component of the revenue requirement analysis is the transfer to, or from, reserves to either maintain prudent ending fund balances or for future funding of specific capital improvements. In future years, as rates are adjusted and reach sufficient levels, funds are being transferred to the operating reserves to replenish prior expenditures and to meet minimum target levels. A more detailed discussion of the District's water reserve funds is provided in Section 3.1.9.

3.1.8 Summary of the Revenue Requirement

Given the above projections of revenues and expenses, a summary of the District's revenue requirement analysis can be developed. In developing the revenue requirement analysis, consideration was given to the financial planning considerations of the District. In particular, emphasis was placed on minimizing rates, while providing adequate funds to support the operational activities and capital improvement needs throughout the test period. Presented below in Table 3 – 4 is a summary of the District's revenue requirement based on projected expenses and current rates. Detailed exhibits of this analysis can be found in the Water Technical Appendices Exhibit 3.

Table 3 - 4
Summary of the Water Revenue Requirement Analysis (\$000s)

	2019	2020	2021	2022	2023	2024
Revenues						
Rate Revenues	\$5,616	\$5,644	\$5,672	\$5,701	\$5,729	\$5,758
Other Revenues	<u>1,281</u>	<u>1,216</u>	<u>1,357</u>	<u>1,437</u>	<u>1,512</u>	<u>1,604</u>
Total Revenues	\$6,897	\$6,860	\$7,029	\$7,137	\$7,241	\$7,362
Expenses						
Total O & M	\$4,474	\$4,795	\$5,240	\$5,557	\$5,791	\$6,124
Rate Funded Capital	2,325	2,500	2,500	2,500	2,500	2,500
Net Debt Service	65	22	390	368	368	368
Reserve Funding	<u>33</u>	<u>(118)</u>	<u>(8)</u>	<u>218</u>	<u>530</u>	<u>790</u>
Total Revenue Requirement	\$6,897	\$7,199	\$8,121	\$8,643	\$9,189	\$9,782
Total Bal. / (Def.) of Funds	\$0	(\$339)	(\$1,092)	(\$1,505)	(\$1,947)	(\$2,420)

As can be seen, the revenue requirement has summed the O&M, net debt service, rate funded capital, and reserve funding. The total revenue requirement is then compared to the total sources of funds which are the rate revenues, at present rate and consumption levels, and other revenues. From this comparison, a balance or deficiency of funds in each year can be determined. The “Bal. / (Def.) of Funds” row is cumulative. That is, any rate revenue adjustments in the initial years will reduce the deficiency in the later years, assuming no changes in projected expenses.

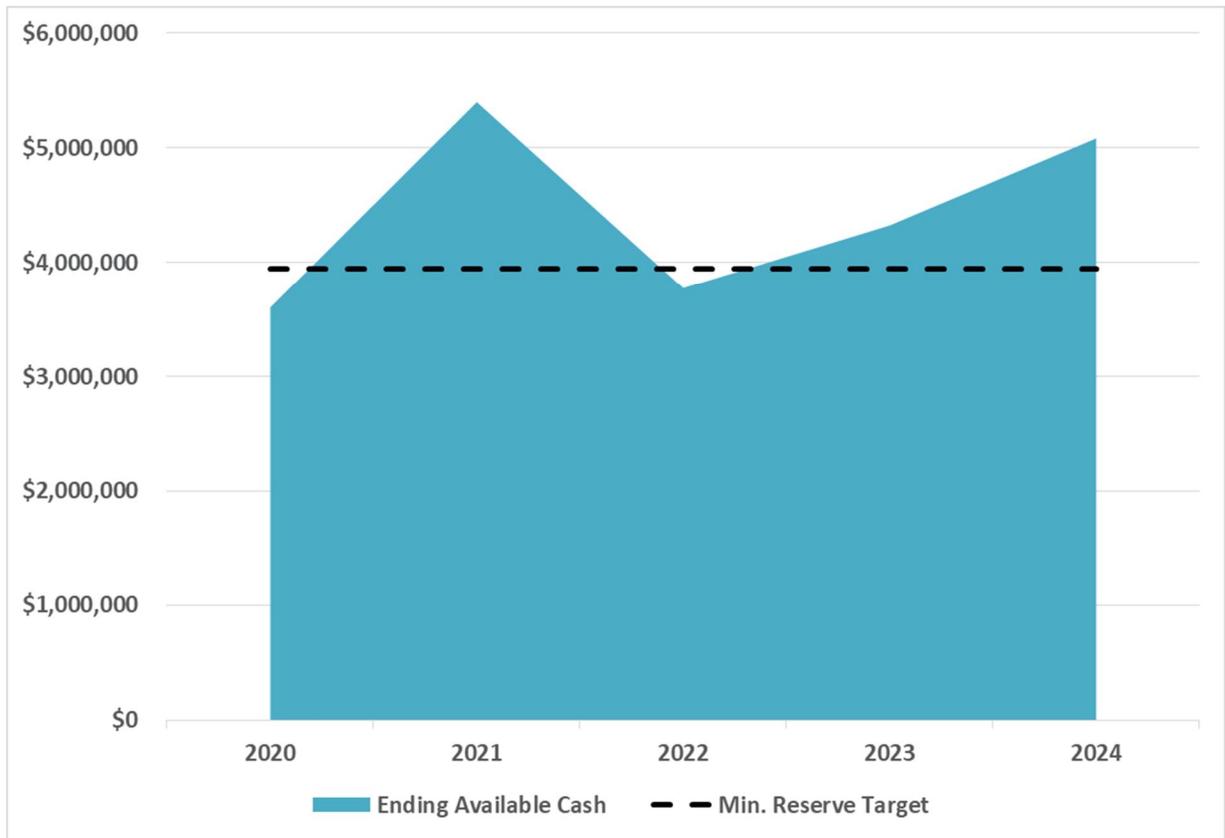
In 2020, the overall level of revenues need to be increased over the test period to meet the operating and capital needs of the water utility. Based on the analysis, the District will need to adjust revenue levels starting in 2020 and continuing through 2024. It is proposed that the revenue adjustments will be effective January 1, of each year. The proposed transition plan has been developed to meet the operating and capital needs of the District during the projected time period.

3.1.9 Reserve Fund Levels

Another key element of determining the financial health and sustainability of the District’s water utility is to review the level of available reserve levels after the proposed revenue adjustments. Utilities can have several different reserves each with a different purpose. The typical types of reserves utilities maintain are generally referenced as an operating reserve and a capital reserve. Each of these funds can have a minimum ending balance that, if reached or falls below, is a signal that the District should review the revenue sources associated with each reserve fund. The minimum ending balances will vary depending on the purpose of the fund and the expected revenue sources. For the District, there is essentially three reserve account for the water utility totaling approximately \$3.9 million.

- **Budget Stabilization**– The reserve is in place to meet the District’s annual cash flow needs and any unexpected one-item operational expenses. The typical minimum ending balance is approximately 90 days of O&M expenses.
- **Capital Reserve** – The reserve is in place to meet the District’s annual capital and rolling stock needs and any unexpected capital expenditures.
- **Water System Acquisition & Improvements Property Tax Reserve** – The reserve is in place for the future acquisitions and infrastructure improvements for those newly acquired systems.

Shown in the chart below is the District’s water utility projected ending fund balance over the rate setting period.



It should be noted that the analysis has included the long-term borrowing within the reserves, which is then used to fund capital improvements, specifically the water treatment plant project. In future years the District is able to meet target reserve levels with the proposed revenues.

3.1.10 Revenue Requirement Summary

Based on the revenue requirement analyses developed herein, HDR has concluded that the District will need to adjust the level of water revenues received over the next five years (2020 – 2024). HDR has reached this conclusion for the following reasons:

- Adjustments are necessary to fund annual water utility operating and capital needs
- Adjustments are necessary to maintain prudent funding of annual renewal and replacement of the water system
- The proposed adjustments maintain the District’s water utility’s strong financial health (e.g., reserve levels, debt service coverage ratios) and provide long-term, sustainable funding levels

In reaching this conclusion, HDR recommends that the District adopts the proposed revenue levels for 2020 through 2024. The following sections of this report will outline the proposed rate levels to maintain the target revenue levels identified in the revenue requirement analysis. This results in sufficient funding for the O&M and capital improvement needs for the Study time period.

3.2 Water Cost of Service

In the previous section, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the District’s water utility. This section will provide an overview of the cost of service analysis developed for the District.

A cost of service analysis determines the equitable allocation of the total revenue requirement between the various customer classes of service (e.g., Residential, Commercial). The previously developed revenue requirement for 2020 was utilized in the development of the cost of service analysis.

3.2.1 Objectives of a Cost of Service Study

There are two primary objectives in conducting a cost of service analysis:

- Equitably and proportionally distribute the water revenue requirement among the customer classes of service; and
- Derive average unit costs (i.e., cost-based rates) for subsequent rate designs

The objectives of the cost of service analysis are different from determining a revenue requirement. As noted in the previous section, a revenue requirement analysis determines the utility’s overall revenue needs, while the cost of service analysis determines the proportional and equitable manner to collect the revenue requirement from each of the customer class of service.

The results of the cost of service analysis provide unit costs (i.e., cost-based rates) which are used in the development of the final proposed rate designs. The cost of service analysis provides a cost per unit of water consumption based on each customer class’s equitable and proportional share of costs. For example, a water utility incurs costs related to average day, peak day, fire protection, and customer-related cost components. A water utility must build sufficient capacity² to meet

² 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

summer peak capacity needs. Therefore, those customers contributing to those peak demands on the system should pay their proportionately higher share of the costs to provide the capacity in the system. The unit costs provide the relationship between these components which are then used to set cost-based rates.

3.2.2 Determining the Customer Classes of Service

The first step in a cost of service analysis is to determine the customer classes of service. Based on discussion with District staff, and a review of the various types of customers, the classes of service used within the cost of service analysis were:

- Residential
- Commercial
- Fireline

In determining classes of service for cost of service purposes, the objective is to group customers together into similar or homogeneous groups based upon similar facility requirements and/or demand characteristics. Currently, the District has a rate structure for each of the above noted customer classes of service. The analysis has been developed to reflect the consumption patterns of each class. For example, residential customers have different consumption characteristics and facility requirements than commercial customers. This is a key aspect of a cost of service analysis that allows for the proportional and equitable distribution of costs to establish the proposed rates for each customer class of service. Based on these customer classes of service, each with their own unique customer consumption patterns and characteristics, the cost of service can be developed.

3.2.3 General Cost of Service Procedures

In order to determine the cost to serve each customer class of service on the District's water system, a cost of service analysis is conducted. A cost of service analysis utilizes a three-step approach to review costs. These steps take the form of functionalization, allocation, and distribution. Provided below is a detailed discussion of the water cost of service study conducted for the District, and the specific steps taken within the analysis. The approach used for the District's study conforms to generally accepted cost of service methodologies as outlined in the AWWA M1 manual.

3.2.3.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expense and asset (infrastructure) data by major operating functions (e.g., supply, transmission, storage, distribution). Within this study, there was a limited amount of

demand is known as peak demand. Both the operating costs and capital assets related costs incurred to accommodate the peak demands are generally allocated to each customer class based upon the class's contribution to the peak month, day and hour event.

functionalization of the cost data since it was largely accomplished within the District’s system of accounts.

3.2.3.2 Allocation of Costs

The second analytical task performed in a water cost of service study is the allocation of the costs. The allocation of costs examines why the expenses were incurred or what type of need is being met. The following allocations were used to develop the cost of service analysis:

- **Commodity Related Costs:** Commodity costs are those costs which tend to vary with the total quantity of water consumed by a customer. Commodity costs are those incurred under average load (demand) conditions and are generally specified for a period of time such as a month or year. Chemicals or utilities (electricity) are examples of commodity-related cost as these costs tend to vary based upon the total demand of water.
- **Capacity Related Costs:** Capacity costs are those which vary with peak demand, or the maximum rates of flow to customers. System capacity is required when there are large demands for water placed upon the system (e.g., summer lawn watering). For water utilities, capacity related costs are generally related to the sizing of facilities needed to meet a customer’s maximum water demand at any point in time. For example, portions of distribution storage reservoirs and mains (pipes) must be adequately sized to meet the peak demands of each customer class of service.
- **Customer Related Costs:** Customer costs are those costs which vary with the number of customers on the water system. They do not vary with system output or consumption levels. These costs are also sometimes referred to as readiness to serve or availability costs. Customer costs may also sometimes be further classified as either actual or weighted. Actual customer costs vary proportionally, from customer to customer, with the addition or deletion of a customer regardless of the size of the customer. An example of an actual customer cost is postage for mailing bills. This cost does not vary from customer to customer, regardless

Water Cost of Service Analysis Terminology

Functionalization – The arrangement of the cost data by functional category (e.g., source of supply, distribution).

Allocation – The assignment of functionalized costs to cost components (e.g., commodity, capacity, customer, and fire protection related).

Distribution – Distributing the allocated costs to each class of service based upon each class’s proportional contribution to that specific cost component.

Commodity Costs – Costs that are classified as commodity related vary with the total demand of water (e.g., chemicals, electricity).

Capacity Costs – Costs classified as capacity related vary with peak day usage. Facilities are often designed and sized around meeting peak demands.

Fire Protection Costs – Costs that are related to fire protection services (e.g., hydrants, oversizing of storage and distribution mains).

Customer Costs – Costs classified as customer related vary with the number of customers on the system (e.g., metering costs).

of the size or consumption characteristics of the customer. In contrast, a weighted customer cost reflects a disproportionate cost, from customer to customer, with the addition or deletion of a customer. Examples of weighted customer costs are items such as meter maintenance expenses, where a large commercial customer requires a significantly more expensive meter than a typical residential customer. This allocation reflects a weighted cost by customer class and an allocation based on the equivalent capacity based on the size of meters for each customer class and the AWWA capacity of each meter size.

- **Fire Protection Related Costs:** Fire protection costs are system and capacity costs necessary to allow for public fire protection functions. Usually, such costs relate to public fire hydrants and the over-sizing of mains and distribution storage reservoirs for fire protection purposes. Ultimately, for the District's Study, fire protection costs were split between public and private to develop the proper allocation of costs between the various customer classes.
- **Revenue Related Costs:** Some costs associated with the utility may vary with the amount of revenue received by the utility. An example of a revenue related cost would be a utility tax which is based on the gross utility revenue. For the District's study no costs were allocated to the revenue requirement component.
- **Direct Assignment:** Some costs associated with the utility may be directly assigned to a specific customer class, or classes. This can be a specific O&M expense or component of the infrastructure that only benefits a specific customer class, or classes. For the District's study no costs were allocated to the revenue requirement component.

3.2.4 Development of Distribution Factors

Once the allocation process is complete, and the customer groups have been defined, the various allocated costs were distributed proportionally to each customer group. The District's allocated costs were distributed to the previously identified customer groups using the following distribution factors.

- **Commodity Distribution Factor:** As noted earlier, commodity-related costs vary with the total water consumption. Therefore, the commodity distribution factor was based on the projected total metered consumption, plus losses for each class of service, and tier for Residential, for the projected test period. The development of the commodity distribution factor took into consideration the typical consumption patterns of the customer classes given the impact of previous State mandated conservation and the District's customer response to those mandates. The projection of metered consumption therefore reflects current consumption levels and projected consumption levels for the projected study period.
- **Capacity Distribution Factor:** The capacity distribution factor was developed based on the estimated contribution to peak day use of each class. Peak day use by customer class of service was estimated using peaking factors for each customer class and tier (Residential). For the District's study, the peaking factor was defined as the relationship between peak day contribution and average day use and determined for each customer group based on a review of the average month to peak month usage of each individual

customer for each class of service. Given an estimated peaking factor, the peak day contribution for each class of service was developed.

- **Customer Distribution Factor:** Customer costs vary with the number of customers on the system. Two basic types of customer distribution factors were identified – actual and weighted. The distribution factor for actual customers were based on the projection of the number of customers developed within the revenue requirement. The weighted customer distribution factor is also broken down further into two factors which attempt to reflect the disproportionate costs associated with serving different types of customers. The first weighted customer factor is for customer service and accounting. This weighted customer distribution factor takes into account the fact that it may take more time to read a meter and process a bill for various customers. For the District’s study no differences were developed for this factor. The second weighted customer distribution factor is for meters and services. This factor reflects the different demands associated with larger sized meters. For example, there is a significantly higher demand that a 6” meter can place on the system compared to a 3/4” meter. This factor reflects the average capacity needs of the customer classes based on AWWA meter equivalencies.
- **Fire Protection Distribution Factor:** The development of the distribution factor for fire protection expenses involved an analysis of each class of service and their fire flow requirements. The analysis took into account the gallon per minute fire flow requirements in the event of a fire, along with the duration of the required flow. The fire flow rates used within the distribution factor were based on industry standards and similar experiences with other water cost of service studies. The minimum fire flow requirements are then multiplied by the number of customers in each class of service, and the assumed duration of the fire, to determine the class’s prorated fire flow requirements. As the District also has private fire protection, additional distribution factors were developed to distribute the fire protection costs between public and private based on equivalent services which were calculated using the demand factors from the AWWA M1 Manual.
- **Revenue Related Distribution Factor:** The revenue related distribution factor was developed from the projected rate revenues for 2020 for each customer class of service. These same revenues were used within the revenue requirement analysis discussed in section 3.1.

As mentioned previously, in a cost of service study, the distribution factors represent a group of similar customers such as Residential or Commercial. For this analysis, however, additional cost detail was needed when allocating costs. This meant that the commodity and capacity allocation factors had the classes further broken down; Residential has a factor for each of the tiers whereas Commercial has only the uniform rate for the development of the proposed rates to provide the cost basis for the tiered rates (i.e., Proposition 218). Further discussion related to the allocation of costs to a greater cost level is discussed in more detail in the rate design analysis provided in Section 3.3 of this report and can be found in Exhibits 7 through 11 of the Technical Appendix - A - Water Analysis.

3.2.5 Functionalization and Allocation of Plant in Service

As noted, one of the first steps of the cost of service is the functionalization and allocation of plant in service. In performing the functionalization of plant in service, HDR utilized the District's historical plant (asset) records. Once the plant assets were functionalized, the analysis shifted to the allocation of the asset. The allocation process included reviewing each group of assets and determining which cost classifiers the assets were related to. For example, the District's assets were allocated as: commodity-related, capacity-related, customer-related, revenue-related, fire protection-related, or a direct assignment. Provided below is a summary of the allocation process. The following approach is based on the methodology as described in the AWWA M1 Manual and the District's water system operating and customer characteristics.

Source of supply – Source of supply was classified as average day and peak day related. Based on the operation of the water system, the source of supply assets were allocated 42.1% to commodity and 57.9% to capacity. This allocation reflects the use of these assets and infrastructure for both average day and peak day demands (capacity needs).

Pumping – Pumping (pump stations) was classified as source of supply; 42.1% to commodity and 57.9% to capacity. Similar to source of supply, this allocation reflects the purpose of these assets in providing both average and peak day demands.

Storage – Storage, or water tanks, are typically designed to meet at least two types of needs – peak use demands and fire protection. The total storage capacity of the District's reservoirs was examined and consideration given to the capacity required for fire protection. This amount of capacity, in relation to the total storage capacity, is considered fire protection related. The balance of storage capacity is considered to be in place to meet peak use demands. This resulted in 54.5% of the storage costs being assigned to peak day, or the capacity cost component and the remaining 45.5% to be assigned to the fire protection component.

Distribution Mains – Distribution lines (mains) are typically assumed to provide three types of costs. First, a distribution system must be in place to meet a customer's minimum use requirements for water. This portion of the distribution main plant investment is considered to be a customer related cost, or a function of the number of customers on the system. Next, a portion of the distribution system mains is considered a function of meeting peak flow requirements on the system. Distribution mains must be sized to adequately meet the maximum (peak) flows demanded by customers. This portion of the distribution main plant investment is considered capacity related and allocated on an equivalent meter basis which reflects the capacity, or demand, that can be placed on the system by customers with varying meter sizes. Finally, distribution mains must also be over-sized for public fire flow demands. This final portion of over-sizing for distribution plant investment is classified as public fire protection-related. Based upon an analysis of the District's assets, and the utilization of the system, the assignment of the distribution mains was therefore 28% capacity-related, 59% customer capacity-related, and 13% fire protection related.

Table 3 – 5 provides a summary of the basic functionalization and allocation of the major water plant items.

Table 3 - 5
Summary of the Allocation of Water Plant in Service

Category	Commodity	Capacity	Customer Related	Fire Protection	Direct Assign.
Source of Supply	42.1%	57.9%	0.0%	0.0%	0.0%
Pumping	42.1%	57.9%	0.0%	0.0%	0.0%
Storage	0.0%	54.5%	0.0%	45.5%	0.0%
Distribution Mains	0.2%	75.7%	10.5%	13.6%	0.0%
General Plant	<u>5.9%</u>	<u>70.9%</u>	<u>7.8%</u>	<u>15.4%</u>	<u>0.0%</u>
Total Net Plant In Service	5.9%	70.9%	7.8%	15.4%	0.0%

A more detailed exhibit of the functionalization and allocation of water plant (assets) can be found in the Technical Appendix A - Water Analysis in Exhibit 12.

3.2.6 Functionalization and Allocation of Operating Expenses

As noted in the AWWA M1 Manual, operating expenses are generally functionalized and allocated in a manner similar to the corresponding plant account. For example, maintenance of distribution mains is typically allocated in the same manner (allocation percentages) as the plant account for distribution mains. This approach to allocating the District’s operating expenses was used for this analysis. Although in general, the District does separate O&M expenses by function (e.g., supply, storage), not all of the O&M is functionalized which is not uncommon for utilities. As a result, the approach to allocate the operating expenses was based on the allocation of the plant, or asset data, which reflects the investment made by the District to provide service.

For the Study, the revenue requirement for 2020 was functionalized and allocated based on the approach noted above. The District utilized a cash basis revenue requirement, which was comprised of operation and maintenance expenses, rate funded capital, debt service, and reserve funding. Provided in Table 3 – 6 is a summary of the allocation of the water revenue requirement to the cost classifiers. The allocation of revenue requirement is further detailed in Exhibit 14 to the Technical Appendix A - Water Analysis.

Table 3 - 6
Summary of the Classification of the Revenue Requirement (\$000)

	Total	Commodity	Capacity	Customer	Fire Protection	Direct Assign.
Net Revenue Requirement	\$5,983	\$789	\$2,679	\$2,196	\$319	\$0

3.2.7 Major Assumptions of the Cost of Service Study

A number of key assumptions were used within the District's cost of service study. Below is a brief discussion of the major assumptions used.

- A test period of 2020 was used for the cost of service analysis in order to select the expenses which should be allocated and distributed for the rate setting period. The revenue and expense data was previously developed within the revenue requirement study.
- A cash basis approach was utilized which conforms to generally accepted water cost of service approaches and methodologies.
- The allocation of plant in service was developed based upon generally accepted cost allocation techniques. Furthermore, they were developed using the District's specific data.
- Consumption by cost or class of service used within this study were developed for each class of service from historical usage information provided by the District.
- Peak day capacity allocation factors were estimated based upon each customer group's average to peak month relationship.

3.2.8 Summary Results of the Cost of Service Analysis

In summary form, the cost of service analysis began by functionalizing the previously developed revenue requirement for 2020. The functionalized revenue requirement was then allocated into the various cost components. The individual allocation totals were then distributed to the various customer classes of service and tiers based on the appropriate distribution factor. For example, commodity-related costs were distributed based on the commodity distribution factor which was based on annual water consumption. Each customer class is distributed their proportional share of commodity costs based on total annual water consumption by tier. Similarly, capacity costs were distributed proportionally based on the capacity distribution factor. This factor reflects the peaking characteristics of each class, and tier. In this way, each class and tier, is distributed the proportional share of costs allocated to the capacity component.

The distributed expenses for each customer class were then aggregated to determine each customer class's overall revenue responsibility. Table 3 – 7 provides a summary of the distributed costs to each customer class of service, also described in Exhibit 16 to the Technical Appendix A - Water Analysis.

Table 3 – 7
Summary of the Allocation of the Water Revenue Requirement (\$000)

Cost Classifier	Total Costs	Residential	Commercial	Fireline
Commodity	\$789	\$616	\$173	\$0
Capacity	592	437	124	31
Actual Customer	0	0	0	0
Customer Acctg.	0	0	0	0
Meters & Services	2,196	1,863	238	95
Capacity Demand	2,087	1,771	226	90
Public Fire Protection	295	257	38	0
Private Fire Protection	24	0	0	24
Direct Assignment	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total	\$5,983	\$4,945	\$798	\$240

The cost of service study proportionally and equitably distributes the 2020 revenue requirement to each customer class with their respective benefit received from and burdens placed on the water system (proportional allocation). A cost of service analysis is based on one year’s O&M expense data and projected customer usage information. Given this, the results of the cost of service analysis may change from year to year. As the District continues to monitor rates and cost of service results through future studies, future cost of service adjustments may be necessary to reflect costs and customer consumption patterns at that time.

Based on the overall distribution of the costs, a comparison is made to the current revenues to determine the overall revenue adjustment by class of service to meet the overall system revenue needs. Provided in Table 3-8 is a summary of the cost of service analysis.

Table 3 – 8
Summary of the Water Cost of Service Analysis (\$000)

Class of Service	Present Revenues	Allocated Costs	\$ Difference
Residential	\$4,571	\$4,945	(\$374)
Commercial	845	798	47
Fireline	<u>229</u>	<u>240</u>	<u>(11)</u>
Total System	\$5,644	\$5,983	(\$339)

As can be seen in Table 3 – 8, while an overall revenue adjustment is necessary, the distribution of costs results in different revenue adjustments by class of service. In this case, Residential and Fireline customer current revenues are less than the distributed costs and should be increased, while Commercial revenues can be reduced to reflect the distribution of costs. It is important to note that the overall system average and individual customer class revenue adjustments do not

reflect the actual customer bill impacts, only the overall revenue change for the class of service as a whole.

3.2.9 Consultant's Conclusions and Recommendations

Given the requirements of Article XIII D, section 6, the results of the cost of service will be used to establish the proposed rate designs for each of the District's customer classes of service. A more detailed discussion of the use of the cost of service results, and unit costs, is provided in the rate design section (Section 3.3) of this report.

3.2.10 Summary of the Cost of Service Analysis

This section of the report has provided the recommendations resulting from the cost of service analysis developed for the District's water utility. This analysis was prepared using generally accepted cost of service techniques as provided in the AWWA M1 Manual to meet the intent of Proposition 218 for proportional and cost-based rates. The following section of the report will provide a summary of the present and proposed rates for the District's water utility.

3.3 Water Rate Design

The final step of the District's water rate study is the design of rates to collect the desired levels of revenues, based on the results of the revenue requirement and cost of service analyses. In reviewing District's rates, consideration must be given to the level of the rates as well as the structure of the rate schedules. The level of rates reflects the amount of revenues that should be collected in total while the structure of the rates is how it is collected (charged) from the customers.

The overall revenue level for the District has been established in the revenue requirement analysis and the proportional and equitable distribution of costs between the various customer classes has been developed in the cost of service analysis. This provides the overall system revenues and how the total system revenues are equitably and proportionally collected from each class of service. Another important component for the Study was the rate transition of the recently acquired water systems of Timberland, Tahoe Cedars, and Madden Creek. For Timberland, the current rates are relatively similar to the District's, and the District has been making improvements to the Timberland system. As a result, the Timberland customers will be transitioned to the District's adopted rates in 2020. However, for the other two systems, the current rates are approximately half, and in discussion with the District Board, a single year transition was too aggressive. Consequently, it was determined that a multiple year transition plan was preferable and so it was decided for the two systems to be transitioned to the District's rates by 2024. A more detailed discussion of the transition of rates for these two systems will be provided later in this report.

3.3.1 Rate Design Criteria and Considerations

Prudent rate administration dictates that several criteria must be considered when setting utility rates. Some of these rate design criteria are listed below:

- Rates which are easy to understand from the customer's perspective

- Rates which are easy for the District to administer
- Consideration of the customer's ability to pay
- Continuity, over time, of the rate making philosophy
- Policy considerations (encourage efficient use, economic development, etc.)
- Provide revenue stability from month to month and year to year
- Promote efficient allocation of the resource
- Equitable and non-discriminatory (cost-based)
- Legally defensible

It is important that the District provide its customers with a proper price signal as to what their consumption and peaking (demand) requirements are costing. This goal may be approached through rate level and structure. When developing the proposed rate designs, all the above listed criteria were taken into consideration. However, it is difficult - if not impossible - to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration the customer's ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between these various goals and objectives.

3.3.2 Development of Cost-Based Water Rates

Developing cost-based and equitable rates is of paramount importance in developing proposed water rates. While always a key consideration in developing rates, meeting the legal requirements, and documenting the steps taken to meet the requirements, has been in the forefront with the recent legal challenges in the State of California on water rates. The District's proposed water rates have been developed to meet the legal requirements of California constitution article XIII D, section 6 (Proposition 218). A key component of Article XIII D is the development of rates which reflect the cost of providing service and are proportionally allocated among the various customer classes of service. There is no single prescribed methodology for equitably assigning costs to the various customer groups. The American Water Works Association (AWWA) M1 Manual clearly delineates various methodologies which may be used to establish cost-based rates. Article XIII D does not prescribe a particular methodology for establishing cost-based rates; consequently, HDR developed the District's proposed water rates based on the methodologies provided in the AWWA M1 Manual to meet the requirements of Article XIII D and recent legal decisions to provide an administrative record of the steps taken to establish the District's water rates.

The proposed rates comply with legal requirements of Article XIII D. HDR reaches this conclusion based upon the following:

- **The revenue derived from water rates does not exceed the funds required to provide the property related service (i.e., water service).** The proposed rates are designed to collect the overall revenue requirements of the District's water utility.
- **The revenues derived from water rates shall not be used for any purpose other than that for which the fee or charge is imposed.** The revenues derived from the District's water rates are used exclusively to operate and maintain the District's water system.

- **The amount of a fee or charge imposed upon a parcel or person as an incident of property ownership shall not exceed the proportional costs of the service attributable to the parcel.** This study focused exclusively (Section 3.2) on the issue of proportional assignment of costs to customer classes of service. The proposed rates have appropriately grouped customers into customer classes of service that reflect the varying consumption patterns and system requirements of each customer class of service. The grouping of customers and rates into these classes of service creates the equity and fairness expected under Article XIII D by having differing rates by customer classes of service which reflect both the level of revenue to be collected by the utility, but also the manner in which these costs are incurred and equitably assigned to customer classes of service based upon their proportional demands and burdens on District's the water system.

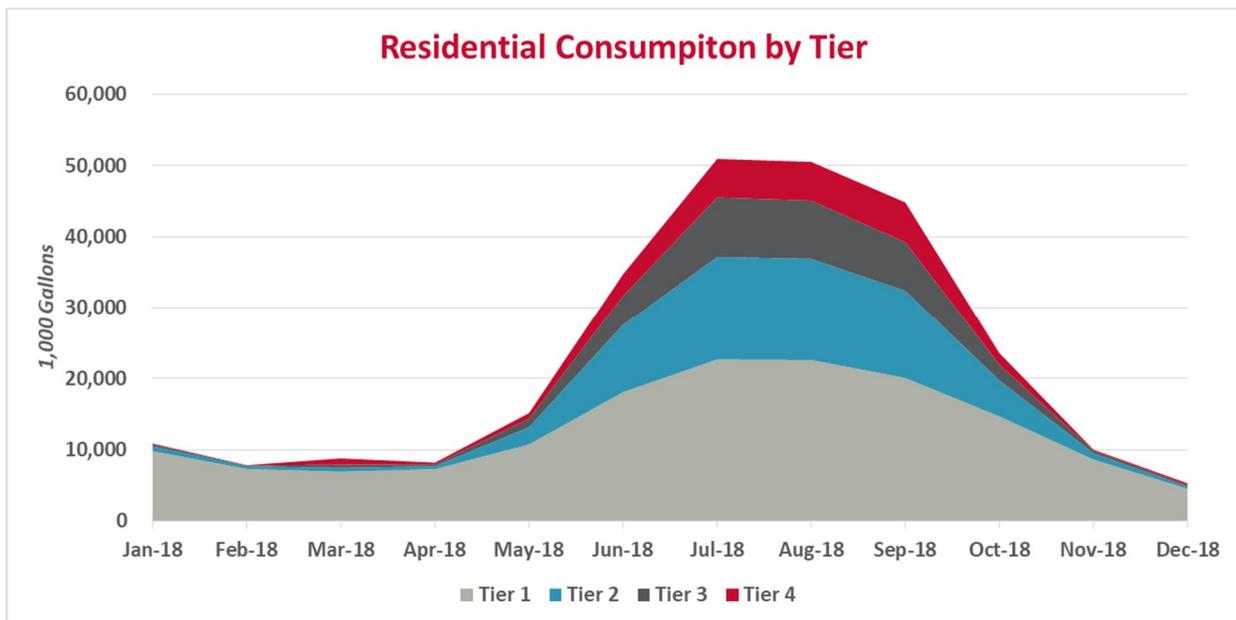
The District currently has a separate rate structure for each customer class of service. For Residential customers that includes a monthly base charge - which varies by meter size - and a four-tiered consumption charge on a dollar per 1,000 gallons basis. Commercial customers are charged a monthly base charge – again based on the meter size but with a higher charge – and a consumption charge but one that is uniform (no tiers) also charged on a per 1,000 gal basis. Finally, the Fireline rate structure consists of a monthly base charge based on the meter size. The monthly service charge, for each customer class of service, is designed to collect a proportional share of the fixed costs of providing water service. The consumption charge is designed to collect the remaining portion of the fixed costs, and the District's variable costs in providing water service.

In discussion with the District, it was determined that the current rate structure was appropriate and adequately addressed achieving the rate design goals and objectives. However, to reflect the portion of fixed costs collected on a meter size basis, the analysis establishes cost per equivalent meter. Given that no cost differences were determined in the fixed cost between Residential and Commercial base (meter) charges, the meter charges should be the same to reflect the equivalent capacity of a meter, by size, regardless of the customer type.

Developing a separate consumption charge for each customer class that reflects the consumption patterns and impacts placed on the system provides the cost-basis to reflect the requirements of Proposition 218. As a part of the Study, HDR developed a water rate design discussion to clearly demonstrate and support the proposed water rates and tiered pricing. The following discussion provides a more detailed analysis of the costing techniques and methodologies used to support the District's proposed rate design.

3.3.3 Determination of Sizing and Number of Tiers

The first step in reviewing the District's current, and proposed, tiered rate structure is to identify the number of tiers and determine the size of the tiers. Only the Residential customer class currently has a tiered structure and no changes were recommended based on a review of individual customer consumption patterns. A summary of the average consumption by month for Residential customers is shown in the graphic below.



When reviewing the tier sizing, and consumption by tier, it can be seen that the tier sizes reflect the typical consumption patterns of the District’s customers. Initially, in 2009, the tiers were developed based on average customer characteristics of average indoor use, average outdoor use, peak outdoor use, and greater than peak outdoor use. Based on the review for the current Study, the tier sizes appear to be appropriate and continue to reflect the District’s Residential customer characteristics. As there is no recommended change, after the number and size of tiers have been identified, the pricing of the tiers is the next analytical step.

3.3.4 Establishing the Cost-Basis for Pricing Tiers

Given past legal decisions regarding water rates, HDR has concluded that utilities have available to them at least three technical approaches to be able to demonstrate (i.e., cost justify) the individual pricing of the tiers. These technical approaches encompass the following areas:

1. Cost differences in water supply (i.e., stacking of water supply resources to tiers).
2. Cost differences from high peak use consumers (relationship of average use to peak use).
3. Direct assignment of costs to specific tiers (conservation program costs, etc.).

In certain cases, the cost differences may be related to the cost of water supply when a utility has more than one source of water supply. Additionally, this water supply approach may also include the cost of alternative water supplies (e.g., recycled or reuse water). For example, reuse water may be assigned to higher tiers to reflect outdoor use or the need for additional/alternative water supply to meet the demands of the high use customers.

The second possible source of cost differences for the pricing of tiers is related to high-peak use (peak demand) customers. Customers that use more water create greater demands and costs on the system. A water supply and distribution system must be sized to meet these peak use requirements. In other words, on the hottest day of the year when customers are watering their

lawn, the supply and distribution system must be sized to meet those peak use demands. Economic theory clearly states that equity is achieved when those that create the demand event, pay for the demand event. In this particular case, this has implications upon the equitable allocation of capacity-related costs to the different usage tiers (low use vs. high peak use).

Finally, certain costs may be directly assigned to specific tiers. For example, a conservation program which focuses on outdoor water use may be directly assigned to the water tiers, or seasons, which are most directly related to outdoor use. The direct assignment to a specific price tier will create a price differential for that tier.

For the District’s study, the focus of the analysis was on the second method of determining the cost impacts and cost differences associated with peak use. The pricing of the tiers, or uniform rate, was developed to provide the cost basis and meet the requirements of Proposition 218.

3.3.5 Development of the Unit Costs for Rate Designs

To begin the assignment of costs related to specific tiers, the results of the cost of service analysis is utilized. As noted in Section 3.2, the cost of service analysis allocates the revenue requirement between the various cost components of average use (commodity), peak use (capacity), and customer (actual, weighted, and capacity-demand). However, the results provided in Table 3 - 5 which distributed the totals to the various customer classes of service are further allocated between the rate structure components (e.g., base charge, consumption charge/tiers). Provided in Table 3 – 9 is a summary of the allocation of the 2020 revenue requirement from the cost of service analysis (same as Table 3 - 7).

Table 3 – 9 Summary of the Allocation of the Water Revenue Requirement (\$000)				
Cost Classifier	Total Costs	Residential	Commercial	Fireline
Commodity	\$789	\$616	\$173	\$0
Capacity	592	437	124	31
Actual Customer	0	0	0	0
Customer Acctg.	0	0	0	0
Meters & Services	2,196	1,863	238	95
Capacity Demand	2,087	1,771	226	90
Public Fire Protection	295	257	38	0
Private Fire Protection	24	0	0	24
Direct Assignment	0	0	0	0
Total	\$5,983	\$4,945	\$798	\$240

The total of the above distributed costs, of approximately \$6.0 million, is the same as the total costs distributed in Table 3 - 8 of the cost of service analysis. This allocation of the total revenue requirement for 2020 is then distributed to the various customer classes of service. Allocated

costs are further distributed between the various rate structure components based on the corresponding distribution factors. The distribution factors were discussed for the costs of service in Section 3.2 of this report. For example, the commodity costs are divided through by each customer class's consumption from a given tier. Provided below is a discussion of the approach used to allocate the revenue requirement between the various customer classes of service to the various rate components.

3.3.5.1 Commodity Distribution Factor

The commodity distribution factor is based on the average annual use for each of the customer classes of service, and more importantly by tier. For the development of the pricing of the proposed rates the following customer class components were used:

- Residential
 - Tier 1
 - Tier 2
 - Tier 3
- Commercial
- Fireline

To develop the commodity distribution factor for each customer class, the usage for each class, and tier, was divided by the total usage of the system. This produces the percent of the system that each class is responsible for and, therefore, their contribution to commodity related costs. The development of the commodity distribution factor (Exhibit 7 of the Technical Appendix A - Water Analysis) is based on the actual metered consumption for each customer class and tier where applicable. Next, the total metered consumption is compared to actual production and purchased water reports. The difference, or system losses, is spread evenly between the Residential and Commercial customer classes as all customers share in system losses (Fireline is excluded as there is no consumption unless there is a fire event).

Provided below in Table 3 – 10 is a summary of the commodity distribution factor, which is described in more detail in Exhibit 7 of the Technical Appendix A - Water Analysis.

Table 3 - 10
Summary of the Commodity Distribution Factor

<i>Reference</i> Calculation	<i>A</i>	<i>B</i>	<i>C</i> C = A + B	<i>D</i>
	2020 Consumption (1,000 gal)	Est. System Losses (1,000 gal)	Total Annual Use (1,000 gal)	% of Total
Residential				
Tier 1	142,210	10,666	152,876	44.2%
Tier 2	57,024	4,277	61,301	17.7%
Tier 3	30,162	2,262	32,425	9.4%
Tier 4	<u>21,913</u>	<u>1,644</u>	<u>23,557</u>	<u>6.8%</u>
Residential Total	251,310	18,848	270,158	78.1%
Commercial	70,831	5,290	75,821	21.9%
Fireline	<u>0</u>	<u>0</u>	<u>0</u>	<u>0.0%</u>
Grand Total	321,841	24,138	345,979	100.0%

The development of the commodity distribution factor is fairly straightforward. The distribution factor is based on the actual metered consumption of each class and tier, plus assumed losses on the system. In this way, those costs allocated to the commodity component can be proportionally distributed to the appropriate customer class and customer class tier. As an example, Tier 1 consumption of the Residential class of service represents 44.2% of the total consumption on the system. As a result, 44.2% of the commodity-related costs are then distributed to Tier 1 of the Residential customers.

This approach is used for each of the customer classes of service for each rate component and tier. Using the costs allocated to the commodity component in the cost of service analysis from Table 3 - 9, and the commodity distribution factor in Table 3 - 10, the distribution of costs to each tier or customer class can be developed. The summary of the distributed commodity costs are shown below in Table 3 - 11.

Table 3 - 11
Distributed Commodity Costs (\$000s)

<i>Reference</i> Calculation	A	B	C	D D = B / C
	% of Total	Commodity Costs	Water Sales (1,000 gal)	Unit Cost (\$ / 1,000 gal)
Residential				
Tier 1	44.2%	\$349	142,210	\$2.45
Tier 2	17.7%	140	57,024	2.45
Tier 3	9.4%	74	30,162	2.45
Tier 4	<u>6.8%</u>	<u>54</u>	<u>21,913</u>	2.45
Residential Total	78.1%	\$616	251,310	
Commercial	21.9%	\$173	70,831	\$2.45
Fireline	<u>0.0%</u>	<u>0</u>	<u>0</u>	0.00
Grand Total	100.0%	\$789	321,841	

The figures in column A are from column D in Table 3 – 10. The costs shown in column B are based on the total commodity related costs from Table 3 – 9. Column C is from column A in Table 3 – 10, or the actual consumption that is billed to the customers.

From the unit costs developed in Table 3 – 11 above, the per unit cost basis of the tiered and uniform rates can be determined for the commodity related costs identified in the cost of service analysis (Column D). For example, for the proposed Residential Tier 1 rate, the commodity component is \$2.45 per 1,000 gallons. This applies to each tier and customer class.

3.3.5.2 Capacity Distribution Factor

Whereas commodity costs are related to the total amount of water used by each class of service and tier, the capacity costs are related to how each customer class uses that water in each tier or annually. Customers use water in different ways and at different times, thus creating different usage patterns and resulting in different peaking factors. These usage patterns drive how the District must size the system to meet the peak demands of customers. To determine the allocation by tier or annually, peaking factors need to be developed for each customer class of service tier or season. The peaking factors for each class of service must be estimated due to a lack of specific metered data related to peak day usage by each class of service. One method discussed in the AWWA M1 Manual used to estimate a class’s peaking factor is to review the average monthly volume of water consumed and compare it to the maximum monthly usage of water. By dividing the maximum month by the average month, a peak-day factor is calculated. Essentially, this factor provides a seasonal surrogate for the difference between the average use and peak day use in each tier or season. For example, if a customer used 10,000gallons per month on average and in the peak month 15,000 gallons was used, the peaking factor would be 1.50 (15,000 / 10,000 = 1.50). In this example, the peaking factor is stating that the maximum usage in a month is 1.50 times higher than the average usage per month.

For the District’s study the consumption patterns of each customer class and tier were reviewed and peaking factors were developed for each tier based on each customer’s peak contribution to the system peak. In other words, a peak factor for each customer, by tier was developed depending on the amount of water used and the peak demands of those customers within that tier compared to the average customer consumption peak. Shown below in Table 3 – 12 is a summary of the capacity distribution factor for each customer class.

Table 3 - 12 Summary of the Capacity Distribution Factor				
<i>Reference</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
<i>Calculation</i>			C = A x B	
	Average Consumption (MGD)	Peaking Factors	Peak Day Use (MGD)	% of Total
Residential				
Tier 1	0.42	1.93	0.81	35.2%
Tier 2	0.17	2.62	0.44	19.1%
Tier 3	0.09	2.88	0.26	11.1%
Tier 4	<u>0.06</u>	3.01	<u>0.19</u>	<u>8.5%</u>
Residential Total	0.74		1.70	73.9%
Commercial	0.21	2.31	0.48	20.9%
Fireline	<u>0.00</u>	0.00	<u>0.12</u>	<u>5.2%</u>
Grand Total	0.95		2.30	100.0%

Table 3 – 12 above shows the development of the capacity distribution factor. For example, based on the District’s Residential customer consumption data, Tier 1 has a peaking factor of 1.93. In other words, those customers use 1.93 times more water in the peak period than on average. This is compared to customers in the remaining tiers which show a higher peaking factor based on how the customers in these tiers consume water. These peaking factors were developed around the District’s specific customers consumption patterns. Similar to the distribution of commodity costs to the tiers or customer classes, the capacity related costs are distributed in the same manner. For example, 35.2% of the capacity costs are allocated to Tier 1 of the Residential customers based on column D in Table 3 - 12. To determine this, the total average day use (column A) of each tier or class is multiplied by the peaking factor (column B). The total peak use by tier or class is divided by the system total peak use to develop the proportional distribution.

Table 3 – 13 provides a summary of the distributed capacity related costs to each tier.

**Table 3 - 13
Distributed Capacity Costs (\$000s)**

<i>Reference Calculation</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i> <i>D = B / C</i>
	% of Total	Capacity Costs	Water Sales (1,000 gal)	Unit Cost (\$ / 1,000 gal)
Residential				
Tier 1	35.2%	\$73	142,210	\$0.51
Tier 2	19.1%	81	57,024	1.43
Tier 3	11.1%	95	30,162	3.13
Tier 4	<u>8.5%</u>	<u>188</u>	<u>21,913</u>	8.60
Residential Total	73.9%	\$437	251,310	
Commercial	20.9%	\$124	70,831	\$1.75
Fireline	<u>5.2%</u>	<u>31</u>	<u>0</u>	0.00
Grand Total	100.0%	\$592	321,841	

The figures in column A are from column D in Table 3 – 12. The costs shown in column B are based on the total capacity-related costs from Table 3 – 9. Column C is from column A in Table 3 – 10. For example, the proposed rate for Tier 2 includes a capacity component cost of \$1.43 per 1,000 gal while the Tier 3 capacity cost is \$3.13 per 1,000 gal. This difference reflects the costs associated with providing consumption at higher tiers and the costs of providing that capacity.

3.3.5.3 Summary of the Consumption Based Unit Costs

Combining the District’s unit costs from the commodity and capacity unit costs results in the basis of the tiered rate pricing. Table 3 – 14 provides the summation of the costs for each tier / rate. This table sums the costs from Table 3 – 11 column D and Table 3 – 13 column D as well as the direct assignment and fire protection costs which were distributed based on the proportion of consumption for each customer class tier / rate.

**Table 3 - 14
Summary of the Unit Costs for Rate Design**

<i>Reference</i>	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
	Commodity Costs (\$ / 1,000 gal)	Capacity Costs (\$ / 1,000 gal)	Direct Assignment Costs (\$ / 1,000 gal)	Total Unit Cost (\$ / 1,000 gal)
Residential				
Tier 1	\$2.45	\$0.51	\$0.00	\$2.97
Tier 2	2.45	1.43	0.00	3.88
Tier 3	2.45	3.13	0.00	5.59
Tier 4	2.45	8.60	0.00	11.05
Commercial	\$2.45	\$1.75	\$0.00	\$4.20
Fireline	\$0.00	\$0.00	\$0.00	\$0.00

The results shown in Table 3 – 14 above are the basis for the District’s consumption pricing for the proposed rates. The analysis and costs shown above have been developed to meet the requirements of Proposition 218 and recent legal decisions related to developing cost-based water rates.

3.3.5.4 Summary of the Customer (Fixed) Costs

The allocated customer related costs are used to establish the monthly service charge which varies by meter size. As a result, the total customer costs were divided by the number of equivalent meters on the system. An equivalent meter uses the capacity ratio of a 3/4-inch meter to the larger meter sizes to determine the pricing for each meter size. In this way the meter charge reflects the equitable proportion of fixed costs on the system based on the capacity demands the customer can place on the system based on the size of the meter. Shown in Table 3 – 15 is a summary of the customer related costs and customer charge development.

Table 3 - 15
Summary of the Base Charge for Rate Design

	Res / Com Meter Equivalency Ratios	Total Residential & Commercial Fixed Cost (\$/ Acct. / Mo)	Fireline Meter Equivalency Ratios	Total Fireline Fixed Cost (\$/ Acct. / Mo)
Total Allocated Costs		\$4,392,618		\$240,240
Total 3/4" Meter Equiv. ^[1]		4,093		674
Cost per Equiv. Meter		\$79.31		\$29.70
Proposed Rates				
3/4"	1.00	\$79.31	1.00	\$29.70
1"	1.67	132.45	1.33	39.60
1.25"	2.17	198.28	1.67	52.80
1.5"	3.33	264.10	2.00	70.40
2"	5.33	422.72	2.67	93.87
3"	10.00	793.10	4.00	125.16
4"	16.67	1,322.10	5.33	166.88
6"	33.33	2,643.40	8.00	222.51
8"	53.33	4,229.60	10.67	296.68
10"	n/a	n/a	13.33	395.57

[1] – Based on the AWWA equivalent meter ratios based on safe operating capacity

Table 3 – 15 shows the proposed customer charge, on a per equivalent meter basis (e.g., a 3/4" meter). It is important to note that the proposed water fixed charges are moving from the current District weights to the AWWA equivalent meter ratios which will impact the calculated number of equivalent meters (total meters in terms of a 3/4" meter). Meter equivalency ratios are defined as the maximum rate of flow through each meter size. For example, a 2" meter has the capacity of 5.33 3/4" meters. This provides a relationship that can be used to calculate the proportional capacity needs and demands as meter sizes increase. The proposed rates for the Fireline customers are designed to collect the allocated costs from the base charge as there is no proposed consumption or usage charge.

3.3.6 Summary of the Present and Proposed Water Rates

Given the development of the unit costs for rate design purposes, the next step is to develop the proposed rates for the next five year period. As a note, the proposed rates are being developed for the test year 2020 based on the unit costs as discussed in the previous section of this report based on generally accepted cost of service principles. The rates for the remaining projected time period are based on the overall system revenue adjustment and all rates are adjusted by that revenue adjustment. Provided below is a summary of the present and proposed rates for each customer class of service for each year of the review period. The rates for the acquisition systems

will be adjusted down by an overall percentage as directed by the Board, and the loss in revenues will be funded with annual property tax revenue. The funding of this transition ensures that existing customer revenues are not used to fund the transition to cost-based rates for these customers as property tax revenue will fund the difference.

As noted, the rate structure for all customer classes has been maintained and only the pricing of the components have been adjusted based on the results of the cost of service analysis and unit costs. The proposed rates reflect the results of the revenue requirement and cost of service analysis. Provided below in Table 3 – 16 is a summary of the Residential present and proposed rates for the District. The proposed rate utilize the unit cost results from the cost of service analysis and reflect cost-based tier pricing.

Table 3 - 16						
Summary of the Monthly Present and Proposed Residential Water Rates						
	<i>Present Rates</i>	2020	2021	2022	2023	2024
<u>Base Charge</u>				<u>\$ / Acct. / Mo.</u>		
3/4"	\$74.50	\$79.31	\$84.07	\$87.43	\$90.93	\$94.57
1"	\$112.25	\$132.45	\$140.40	\$146.01	\$151.85	\$157.93
1 1/4"	\$145.00	\$198.28	\$210.17	\$218.58	\$227.33	\$236.42
1 1/2"	\$172.25	\$264.10	\$279.95	\$291.14	\$302.80	\$314.92
2"	\$232.00	\$422.72	\$448.09	\$466.00	\$484.66	\$504.06
3"	\$350.75	\$793.10	\$840.70	\$874.30	\$909.30	\$945.70
4"	\$462.00	\$1,322.10	\$1,401.45	\$1,457.46	\$1,515.80	\$1,576.48
6"	\$693.50	\$2,643.40	\$2,802.05	\$2,914.04	\$3,030.70	\$3,152.02
8"	--	\$4,229.60	\$4,483.45	\$4,662.64	\$4,849.30	\$5,043.42
Unmetered	\$93.10	\$97.13	\$102.97	\$107.11	\$111.39	\$115.87
OR				<u>\$ / Acct. / Mo.</u>		
<u>Combined Fire Service (CFS) Base Rate By Meter Size</u>						
CFS - 3/4"	\$102.63	\$109.01	\$117.48	\$122.84	\$128.46	\$134.35
CFS - 1"	\$112.00	\$118.91	\$128.62	\$134.64	\$140.97	\$147.61
CFS - 1 1/2"	\$168.50	\$202.85	\$219.60	\$229.94	\$240.81	\$252.22
CFS - 2"	\$187.25	\$226.32	\$246.00	\$257.92	\$270.46	\$283.65
CFS - > 2"			<i>Service Classification Size Determined by District</i>			
<u>Commodity Charge</u>				<u>\$ / 1,000 gal</u>		
0 – 8,000 gal	\$2.68	\$2.97	\$3.15	\$3.28	\$3.41	\$3.55
8,000 – 20,000 gal	\$3.64	\$3.88	\$4.12	\$4.28	\$4.45	\$4.64
20,000 – 40,000 gal	\$5.32	\$5.59	\$5.93	\$6.17	\$6.42	\$6.68
40,000 + gal	\$8.25	\$11.05	\$11.72	\$12.20	\$12.69	\$13.21

As mentioned previously, the Commercial customers will have the same proposed base charge as residential customers now. Additionally, the current uniform consumption charge structure will remain and only the pricing of the uniform rate is updated to reflect the cost of service unit costs. Shown in Table 3 – 17 is the present and proposed Commercial water rates.

Table 3 - 17 Summary of the Monthly Present and Proposed Commercial Water Rates						
	<i>Present Rates</i>	2020	2021	2022	2023	2024
Base Charge			<u><i>\$ / Acct. / Mo.</i></u>			
3/4"	\$89.50	\$79.31	\$84.07	\$87.43	\$90.93	\$94.57
1"	\$143.25	\$132.45	\$140.40	\$146.01	\$151.85	\$157.93
1 1/4"	\$173.75	\$198.28	\$210.17	\$218.58	\$227.33	\$236.42
1 1/2"	\$208.75	\$264.10	\$279.95	\$291.14	\$302.80	\$314.92
2"	\$279.50	\$422.72	\$448.09	\$466.00	\$484.66	\$504.06
3"	\$418.75	\$793.10	\$840.70	\$874.30	\$909.30	\$945.70
4"	\$553.75	\$1,322.10	\$1,401.45	\$1,457.46	\$1,515.80	\$1,576.48
6"	\$829.75	\$2,643.40	\$2,802.05	\$2,914.04	\$3,030.70	\$3,152.02
8"	\$1,110.50	\$4,229.60	\$4,483.45	\$4,662.64	\$4,849.30	\$5,043.42
OR			<u><i>\$ / Acct. / Mo.</i></u>			
Combined Fire Service (CFS) Base Rate By Meter Size						
CFS - 3/4"	\$117.63	\$109.01	\$117.48	\$122.84	\$128.46	\$134.35
CFS - 1"	\$127.00	\$118.91	\$128.62	\$134.64	\$140.97	\$147.61
CFS - 1 1/2"	\$199.50	\$202.85	\$219.60	\$229.94	\$240.81	\$252.22
CFS - 2"	\$218.25	\$226.32	\$246.00	\$257.92	\$270.46	\$283.65
CFS - > 2"		<i>Service Classification Size Determined by District</i>				
Commodity Charge			<u><i>\$ / 1,000 gal</i></u>			
All Usage	\$6.74	\$4.20	\$4.45	\$4.63	\$4.82	\$5.01

As can be seen, the Commercial proposed base charges and combined fire service are the same as for Residential. The other significant change to the proposed rates is the transition from the current meter rates to the AWWA equivalent meter ratios based on safe operating capacity.

The final rate structure summary is for Fireline customers shown in Table 3 – 18. The proposed rates below are the rates for a customers with a single fireline meter providing fire protection services.

Table 3 - 18
Summary of the Monthly Present and Proposed Fireline Water Rates

	<i>Present Rates</i>	2020	2021	2022	2023	2024
	<i>\$ / inch diameter / Mo.</i>					
Private Fire Protection	\$37.50	\$39.60	\$44.55	\$47.21	\$50.04	\$53.04
Private Fire Hydrant	\$37.50	\$39.60	\$44.55	\$47.21	\$50.04	\$53.04

In summary, bill impacts will not only vary between customer classes - as the cost of service results show cost differences - but also customers in the same class depending on overall water consumption. This is due to the tier and uniform pricing being based on the costs associated with the District’s costs and distributed based on a snapshot of consumption characteristics.

3.3.7 Acquisition Customer Rate Transition Plan

As noted previously, the District has determined that the Tahoe Cedars and Madden Creek customers will be transitioned to the District’s rates over time. In discussion with the District Board it was determined that these customers would be charged the District’s adopted rates in 2024. As a point of reference, this is the first rate study to evaluate the rates of these systems, and the rates were developed by the previous system owners. Given the difference in the District’s proposed rates, and the current rates for these systems, a revenue deficiency will exist until 2024. To fund this deficiency, the District Board has directed staff to fund this difference with annual property tax revenues. By using annual property tax revenues, the District’s existing customers are not burdened with funding the costs transition.

It should also be noted that the District is not adopting the rate transition plan for these customers, and during the annual budgeting process the Board will work with staff to develop the rates for the projected period based on the adopted system rates. Currently, each system has its own rate schedule and levels of rates. To simplify the transition plan, the projected rates for Tahoe Cedars and Madden Creek have been merged, and are the same for both systems. Provided in Table 3-19 is a summary of the projected rate transition plan.

Table 3 - 19
Projection of the Monthly Rate Transition Plan

	2020	2021	2022	2023	2024
Unmetered					
			<i>\$ / Acct. / Mo.</i>		
All Unmetered	\$56.39	\$71.26	\$86.13	\$101.00	\$115.87
Base Charge					
			<i>\$ / Acct. / Mo.</i>		
3/4"	\$46.05	\$58.18	\$70.30	\$82.45	\$94.57
1"	76.90	97.16	117.41	137.68	157.93
1 1/4"	115.12	145.44	175.76	206.12	236.42
1 1/2"	153.34	193.73	234.11	274.55	314.92
2"	245.43	310.08	374.71	439.44	504.06
3"	460.47	581.76	703.02	824.46	945.70
4"	767.61	969.80	1,171.94	1,374.38	1,576.48
6"	1,534.76	1,939.02	2,343.18	2,747.94	3,152.02
8"	2,455.71	3,102.55	3,749.23	4,396.86	5,043.42
Residential					
			<i>\$ / 1,000 gal</i>		
Consumption Charge					
0 – 8,000	\$1.72	\$2.18	\$2.64	\$3.09	\$3.55
8,001 – 20,000	\$2.25	\$2.85	\$3.44	\$4.03	\$4.64
20,001 – 40,000	\$3.25	\$4.10	\$4.96	\$5.82	\$6.68
40,001 and above	\$6.42	\$8.11	\$9.81	\$11.51	\$13.21
Commercial					
			<i>\$ / 1,000 gal</i>		
Consumption Charge					
All Consumption	\$2.44	\$3.08	\$3.72	\$4.37	\$5.01

As noted, the Board is not adopting the rate transition plan for the Tahoe Cedars and Madden Creek customers. The rates will be reviewed and updated annually based on the approved system rates adopted by the Board.

3.4 Summary of the Water Rate Study

This completes the analysis for the Tahoe City Public Utility District's water utility. This study has provided a comprehensive review and development of proposed water rates for the District. Adoption of the proposed water rates will allow the District to meet its current and projected water system financial obligations for the time period reviewed based on the assumed customer growth, capital plan, and inflationary increases in operating costs. Should these assumptions change, the proposed rate adjustments may also need to be revised to reflect the current conditions. Based on the results of the water rate study, HDR recommends the following:

- Revenue adjustments are necessary to prudently fund operating and capital renewal and replacement expenses
 - Water revenues should be adjusted annually in 2020 through 2024

- The proposed rates would be effective January 1st of each year
- The proposed rates reflect the results of the cost of service analysis and the proportional allocation of costs to the various customer classes of service.
- Prior to the end of the projected period, the District should complete a review of the water revenue levels and costs at that time.

4 Development of the Sewer Rate Study Update

4.1 Sewer Revenue Requirement

This section describes the development of the revenue requirement analysis for the District’s sewer system. The revenue requirement analysis is the first analytical step in the comprehensive rate study process. From this analysis, a determination can be made as to the overall level of sewer rate adjustments needed to provide adequate and prudent funding for both operating and capital needs of the utility. A main objective of a rate study is to develop proportional and equitable rates over the selected time period. For purposes of this section, the term “sewer” refers to the District’s sewer utility, and the term “wastewater” refers to the contribution of wastewater to the District’s sewer utility for conveyance to the TTSA treatment facility.

4.1.1 Determining the Revenue Requirement

In developing the District’s sewer revenue requirement, the utility must financially “stand on its own” and be properly funded. As a result, the revenue requirement analysis, as developed herein, assumes the full and proper funding needed to operate and maintain the District’s sewer system on a financially sound and prudent basis. The following sections will provide a more detailed discussion of the development of the sewer revenue requirement analysis for the District.

4.1.2 Establishing a Time Frame and Approach

The first step in calculating the revenue requirement for the District’s sewer system was to establish a time frame for the revenue requirement analysis. A 10-year period was determined to be an appropriate amount of time for the financial plan. This financial plan was composed of the District’s 2019 budget which was then projected by assumed escalation factors. Reviewing a multi-year time period is recommended since it attempts to identify any major expenses that may be on the horizon. By anticipating future financial requirements, the District can begin planning for these changes sooner, thereby minimizing short-term rate impacts and overall long-term rates.

The second step in determining the revenue requirement was to decide on the basis of accumulating costs. In this particular case, for the revenue requirement analysis a “cash basis” approach was utilized. The “cash basis” approach is the most commonly used methodology by municipal utilities to set their revenue requirement. This is also the methodology that the District has historically used to establish their sewer revenue requirements. Table 4 - 1 provides a summary of the “cash basis” approach and cost components used to develop the District’s sewer revenue requirement.

Table 4 – 1
Overview of the District’s “Cash Basis” Sewer Revenue Requirements

+	Sewer Operation and Maintenance Expenses
+	Rate Funded Capital
+	Net Debt Service (Principal + Interest) – Existing and Future
±	<u>Reserves Funding</u>
=	Total Sewer Revenue Requirement
–	<u>Miscellaneous Revenues</u>
=	Net Sewer Revenue Requirement (Bal. Req’d from Rates)

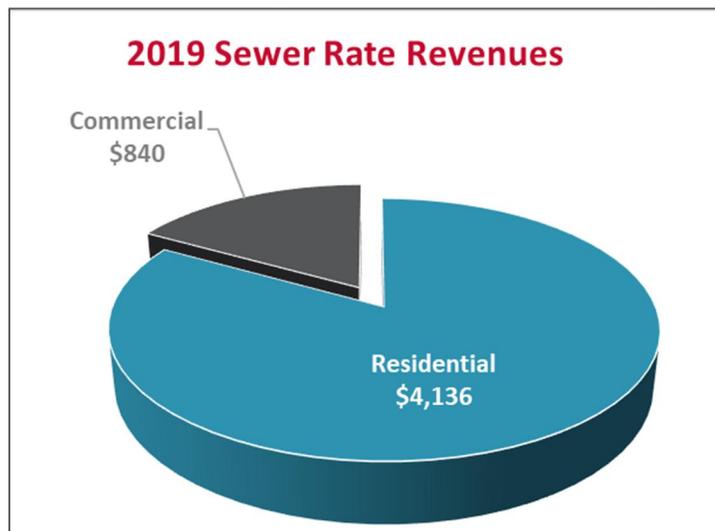
Given a time period around which to develop the revenue requirement and a method to accumulate the costs; the focus shifts to the development and projection of the revenues and expenses of the District’s sewer system.

The primary financial inputs in the development of the revenue requirement were the District’s adopted budget documents, recent billed customer numbers and wastewater contributions, and the sewer capital improvement plan. Presented below is a detailed discussion of the steps and key assumptions contained in the development of the projections of the District’s sewer revenue requirement analysis.

4.1.3 Projecting Rate and Other Miscellaneous Revenues

The first step in developing a projection of the sewer rate revenues, at present rate levels, was to determine the projected billing units (dwelling unit, fixture unit, seat, etc.) for each customer group. The billing units for each customer group were based on the most customer billing statistics. These billing units were then multiplied by the applicable sewer rates. This method of independently calculating revenues links the projected revenues used within the analysis to the projected billing units. It also helps to confirm that the billing units used within the Study are reasonable for purposes of projecting future revenues, allocating costs and – ultimately - establishing the proposed rates to collect the target level of revenues. The rate revenues are also shown in Exhibit 3 under “Rate Revenues” for 2019.

The majority of the District’s rate revenues are derived from residential customers. The District also serves a variety of non-residential customers which are summarized in the Commercial customer class. In total,



and at currently adopted rate levels, the District's sewer system is projected to receive approximately \$5.0 million in rate revenue in 2019. Based on discussion with the District, the Study has assumed a customer growth of 0.0% per year as the system is assumed to be built out. By 2024, the rate revenues - assuming no rate adjustments - are projected to be approximately \$5.0 million. The detailed calculation of the revenues at present rates is included in Exhibit 6 of the Technical Appendix B - Sewer Analysis.

In addition to rate revenues, the District also receives other non-operating revenues. These are revenues related to penalties, interest income, other misc. revenue, etc. In total, the District is projected to receive approximately \$103,000 in 2019. Non-operating revenues were estimated to increase slightly over the Study time period and are \$118,000 by 2024.

On a combined basis, taking into account the rate revenues and the other revenues, the District's sewer utility has total projected revenues of approximately \$5.1 million in 2019, remaining flat at approximately \$5.1 million in 2024. The assumptions used for projecting growth and increases in other revenues can be found in Exhibit 2 of the Technical Appendix B - Sewer Analysis. The projection of rate and miscellaneous revenues can be found in Exhibit 3 of the Technical Appendix B - Sewer Analysis.

4.1.4 Projecting Operation and Maintenance Expenses

Operation and maintenance (O&M) expenses are incurred by the District to maintain the sewer collection and conveyance system at a consistent, high service level. The starting point of the projection of O&M expenses was the District's adopted 2019 budget. Budgeted O&M expenses were projected over the Study time period based on historical inflationary factors. These factors took into consideration the District's historical cost increases and projected increases. The factors ranged from 2.7% to 7.0% annually for the various types of expenses (e.g., salaries, benefits, materials & supplies) and are the same factors used in the water rate analysis. In total, O&M expenses for the District's sewer utility were projected to increase at an annual inflation rate of approximately 6.2% over the Study time period.

The total operation and maintenance expenses for the sewer utility are budgeted to be approximately \$3.7 million in 2019. Over the five-year projected time period, the total O&M expenses are projected to increase to approximately \$5.0 million by 2024. A summary of the O&M expenses is shown as a line item in Table 4 – 3 in section 4.1.9 and the detailed analysis is provided in Exhibit 3 of the Technical Appendix B – Sewer Analysis.

4.1.5 Projecting Capital Funding Needs

A key component in the development of the sewer revenue requirement was to properly and adequately fund capital improvement needs in the near and long term. One of the major issues facing many utilities across the U.S. is the amount of deferred capital projects and the funding pressure from regulatory-related improvements. The proper and adequate funding of capital projects is an important issue for all sewer utilities and not just a local issue or concern of the District. To accomplish this, the District has a Capital Improvement Plan (CIP) to address both the short and long-term needs of the sewer utility. The District's CIP will help guide and prioritize

capital projects over time and capital investments to expand the capacity of facilities to accommodate future customers.

Similar to the water capital funding analysis, there are three types of capital projects that the District may need to fund. These include the following types:

- Renewal and replacement projects
- Growth/capacity expansion projects
- Regulatory-related projects

A more detailed discussion of the above capital projects types was discussed in detail in the water capital funding section (Section 3.1.5). As noted, the way in which projects are funded may vary by the type of capital project. For example, renewal and replacement projects should be funded through annual rates on a “pay-as-you-go basis”. In contrast to this, growth or capacity expansion projects may be funded through the collection of capacity charges (i.e., growth-related charges) in which new development pays a proportional and equitable share of the cost of improvements required as a result of their connection (impact) and that benefit development. Finally, regulatory projects may be funded by a variety of different means, which may include one or more sources such as rates, long-term debt, grants, etc.

While the above discussion appears to neatly divide capital projects into three clearly defined categories, the reality of working with specific capital projects may be more complex. For example, a pump may be replaced, but while being replaced, it is up-sized to accommodate the need for greater capacity. There are many projects that share these “joint” characteristics. At the same time, projects may not be “replacement” related, but rather “improvement” related. Provided below in Table 4 - 2 is a summary of the sewer capital funding analysis, based on the District’s capital plan.

Table 4 – 2 Summary of the Sewer Capital Improvement Plan (\$000s)						
	2019	2020	2021	2022	2023	2024
Total Capital Projects	\$1,615	\$1,249	\$2,702	\$2,551	\$1,876	\$1,885
Other Funding Sources						
Unfunded	\$0	\$0	\$0	\$0	\$0	\$0
Reserves	115	(251)	1,202	1,051	376	385
Long-Term Debt	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Total Other Funding Sources	\$165	(\$251)	\$1,202	\$1,051	\$376	\$385
Rate Funded Capital	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500

While the total amount of a project may vary from year to year, the sewer capital funding plan has attempted to provide a consistent funding source for the replacement of deteriorating

system assets. In this case, the sewer utility's rates will fund an amount of \$1.5 million in 2019. The District's annual depreciation expense is approximately \$461,000 in 2019. Similar to the target for the water utility, a desirable funding target for rate funded CIP is an amount equal to or greater than annual depreciation expense in order to approximately keep up with the rate of deterioration of the system assets. This level of funding appears appropriate based on the level of annual depreciation expense. However, as part of the focus of developing the CIP, the District is committed to making an effort to maintaining this level of rate funded capital.

While, annual depreciation expense is not the same as replacement cost, funding an amount which exceeds the depreciation expense is both prudent and appropriate. As noted, to help establish a prudent level of annual replacement funding through rates, HDR worked with District staff to develop a funding plan for the capital needs. In developing this financial plan, HDR and the District have attempted to minimize rate impacts while funding the planned capital projects of the District's sewer utility.

4.1.6 Projection of Debt Service

The District's sewer utility currently has one (1) outstanding long-term debt issue, the State Revolving Fund loan. This issuance has an annual payment of \$140,000, however, this is offset completely by property tax. This issuance is retired in 2028 and it is assumed that the District will not issue any long-term debt to fund sewer capital improvements over the review period.

HDR is not advising the District on the terms of any bond issuances but rather identifying the overall funding needs, should any exist. As such, HDR is not acting in a municipal advisor role to the District for the issuance of any long-term borrowing.

4.1.7 Reserve Funding

The final component of the revenue requirement analysis is reserve funding line item. This can be described as transfers of revenue to reserve funds to maintain prudent ending fund balances or for future funding of specific or unanticipated projects. Additionally, any balance of funds after the expenses are paid is transferred to the operating fund to maintain minimum fund balances. As will be shown, the rates are at sufficient levels and funds are being transferred back to reserves to meet minimum target levels and to be available for future capital projects. The District is making transfers to the capital reserve in order to help achieve a 'pay-as-you-go' funding approach for sewer capital improvement projects.

4.1.8 Summary of the Sewer Revenue Requirement

Given the above projections of revenues and expenses, a summary of the sewer revenue requirement analysis can be developed. In developing the revenue requirement analysis, consideration was given to the financial planning considerations of the District. In particular, emphasis was placed on attempting to minimize rates, yet still have adequate funds to support the operational activities and capital projects throughout the projected time period. Presented in Table 4 - 3 is a summary of the District's projected sewer revenue requirement. Detailed exhibits of this analysis can be found in the Technical Appendix B – Sewer Analysis (Exhibits 1 – 6).

Table 4 - 3
Summary of the Sewer Revenue Requirement Analysis (\$'000)

	2019	2020	2021	2022	2023	2024
Revenues						
Rate Revenues	\$4,976	\$4,976	\$4,976	\$4,976	\$4,976	\$4,976
Other Revenues	103	112	124	123	119	118
Total Revenues	\$5,079	\$5,088	\$5,100	\$5,099	\$5,095	\$5,094
Expenses						
Total O & M	\$3,685	\$3,948	\$4,205	\$4,483	\$4,670	\$4,973
Net Debt Service	0	0	0	0	0	0
Rate Funded Capital	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Reserve Funding	(106)	(61)	10	(18)	54	26
Total Expenses	\$5,079	\$5,387	\$5,715	\$5,965	\$6,224	\$6,499
Total Bal./(Def.) of Funds	\$0	(\$299)	(\$615)	(\$867)	(\$1,130)	(\$1,404)

As can be seen, the revenue requirement has summed the O&M, rate funded capital, net debt service, and reserve funding components. The total revenue requirement is then compared to the total revenues which include both rate revenues – at current rate levels – and other revenues.

From this comparison, a balance or deficiency of funds in each year can be determined. This balance or deficiency of funds is then compared to the projected revenues from current rates to determine the level of rate adjustment needed to meet the revenue requirement. The “Bal. / (Def.) of Funds” row is cumulative. That is, any adjustments in rate revenues in the initial years will reduce the deficiency in the later years assuming no changes in projected expenses. As can be seen, the sewer utility is operating at a deficiency in each of the five projected years based on the necessary operating and capital costs to continue to provide sewer service to customers.

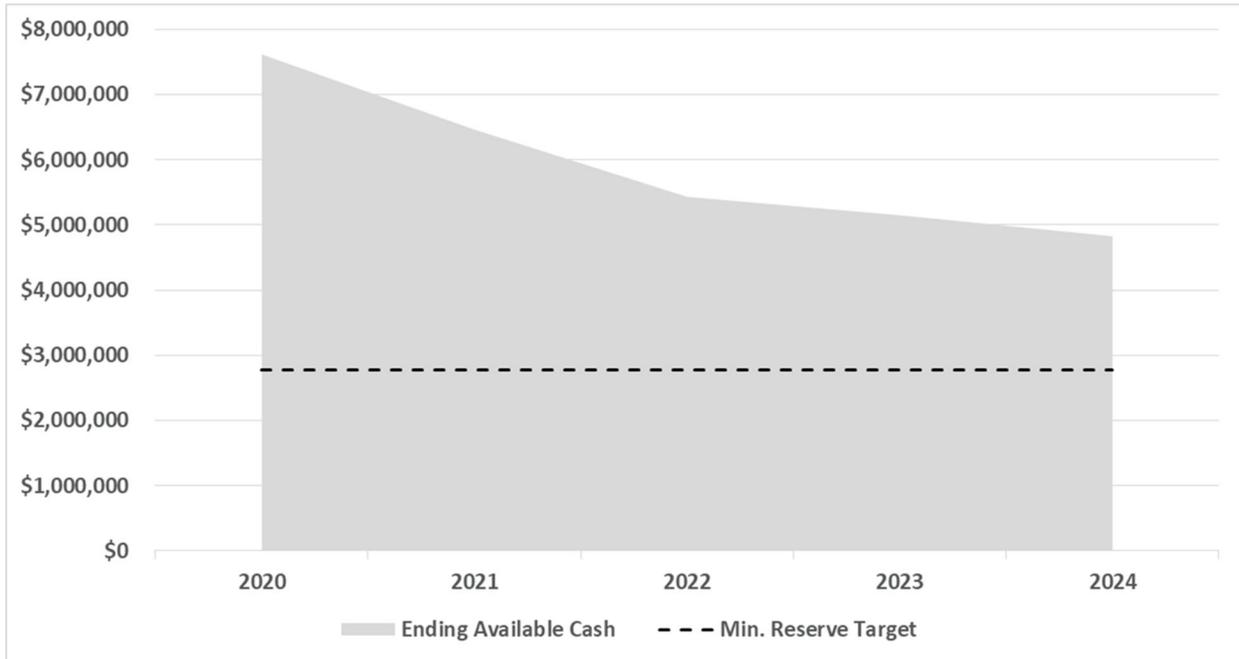
The proposed revenue adjustments are a function of assumed inflation over this time period, coupled with the need to increase the capital improvement funding from rates (renewal and replacement funding), meet minimum reserve levels, etc. A more detailed revenue requirement is included in Exhibit 3 of the Technical Appendix B – Sewer Analysis.

4.1.9 Reserve Fund Levels

Another key element of determining the financial health and sustainability of the District’s sewer utility is to review the level of available reserve levels after the proposed revenue adjustments. Utilities can have several different reserves each with a different purpose. The typical types of reserves utilities maintain are generally referenced as an operating reserve and a capital reserve. Each of these funds can have a minimum ending balance that, if reached or falls below, is a signal that the District should review the revenue sources associated with each reserve fund. The minimum ending balances will vary depending on the purpose of the fund and the expected revenue sources. For the District, there is essentially two reserve account for the sewer utility totaling approximately \$2.8 million.

- **Budget Stabilization**– The reserve is in place to meet the District’s annual cash flow needs and any unexpected one-item operational expenses. The typical minimum ending balance is approximately 90 days of O&M expenses.
- **Capital Reserve** – The reserve is in place to meet the District’s annual capital and rolling stock needs and any unexpected capital expenditures.

Shown in the chart below is the District’s sewer utility projected ending fund balance over the rate setting period.



4.1.10 Consultant’s Conclusions

Based on the revenue requirement analysis developed herein, HDR recommends that the District adjust sewer revenues annually over the next five-year period (2020 –2024). HDR has reached this conclusion for the following reasons:

- Revenue adjustments are necessary to fund the District’s capital improvement needs, of which a significant portion is driven by the renewal and replacement of aging infrastructure
- The revenue adjustments are necessary in order to cover the annual inflationary costs related to O&M of the sewer utility
- The proposed revenue adjustments maintain the District’s strong financial health and provide long-term sustainable funding levels

In reaching this conclusion, HDR would recommend that the District adopt revenue adjustments in order to provide sufficient funding for annual O&M and capital improvement program over the next five-year period

4.1.11 Summary of the Sewer Revenue Requirement

This section of the Study has provided a discussion of the District’s sewer revenue requirement analysis. The revenue requirement analysis developed a revenue transition plan to support the District’s O&M and capital needs. The next section will discuss the cost of service analysis developed for the District’s sewer utility.

4.2 Sewer Cost of Service

In the previous section, the revenue requirement analysis focused on the total sources and application of funds required to adequately fund the District’s sewer collection and treatment system. This section will provide an overview of the cost of service analysis developed for the District.

A cost of service analysis is concerned with the proportionate allocation of the total revenue requirement between the various customer classes of service (e.g., Residential, Commercial). The previously developed revenue requirement was utilized in the development of the cost of service analysis.

4.2.1 Objectives of a Cost of Service Study

There are two primary objectives in conducting a sewer cost of service study:

- Allocate the District’s revenue requirement among the customer classes of service
- Derive average unit costs for subsequent rate designs

The objectives of the cost of service analysis are different from determining a revenue requirement. As noted in the previous section, a revenue requirement analysis determines the utility’s overall revenue needs, while the cost of service analysis determines the proportional and equitable manner to collect the revenue requirement from the District’s various customer classes of service.

The second rationale for conducting a cost of service analysis is to ensure that proposed rates are designed such that it properly reflects the costs incurred by the District. For example, a sewer utility typically incurs costs related to flow (wastewater volumes), strength, and customer cost components. Each of these types of costs may be collected in a slightly different manner as to allow for the development of rates that collect costs in the same manner as they are incurred.

4.2.2 Determining the Customer Classes of Service

The first step in a cost of service analysis is to determine the customer classes of service. HDR started with the customer classes of service based on the current rates. The customer classes used in the cost of service analysis are:

- Residential
- Commercial

In determining classes of service for cost of service purposes, the objective is to group customers together into similar or homogeneous groups based upon facility requirements and/or flow characteristics. It is important to note that the Commercial customer class has a number of subclasses such as restaurant, theater, or hotel just to name a few. However, because the District charges all subclasses a proportional equivalent unit charge (EDU) it was determined that one ‘commercial’ class was appropriate. The proposed rate schedules will provide the rate for each specific customer based on the EDU equivalent for the billing unit.

4.2.3 General Cost of Service Procedures

In order to determine the cost to serve each customer class of service on the District’s system, a cost of service analysis is conducted. The development of the cost of service on generally accepted principles and methodologies and tailored to the District’s system and customer characteristics is paramount. The District’s cost of service analysis was based on the Water Environment Federation Manual of Practice No. 27. This manual outlines the approach to establish cost-based and equitable rates and outlines a three-step approach. These steps take the form of functionalization, classification, and allocation. Provided below is a detailed discussion of the sewer cost of service study conducted for the District, and the specific steps taken within the analysis.

4.2.3.1 Functionalization of Costs

The first analytical step in the cost of service process is called functionalization. Functionalization is the arrangement of expenses and sewer asset (plant) data by major operating functions (e.g., collection, pumping, treatment). Within the Study, there was a limited amount of functionalization of the cost data, as the District’s records functionalized a majority of the costs.

4.2.3.2 Allocation of Costs

The second analytical task performed in a sewer cost of service study is the allocation of the costs. Allocation determines why the expenses were incurred or what type of need is being met. The following cost allocations were used to develop the cost of service analysis:

- **Volume Related Costs:** Volume related costs are those costs which tend to vary with the total quantity of wastewater collected and treated.
- **Strength Related Costs:** Strength related costs are those costs associated with the additional handling and treatment of high “strength” wastewater. Strength of wastewater

is typically measured in biochemical oxygen demand³ (BOD) and total suspended solids⁴ (SS). Increased levels of BOD or SS generally equate to increased treatment costs.

- **Customer Related Costs:** Customer-related costs vary with the addition or deletion of a customer or a cost which is a function of the number of customers served. Customer related costs typically include the costs of billing, collecting, and accounting.
- **Revenue Related Costs:** Some costs associated with the utility may vary with the amount of revenue received by the utility. An example of a revenue related cost would be a utility tax which is based on gross utility revenue.

The allocation of costs is provided in Exhibit 11 for the infrastructure (sewer assets) and Exhibit 12 for the test period revenue requirement of the Technical Appendix B - Sewer Analysis. As mentioned, the basis, or methodology, for the allocation process is the WEF MOP #27. The methodology provided in the manual was then applied to the District's specific system and operations and customer characteristics to develop the appropriate allocation.

4.2.3.3 Development of Distribution Factors

Once the allocation process is complete, and the customer groups have been defined, the various allocated costs re distributed proportionally to each customer class of service. The District's allocated costs were distributed to the customer classes of service using the following Distribution factors.

- **Volume Distribution Factor:** Volume-related costs are generally allocated on the basis of contribution to wastewater flows. Wastewater flows were calculated based on average monthly water flow estimates for non-volume billed customers and volumetric billing information of the commercial customers. Because the District does not directly

Terminology of a Sewer Cost of Service Analysis

Functionalization – The arrangement of the cost data by functional category (e.g. collection, pumping, treatment).

Allocation – The assignment of functionalized costs to cost components (e.g. volume, strength, and customer related).

Distribution – Distributing the allocated costs to each class of service based upon each class's proportional contribution to that specific cost component.

Volume Costs – Costs that are classified as volume related vary with the total flow of wastewater (e.g., power for pumping).

Strength Costs – Costs classified as strength related refer to the wastewater treatment function. Typically, strength-related costs are further defined as biochemical oxygen demand (BOD) and suspended solids (SS). Different types of customers may have high wastewater strength characteristics and high strength wastewater costs more to treat. Treatment facilities are often designed and sized around meeting these costs.

Customer Costs – Costs classified as customer related vary with the number of customers on the system, e.g., billing costs.

Direct Assignment – Costs that can be clearly identified as belonging to a specific customer group or group of customers.

³ BOD is the amount of [dissolved oxygen](#) that must be present in water [in order](#) for [microorganisms](#) to [decompose](#) the [organic](#) matter in the wastewater

meter wastewater discharges, metered water data is used to estimate contributed average wastewater volume units of service. A summary of the volume allocation factor is provided in Exhibit 7 of the Technical Appendix B - Sewer Analysis.

- **Strength Distribution Factor:** Strength-related costs are classified between BOD and TSS. Both of these types of costs are allocated to each of the classes of service based upon the assumed domestic strength level of 200 mg/l for BOD and 200 mg/l for TSS. The strength level was based on industry average strength levels. A detailed analysis of the allocation of strength related costs is provided in Exhibit 9 of the Technical Appendix B - Sewer Analysis.
- **Customer Distribution Factor:** Customer costs within the cost of service analysis are allocated to the various customer classes of service based upon their respective customer counts. Two types of customer allocation factors were developed; actual and per EDU. The actual customer allocation factor assumes that there is no disproportionate cost associated with serving a customer (e.g., postage for bills is the same regardless of the size or usage of the customer). In contrast, an EDU customer allocation factor assumes that there is some disproportionality associated with serving different types of customers and attempts to estimate the level of difference in serving the customers. A detailed analysis of the allocation of customer related costs is provided in the Technical Appendix B – Sewer Analysis (Exhibit 8).
- **Direct Assignment Distribution Factor:** The costs that are related to a specific customer class are directly assigned in order to avoid any subsidies that might occur from other customers paying for costs they do not incur.
- **Revenue Related Distribution Factor:** The revenue related distribution factor was developed from the projected rate revenues for 2020. A detailed analysis of the allocation of revenue related costs are shown in the Technical Appendix- B Sewer Analysis (Exhibit 10).

The development of distribution factors is based on generally accepted principles as developed in the WEF MOP #27. For the District’s study, all costs were allocated on an EDU basis. This was done as this is the same method in which the district is charged for treatment services as the District only provides collection and conveyance services. Additionally, the EDU factor incorporates both a fixed customer component and a flow or volume based weighting. The summary of the allocation of the test period revenue requirement is provided in Exhibit 12 of the Technical Appendix B – Sewer Analysis.

4.2.4 Summary of the Sewer Cost of Service Analysis

In summary form, the cost of service analysis began by functionalizing the District’s facility asset records and O&M expenses. The functionalized facility and expense accounts were then allocated to the appropriate cost component(s). Provided below is a summary of the allocation of the District’s 2020 test period revenue requirement using the methodology outlined in the WEF MOP #27 and the District’s specific facility requirements and operations. Provided in Exhibits 11 and

⁴ SS is the entire amount of organic and inorganic particles dispersed in wastewater

Exhibit 12 of the Technical Appendix B - Sewer Analysis is a detailed summary of the classification of the District infrastructure and revenue requirement. The classification of the individual line items of the revenue requirement are summed to develop the results in Table 4 – 4.

Table 4 – 4 Summary of the Classification of the 2020 Revenue Requirement (\$000's)						
Total	Volume	BOD	TSS	Customer (EDU)	Revenue Related	Direct Assignment
\$5,275	\$0	\$0	\$0	\$5,275	\$0	\$0

As shown in Table 4 – 4 the total revenue requirement for 2020 has been allocated only to the EDU based cost component which is appropriate as a collection-only sewer system based on generally accepted methodologies. Next, the individual allocation totals were then distributed proportionally to the various customer groups based on the appropriate distribution factor(s), in this case only the EDU allocation factor was utilized. Therefore, for all customers, the allocated costs are then divided by the total number of EDU's to develop the proposed unit costs, or cost-based rate.

The distributed expenses for each customer class were then aggregated to determine each customer class's overall revenue responsibility. Provided in Table 4 - 5 is a summary of the cost of service analysis.

Table 4 – 5 Summary of the Sewer Cost of Service Analysis (\$000)			
Class of Service	Present Rate Revenues	Allocated Costs	\$ Difference
Residential	\$4,136	\$4,384	(\$248)
Commercial	<u>840</u>	<u>891</u>	<u>(50)</u>
Total	\$4,976	\$5,275	(\$299)

When reviewing the results of the cost of service analysis, the results will not be “exact” each time the District updates its cost of service analysis. This is due to changing customer sewer characteristics, external impacts such as drought conditions, and other changes in how the District incurs costs. However, to meet the requirements of Proposition 218, HDR proposes that cost of service adjustments be made in accordance with the results of the Study.

The allocated and distributed costs for each customer class of service are used to develop the proposed rates for the test period, in this case, 2020. The total costs are divided by the billing units (EDUs), to develop average unit costs which become the rates for the 2020 period. Provided

in Table 4 – 6 is a summary of the EDU distribution factor and distribution of the EDU-related costs. The EDU distribution factors, or the “% of Total” in the Table, are derived from Exhibit 8 of the Technical Appendix B – Sewer Analysis.

Table 4 – 6 Summary of the EDU Distribution Factor & Allocated Costs				
	% of Total	Allocated Costs (\$000s)	Total EDUs	Unit Cost (\$ / EDU)
Residential	83.1%	\$4,384	7,808	\$46.79
Commercial	<u>16.9%</u>	<u>891</u>	<u>1,586</u>	46.79
Total	100.0%	\$5,275	9,394	

Provided in Table 4 – 7 is a summary of the unit costs, which are based on the proposed rate structure for each customer class of service. For all customers, the rates are charged on an EDU – or equivalent dwelling unit – basis. That is, 1 EDU is considered a single family home equivalent. For the Commercial customers, the rates are developed as a proportion of an EDU. The development of the cost of service and unit costs are provided in Exhibits 13 through 15 of the Technical Appendix B – Sewer Analysis.

Table 4 – 7 Summary of the Sewer 2020 Unit Costs		
	Residential	Commercial
Fixed (\$ / EDU)	\$46.79	\$46.79

4.2.5 Consultant’s Conclusions and Recommendations

While the District rate setting approach is to charge all customers on an EDU basis there are no cost differences, HDR recommends that the District implement cost of service results for the unit costs. Given this, the proposed rates reflect the results of the current cost of service analysis as provided in Table 4 – 7.

4.2.6 Summary of the Sewer Cost of Service Analysis

This section of the Study has provided a summary of the cost of service analysis developed for the District. This analysis was prepared using generally accepted cost of service techniques and principles. The next section of the Study will review the present and proposed sewer rates for the District.

4.3 Sewer Rate Design

The final step of the District's Study is the design of rates to collect the desired levels of revenue, based on the results of the revenue requirement and cost of service analyses. In reviewing District's rates, consideration is given to the level of the rates and the structure of the rates.

4.3.1 Rate Design Criteria and Considerations

Prudent rate administration dictates that several criteria must be considered when setting utility rates. An example of some of these rate design criteria are listed below:

- Rates which are easy to understand from the customer's perspective
- Rates which are easy for the District to administer
- Consideration of the customer's ability to pay
- Continuity, over time, of the rate making philosophy
- Policy considerations (encourage efficient use, economic development, etc.)
- Provide revenue stability from month to month and year to year
- Promote efficient allocation of the resource
- Equitable and non-discriminatory (cost-based)
- Compliance with State law (Prop 218)

When developing the proposed rate designs, all the above-listed criteria were taken into consideration. However, it is difficult, if not impossible, to design a rate that meets all the goals and objectives listed above. For example, it may be difficult to design a rate that takes into consideration customers' ability to pay, and one which is cost-based. In designing rates, there are always trade-offs between these various goals and objectives. This process was more straightforward for the District as the current rate structure on an EDU basis was maintained.

4.3.2 Development of Cost-Based Sewer Rates

Developing proportional and equitable rates is of paramount importance in developing proposed sewer rates. The District's proposed sewer rates have been developed to meet the legal requirements of California Constitution Article XIII D, Section 6 (Article XIII D). A key component of Article XIII D is the development of rates which reflect the cost of providing service and are proportionately and equitably allocated among the various customer classes of service and the customers within each class. There is no single methodology for equitably assigning costs to the various customer groups. The Water Environment Federation Manual of Practice #27 (WEF MOP #27) provides various methodologies which may be used to establish cost-based rates. However, Article XIII D is not prescriptive and does not provide a specific methodology for establishing rates. Given that, HDR developed the proposed sewer rates based on generally accepted rate setting methodologies to meet the requirements of Article XIII D.

HDR is of the opinion that the District's proposed rates meet the legal requirements of Article XIII D. HDR reaches this conclusion based upon the following:

- **The revenue derived from sewer rates does not exceed the funds required to provide the property related service (i.e., sewer service).** The proposed rates are designed to collect the overall revenue requirement of the District’s sewer system.
- **The revenues derived from sewer rates shall not be used for any purpose other than that for which the fee or charge is imposed.** The revenues derived from the District’s sewer rates are used exclusively to operate and maintain and fund the capital improvements of the District’s sewer system.
- **The amount of a fee or charge imposed upon a parcel or person as an incident of property ownership shall not exceed the proportional costs of the service attributable to the parcel.** The cost of service analysis focused exclusively on the issue of proportional assignment of costs to customer classes of service. The proposed rates have appropriately grouped customers into customer classes of service that reflect the varying customer characteristics and system requirements (i.e., the benefits they receive from and burdens they place on the system) of each customer class of service. The grouping of customers and rates into these classes of service creates the equity and proportionality expected under Proposition 218 by having differing rates by customer classes of service which reflect both the level of revenue to be collected by the utility, and the manner in which these costs are incurred and equitably assigned to customer classes of service and customers within each class of service based upon their proportional impacts.

4.3.3 Overview of the Current Sewer Rate Structure

The District currently has a flat monthly fixed charge rate for all customers, the level of the charge varies by the proportion of an EDU that is assumed for each class and subclass. The flat rate provides revenue stability for the District as well as reflects the fact that the District is a collection only agency and so the largest variable is the assumed volume that must be collected. The EDU basis provides that in the most simple and easy to understand manner.

4.3.4 Overview of the Proposed Sewer Rate Structure

The District currently has a rate structure for each of the customer classes of service based on an EDU or a proportion thereof. For all customers, the fixed flat monthly rate structure is maintained. A flat monthly charge is still the most prolific structure used for sewer customers.

Given the result of the prior analyses - the revenue requirement and cost of service analyses- proposed rates can be developed that reflect the cost based allocation of the costs of providing service. Provided in Table 4 - 8 is a summary of the present and proposed sewer rates.

Table 4 – 8
Summary of the Monthly Present and Proposed Sewer Rates

	Present Rates	2020	2021	2022	2023	2024
	\$ / EDU					
Residential	\$44.14	\$46.79	\$49.60	\$51.83	\$54.16	\$56.60
	\$ / Unit					
Commercial						
Motel W/O Kitchen	\$17.96	\$19.04	\$20.18	\$21.39	\$22.35	\$23.36
Motel W/Kitchen	\$19.14	\$20.29	\$21.51	\$22.80	\$23.83	\$24.90
Seating - Per 1/2 Seat	\$1.23	\$1.30	\$1.38	\$1.46	\$1.53	\$1.60
Seating - Per Seat	\$2.46	\$2.61	\$2.76	\$2.93	\$3.06	\$3.20
Laundry - Per Machine	\$8.98	\$9.52	\$10.09	\$10.70	\$11.18	\$11.68
Hotel W/Kitchen	\$17.96	\$19.04	\$20.18	\$21.39	\$22.35	\$23.36
Hotel W/O Kitchen	\$11.33	\$12.01	\$12.73	\$13.49	\$14.10	\$14.73
Campsite W/Sewer	\$22.26	\$23.60	\$25.01	\$26.51	\$27.70	\$28.95
Campsite W/O Sewer	\$19.14	\$20.29	\$21.51	\$22.80	\$23.83	\$24.90
Snackbar	\$66.34	\$70.32	\$74.54	\$79.01	\$82.57	\$86.29
Service Station	\$66.34	\$70.32	\$74.54	\$79.01	\$82.57	\$86.29
Beauty / Barber Shop (Per Chair)	\$23.92	\$25.36	\$26.88	\$28.49	29.77	\$31.11
Theatre	\$132.61	\$140.57	\$149.01	\$157.95	\$165.06	\$172.49
Boat Pump	\$66.34	\$70.32	\$74.54	\$79.01	\$82.57	\$86.29
Standby Sewer Service	\$8.69	\$9.21	\$9.76	\$10.35	\$10.82	\$11.31
Food Service Estab Lic	\$29.40	\$31.17	\$33.03	\$35.01	\$36.59	\$38.24
Backwash (Pool/Spa Filters)	\$22.26	\$23.60	\$25.01	\$26.51	\$27.70	\$28.95
Unclassified Sewer	\$44.14	\$46.79	\$49.60	\$52.58	\$54.95	\$57.42
Unclassified Sewer W/O Kitchen	\$17.96	\$19.04	\$20.18	\$21.39	\$22.35	\$23.36
0.5 Sewer Unit (1-10 Fixtures)	\$22.26	\$23.60	\$25.01	\$26.51	\$27.70	\$28.95
1.0 Sewer Unit (11-20 Fixtures)	\$44.14	\$46.79	\$49.60	\$52.58	\$54.95	\$57.42
Comm'Cl Non-Rest < 1,000 Sq Ft	\$44.14	\$46.79	\$49.60	\$52.58	\$54.95	\$57.42
Comm'Cl Non-Rest < 1,000 Sq Ft	\$22.26	\$23.60	\$25.01	\$26.51	\$27.70	\$28.95
Pro-Rate Sewer Charge	\$1.21	\$1.28	\$1.36	\$1.44	\$1.50	\$1.57

The basis for the proposed rates are the unit costs developed in the cost of service analysis. As can be seen in Table 4 – 8, the Commercial customer rates are based on various billing units (e.g., per seat, fixture, etc.). Each of the billing units has been developed on the basis of wastewater contributions in comparison to 1 EDU based on industry information and data. In this way, the rate for each billing unit reflects the wastewater generation for the customer and the relationship to 1 EDU.

4.4 Summary of the Sewer Rate Design

The District's present sewer rate structures are contemporary in design and reflect the rate structures used by other similar utilities in California, both locally and state wide. Based on the District's system and customer characteristics, the proposed sewer rates appropriately reflect the cost to provide service and are cost-based between the various customer classes. Full and

complete technical appendices of the development of the comprehensive sewer rate study and the proposed revenue adjustments can be found in appendices of this report.



Technical Appendix A – Water Analysis



Tahoe City PUD
Water Cost of Service
Exhibit 1
Summary of the Revenue Requirement

	<i>Budgeted</i>	<i>Projected</i>									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues											
Total Rate Revenues	\$5,616,194	\$5,644,275	\$5,672,497	\$5,700,859	\$5,729,363	\$5,758,010	\$5,786,800	\$5,815,734	\$5,844,813	\$5,874,037	\$5,903,407
Total Other Revenues	1,280,937	1,215,872	1,356,966	1,436,591	1,511,779	1,604,165	1,657,824	1,712,026	1,766,868	1,822,233	1,877,981
Total Revenues	\$6,897,131	\$6,860,148	\$7,029,462	\$7,137,450	\$7,241,143	\$7,362,175	\$7,444,625	\$7,527,760	\$7,611,681	\$7,696,270	\$7,781,388
Expenses											
Total O & M Expense	\$4,474,253	\$4,794,697	\$5,239,620	\$5,556,980	\$5,791,177	\$6,124,402	\$6,480,924	\$6,854,368	\$7,247,349	\$7,675,018	\$8,127,905
Rate Funded Capital	2,325,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,550,000	2,600,000	2,650,000	2,700,000	2,750,000
Net Debt Service	65,324	21,664	390,042	367,564	367,564	367,564	367,564	367,564	367,564	367,564	367,564
Reserve Funding	32,554	(117,557)	(8,244)	218,218	529,772	790,224	724,819	653,138	573,020	469,564	352,481
Total Revenue Requirements	\$6,897,131	\$7,198,804	\$8,121,418	\$8,642,762	\$9,188,513	\$9,782,189	\$10,123,307	\$10,475,070	\$10,837,933	\$11,212,146	\$11,597,949
Bal. / (Def.) of Funds	\$0	(\$338,657)	(\$1,091,956)	(\$1,505,312)	(\$1,947,370)	(\$2,420,014)	(\$2,678,682)	(\$2,947,310)	(\$3,226,252)	(\$3,515,876)	(\$3,816,561)
Balance as a % of Rates	0.0%	6.0%	19.3%	26.4%	34.0%	42.0%	46.3%	50.7%	55.2%	59.9%	64.7%
Proposed Rate Adjustment	0.0%	6.0%	12.5%	6.0%	6.0%	6.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Additional Revenue	\$0	\$338,657	\$1,091,956	\$1,505,312	\$1,947,370	\$2,420,014	\$2,678,682	\$2,947,310	\$3,226,252	\$3,515,876	\$3,816,561
Total Bal. / (Def.) of Funds	\$0	(\$0)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Balance as a % of Rate Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Residential Bill (3/4" mtr + 6,000 gal)											
After Proposed Rate Adjustment	\$90.58	\$96.01	\$108.02	\$114.50	\$121.37	\$128.65	\$132.51	\$136.48	\$140.58	\$144.80	\$149.14
<i>Difference</i>	0.00	5.43	12.00	6.48	6.87	7.28	3.86	3.98	4.09	4.22	4.34
<i>Cumulative</i>	0.00	5.43	17.44	23.92	30.79	38.07	41.93	45.90	50.00	54.22	58.56
Debt Service Coverage Ratio (Bonded Debt Only)											
Before Proposed Rate Adjustment	27.34	45.94	2.36	2.15	1.97	1.68	1.31	0.92	0.50	0.03	0.00
After Proposed Rate Adjustment	27.34	53.48	3.80	4.20	4.62	4.98	4.95	4.93	4.88	4.81	4.72

Tahoe City PUD
 Water Cost of Service
 Exhibit 2
 Escalation Factors

	<i>Budgeted</i>	<i>Projected</i>									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues											
Rate Revenue	Budget	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Rate Adjustment	0.0%	6.0%	12.5%	6.0%	6.0%	6.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Other Revenues	Budget	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
Consumption	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Expenses											
Salaries	Budget	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Benefits	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Professional Services	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Materials & Supplies	Budget	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Equipment	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Miscellaneous	Budget	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Utilities	Budget	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Flat	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest Rate	0.6%	0.7%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
<u>New Debt Service</u>											
<i>Revenue Bond</i>											
Term in Years	20	20	20	20	20	20	20	20	20	20	20
Rate	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
<i>Low Interest Loan</i>											
Term in Years	20	20	20	20	20	20	20	20	20	20	20
Rate	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

Tahoe City PUD
Water Cost of Service
Exhibit 3
Revenue Requirement

	<u>Budgeted</u>	<u>Projected</u>										<u>Notes</u>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Revenues												
Rate Revenues												
Residential	\$4,548,120	\$4,570,861	\$4,593,715	\$4,616,684	\$4,639,767	\$4,662,966	\$4,686,281	\$4,709,712	\$4,733,261	\$4,756,927	\$4,780,712	As Rate Revenue
Commercial	840,599	844,802	849,026	853,271	857,537	861,825	866,134	870,465	874,817	879,191	883,587	As Rate Revenue
Fireline	227,475	228,612	229,755	230,904	232,059	233,219	234,385	235,557	236,735	237,919	239,108	As Rate Revenue
Total Rate Revenues	\$5,616,194	\$5,644,275	\$5,672,497	\$5,700,859	\$5,729,363	\$5,758,010	\$5,786,800	\$5,815,734	\$5,844,813	\$5,874,037	\$5,903,407	
Other Revenues												
Penalties on delinquencies	\$44,300	\$45,186	\$46,090	\$47,012	\$47,952	\$48,911	\$49,889	\$50,887	\$51,905	\$52,943	\$54,002	LT Financial Plan
User Fee - Supplemental #6	21,665	21,665	0	0	0	0	0	0	0	0	0	LT Financial Plan
Grant Revenue	131,632	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Other Non-Operating Revenue	1,200	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Discounts Earned	60	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Proceeds from Asset Sales	360	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Other Operating Revenue	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	7,500	LT Financial Plan
Interest Income	12,413	16,889	40,529	44,380	39,304	46,665	54,558	61,633	67,951	73,352	77,651	Calc'd on Reserves
Rental Income	22,074	22,515	22,965	23,424	23,892	24,370	24,857	25,354	25,861	26,378	26,906	LT Financial Plan
Madden Creek	167,133	177,161	199,306	211,264	223,940	237,376	244,498	251,833	259,388	267,169	275,184	As Rate Adjustment
Tahoe Cedars	708,562	751,075	844,960	895,657	949,397	1,006,361	1,036,551	1,067,648	1,099,677	1,132,668	1,166,648	As Rate Adjustment
Timberland	164,039	173,881	195,617	207,354	219,795	232,982	239,972	247,171	254,586	262,224	270,090	As Rate Adjustment
Total Other Revenues	\$1,280,937	\$1,215,872	\$1,356,966	\$1,436,591	\$1,511,779	\$1,604,165	\$1,657,824	\$1,712,026	\$1,766,868	\$1,822,233	\$1,877,981	
Total Revenues	\$6,897,131	\$6,860,148	\$7,029,462	\$7,137,450	\$7,241,143	\$7,362,175	\$7,444,625	\$7,527,760	\$7,611,681	\$7,696,270	\$7,781,388	
Water Production												
Personnel Cost												
Salaries - Full Time Classic	\$297,147	\$317,947	\$340,204	\$364,018	\$389,499	\$416,764	\$445,938	\$477,153	\$510,554	\$546,293	\$584,533	LT Financial Plan
Salaries - Full Time - PEPR	96,389	103,136	110,356	118,081	126,346	135,191	144,654	154,780	165,614	177,207	189,612	LT Financial Plan
Salaries - OT	11,920	12,754	13,647	14,603	15,625	16,718	17,889	19,141	20,481	21,914	23,448	LT Financial Plan
Salaries - Part Time	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
New Position - Classic	0	14,882	15,924	17,038	18,231	19,507	20,873	22,334	23,897	25,570	27,360	LT Financial Plan
Employee Benefits - Pension-CLASSIC + DC	168,402	113,098	121,015	129,486	138,550	148,248	158,626	169,730	181,611	194,323	207,926	LT Financial Plan
Employee Benefits - Pension-PEPRA + DC	(1,910)	9,774	10,458	11,190	11,974	12,812	13,709	14,668	15,695	16,794	17,969	LT Financial Plan
Employee Benefits - FICA	0	34,110	36,259	38,543	40,971	43,553	46,296	49,213	52,314	55,609	59,113	LT Financial Plan
Employee Benefits - OPEB	0	20,749	22,248	24,425	25,452	26,011	27,764	28,290	28,193	30,146	31,971	LT Financial Plan
Employee Benefits - SUI	0	4,340	4,340	4,340	4,340	4,340	4,340	4,340	4,340	4,340	4,340	LT Financial Plan
Employee Benefits - Life / LTD / Flex	0	2,599	2,668	2,836	3,015	3,205	3,407	3,621	3,849	4,092	4,350	LT Financial Plan
Worker's Comp	0	16,816	17,875	19,001	20,198	21,471	22,823	24,261	25,790	27,414	29,142	LT Financial Plan
ACA Excise Tax - effective 2022	0	0	0	0	8,009	11,084	12,745	14,657	16,856	19,384	22,292	LT Financial Plan
Employee Assistance Fund	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Benefits-Dental	5,268	5,959	6,317	6,696	7,098	7,524	7,975	8,454	8,961	9,499	10,069	LT Financial Plan
Benefits-Vision	1,116	1,249	1,286	1,325	1,365	1,406	1,448	1,491	1,536	1,582	1,629	LT Financial Plan
Benefits - Health	51,684	57,735	59,467	61,251	63,089	64,982	66,931	68,939	71,007	73,137	75,331	LT Financial Plan
Total Personnel Cost	\$630,016	\$715,149	\$762,063	\$812,833	\$873,762	\$932,816	\$995,416	\$1,061,071	\$1,130,698	\$1,207,304	\$1,289,085	

	<u>Budgeted</u>	<u>Projected</u>										<u>Notes</u>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Professional Services												
Consultants Fees	\$17,624	\$18,153	\$18,698	\$19,259	\$19,837	\$20,432	\$21,045	\$21,676	\$22,326	\$22,996	\$23,686	LT Financial Plan
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Legal Fees	5,000	5,150	5,305	5,464	5,628	5,797	5,971	6,150	6,335	6,525	6,721	LT Financial Plan
Total Professional Services	\$22,624	\$23,303	\$24,003	\$24,723	\$25,465	\$26,229	\$27,016	\$27,826	\$28,661	\$29,521	\$30,407	
Charges & Services												
Advertising and Printing	\$7,900	\$8,137	\$8,381	\$8,632	\$8,891	\$9,158	\$9,433	\$9,716	\$10,007	\$10,307	\$10,616	LT Financial Plan
Bank Charges V/MC Fees	11,799	12,153	12,518	12,894	13,281	13,679	14,089	14,512	14,947	15,395	15,857	LT Financial Plan
Dues, Subscriptions & Pubs.	17,215	17,731	18,263	18,811	19,375	19,956	20,555	21,172	21,807	22,461	23,135	LT Financial Plan
Fees and Permits	52,800	54,384	56,016	57,696	59,427	61,210	63,046	64,937	66,885	68,892	70,959	LT Financial Plan
Meeting, Training & Travel	4,068	4,190	4,316	4,445	4,578	4,715	4,856	5,002	5,152	5,307	5,466	LT Financial Plan
Mileage Reimbursement	252	260	268	276	284	293	302	311	320	330	340	LT Financial Plan
Other Purchased Services	16,241	16,728	17,230	17,747	18,279	18,827	19,392	19,974	20,573	21,190	21,826	LT Financial Plan
R & M Contracts	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Snow Removal	11,000	11,330	11,670	12,020	12,381	12,752	13,135	13,529	13,935	14,353	14,784	LT Financial Plan
Software & Maintenance	2,679	2,759	2,842	2,927	3,015	3,105	3,198	3,294	3,393	3,495	3,600	LT Financial Plan
Telemetry	5,400	5,562	5,729	5,901	6,078	6,260	6,448	6,641	6,840	7,045	7,256	LT Financial Plan
Water Quality Analysis	4,000	4,120	4,244	4,371	4,502	4,637	4,776	4,919	5,067	5,219	5,376	LT Financial Plan
Total Charges & Services	\$133,354	\$137,354	\$141,477	\$145,720	\$150,091	\$154,592	\$159,230	\$164,007	\$168,926	\$173,994	\$179,215	
Materials & Supplies												
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	LT Financial Plan
Meeting Food	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Miscellaneous	2,556	2,633	2,712	2,793	2,877	2,963	3,052	3,144	3,238	3,335	3,435	LT Financial Plan
Postage	9,054	9,326	9,606	9,894	10,191	10,497	10,812	11,136	11,470	11,814	12,168	LT Financial Plan
R & M Equipment	13,000	13,390	13,792	14,206	14,632	15,071	15,523	15,989	16,469	16,963	17,472	LT Financial Plan
R & M Facility	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	85,000	LT Financial Plan
Small Equipment Expense	11,700	12,051	12,413	12,785	13,169	13,564	13,971	14,390	14,822	15,267	15,725	LT Financial Plan
Supplies	19,000	19,570	20,157	20,762	21,385	22,027	22,688	23,369	24,070	24,792	25,536	LT Financial Plan
Vehicle - TV Van & Vactor	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Vehicle Expense	17,767	18,300	18,849	19,414	19,996	20,596	21,214	21,850	22,506	23,181	23,876	LT Financial Plan
Insurance	12,108	12,471	12,845	13,230	13,627	14,036	14,457	14,891	15,338	15,798	16,272	LT Financial Plan
Telephone	2,300	2,369	2,440	2,513	2,588	2,666	2,746	2,828	2,913	3,000	3,090	LT Financial Plan
Utilities	199,532	205,518	211,684	218,035	224,576	231,313	238,252	245,400	252,762	260,345	268,155	LT Financial Plan
Total Materials & Supplies	\$372,017	\$380,628	\$389,498	\$398,632	\$408,041	\$417,733	\$427,715	\$437,997	\$448,588	\$459,495	\$470,729	
Governance & Admin Services	\$337,509	\$328,375	\$344,887	\$362,235	\$431,429	\$452,474	\$474,868	\$498,369	\$523,032	\$549,842	\$578,166	LT Financial Plan
Engineering / Technology Svcs / GIS Allocation	\$481,918	\$537,327	\$586,177	\$637,532	\$591,136	\$636,677	\$686,302	\$738,382	\$793,042	\$852,733	\$915,834	LT Financial Plan
Total Water Production	\$1,977,438	\$2,122,136	\$2,248,105	\$2,381,675	\$2,479,924	\$2,620,521	\$2,770,547	\$2,927,652	\$3,092,947	\$3,272,889	\$3,463,436	

	<u>Budgeted</u>	<u>Projected</u>										<u>Notes</u>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Water Storage, Transmission, & Distribution												
Personnel Cost												
Salaries - Full Time Classic	\$407,645	\$436,180	\$466,713	\$499,383	\$534,339	\$571,743	\$611,765	\$654,589	\$700,410	\$749,439	\$801,899	LT Financial Plan
Salaries - Full Time - PEPR A	132,231	141,487	151,391	161,989	173,328	185,461	198,443	212,334	227,197	243,101	260,118	LT Financial Plan
Salaries - OT	18,166	19,438	20,798	22,254	23,812	25,479	27,262	29,171	31,213	33,397	35,735	LT Financial Plan
Salaries - Part Time	51,584	55,195	59,059	63,193	67,616	72,349	77,414	82,833	88,631	94,835	101,474	LT Financial Plan
New Position - Classic	0	14,882	15,924	17,039	18,232	19,508	20,873	22,334	23,898	25,571	27,361	LT Financial Plan
Employee Benefits -Pension-CLASSIC + DC	231,086	153,263	163,991	175,471	187,754	200,897	214,959	230,006	246,107	263,334	281,768	LT Financial Plan
Employee Benefits -Pension-PEPRA + DC	(1,910)	13,408	14,347	15,351	16,425	17,575	18,805	20,122	21,530	23,037	24,650	LT Financial Plan
Employee Benefits -FICA	0	46,518	49,449	52,564	55,876	59,396	63,138	67,116	71,344	75,838	80,616	LT Financial Plan
Employee Benefits - OPEB	0	28,200	30,238	33,195	34,591	35,351	37,734	38,449	38,317	40,971	43,451	LT Financial Plan
Employee Benefits -SUI	0	4,557	4,557	4,557	4,557	4,557	4,557	4,557	4,557	4,557	4,557	LT Financial Plan
Employee Benefits -Life / LTD / Flex	0	3,533	3,755	3,992	4,243	4,511	4,795	5,097	5,418	5,759	6,122	LT Financial Plan
Worker's Comp	0	24,936	26,441	28,039	29,735	31,536	33,449	35,479	37,636	39,925	42,357	LT Financial Plan
ACA Excise Tax - effective 2022	0	0	0	0	8,009	11,084	12,745	14,657	16,856	19,384	22,292	LT Financial Plan
Employee Assistance Fund	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Benefits-Dental	5,940	6,671	7,071	7,495	7,945	8,422	8,927	9,463	10,031	10,633	11,271	LT Financial Plan
Benefits-Vision	1,248	1,385	1,427	1,470	1,514	1,559	1,606	1,654	1,704	1,755	1,808	LT Financial Plan
Benefits - Health	101,472	109,016	112,286	115,655	119,125	122,699	126,380	130,171	134,076	138,098	142,241	LT Financial Plan
Total Personnel Cost	\$947,462	\$1,058,669	\$1,127,447	\$1,201,646	\$1,287,101	\$1,372,126	\$1,462,853	\$1,558,032	\$1,658,925	\$1,769,635	\$1,887,720	
Professional Services												
Consultants Fees	\$37,624	\$38,753	\$39,916	\$41,113	\$42,346	\$43,616	\$44,924	\$46,272	\$47,660	\$49,090	\$50,563	LT Financial Plan
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Legal Fees	3,500	3,605	3,713	3,824	3,939	4,057	4,179	4,304	4,433	4,566	4,703	LT Financial Plan
Total Professional Services	\$41,124	\$42,358	\$43,629	\$44,937	\$46,285	\$47,673	\$49,103	\$50,576	\$52,093	\$53,656	\$55,266	
Charges & Services												
Advertising and Printing	\$8,750	\$9,013	\$9,283	\$9,561	\$9,848	\$10,143	\$10,447	\$10,760	\$11,083	\$11,415	\$11,757	LT Financial Plan
Bank Charges V/MC Fees	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Cash Over/short	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Community Promotion	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Conservation	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Directors Fees & Benefits	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Dues, Subscriptions & Pubs.	17,215	17,731	18,263	18,811	19,375	19,956	20,555	21,172	21,807	22,461	23,135	LT Financial Plan
Employee Morale	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Equipment Rental	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Fees and Permits	18,392	18,944	19,512	20,097	20,700	21,321	21,961	22,620	23,299	23,998	24,718	LT Financial Plan
Meeting, Training & Travel	4,068	4,190	4,316	4,445	4,578	4,715	4,856	5,002	5,152	5,307	5,466	LT Financial Plan
Mileage Reimbursement	252	260	268	276	284	293	302	311	320	330	340	LT Financial Plan
Other Purchased Services	14,643	15,082	15,534	16,000	16,480	16,974	17,483	18,007	18,547	19,103	19,676	LT Financial Plan
R & M Contracts	26,252	27,040	27,851	28,687	29,548	30,434	31,347	32,287	33,256	34,254	35,282	LT Financial Plan
Snow Removal	7,500	7,725	7,957	8,196	8,442	8,695	8,956	9,225	9,502	9,787	10,081	LT Financial Plan
Software & Maintenance	2,767	2,850	2,936	3,024	3,115	3,208	3,304	3,403	3,505	3,610	3,718	LT Financial Plan
Telemetry	5,300	5,459	5,623	5,792	5,966	6,145	6,329	6,519	6,715	6,916	7,123	LT Financial Plan
Water Quality Analysis	13,000	13,390	13,792	14,206	14,632	15,071	15,523	15,989	16,469	16,963	17,472	LT Financial Plan
Total Charges & Services	\$118,139	\$121,684	\$125,335	\$129,095	\$132,968	\$136,955	\$141,063	\$145,295	\$149,655	\$154,144	\$158,768	

Tahoe City PUD
Water Cost of Service
Exhibit 3
Revenue Requirement

	<u>Budgeted</u>	<u>Projected</u>										<u>Notes</u>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Materials & Supplies												
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	LT Financial Plan
Cost of Goods Sold	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Meeting Food	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Miscellaneous	2,000	2,060	2,122	2,186	2,252	2,320	2,390	2,462	2,536	2,612	2,690	LT Financial Plan
Postage	10,040	10,341	10,651	10,971	11,300	11,639	11,988	12,348	12,718	13,100	13,493	LT Financial Plan
R & M Equipment	115,000	118,450	122,004	125,664	129,434	133,317	137,317	141,437	145,680	150,050	154,552	LT Financial Plan
R & M Facility	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	31,000	LT Financial Plan
Small Equipment Expense	25,000	25,750	26,523	27,319	28,139	28,983	29,852	30,748	31,670	32,620	33,599	LT Financial Plan
Supplies	55,000	56,650	58,350	60,101	61,904	63,761	65,674	67,644	69,673	71,763	73,916	LT Financial Plan
Vehicle - TV Van & Vactor	8,390	8,642	8,901	9,168	9,443	9,726	10,018	10,319	10,629	10,948	11,276	LT Financial Plan
Vehicle Expense	17,759	18,292	18,841	19,406	19,988	20,588	21,206	21,842	22,497	23,172	23,867	LT Financial Plan
Insurance	18,210	18,756	19,319	19,899	20,496	21,111	21,744	22,396	23,068	23,760	24,473	LT Financial Plan
Telephone	3,000	3,090	3,183	3,278	3,376	3,477	3,581	3,688	3,799	3,913	4,030	LT Financial Plan
Utilities	65,588	67,556	69,583	71,670	73,820	76,035	78,316	80,665	83,085	85,578	88,145	LT Financial Plan
Total Materials & Supplies	\$350,987	\$360,587	\$370,477	\$380,662	\$391,152	\$401,957	\$413,086	\$424,549	\$436,355	\$448,516	\$461,041	
Governance & Admin Services	\$428,005	\$413,175	\$435,268	\$458,465	\$546,792	\$574,615	\$604,391	\$635,632	\$668,411	\$704,053	\$741,699	LT Financial Plan
Engineering / Technology Svcs / GIS Allocation	\$611,098	\$676,088	\$739,792	\$806,896	\$749,203	\$808,542	\$873,494	\$941,753	\$1,013,471	\$1,091,894	\$1,174,877	LT Financial Plan
Total Water Storage, Transmission, & Distribution	\$2,496,815	\$2,672,561	\$2,841,948	\$3,021,701	\$3,153,501	\$3,341,868	\$3,543,990	\$3,755,837	\$3,978,910	\$4,221,898	\$4,479,371	
Additional O&M - WTP	\$0	\$0	\$149,567	\$153,605	\$157,753	\$162,012	\$166,386	\$170,879	\$175,492	\$180,231	\$185,097	As Materials & Supplies
Total Operation & Maintenance Expense	\$4,474,253	\$4,794,697	\$5,239,620	\$5,556,980	\$5,791,177	\$6,124,402	\$6,480,924	\$6,854,368	\$7,247,349	\$7,675,018	\$8,127,905	
<i>Revenues Over / (Under) O&M</i>	<i>\$2,422,878</i>	<i>\$2,065,450</i>	<i>\$1,789,842</i>	<i>\$1,580,470</i>	<i>\$1,449,965</i>	<i>\$1,237,773</i>	<i>\$963,701</i>	<i>\$673,392</i>	<i>\$364,332</i>	<i>\$21,252</i>	<i>(\$346,516)</i>	
Rate Funded Capital	\$2,325,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,600,000	\$2,650,000	\$2,700,000	\$2,750,000	2019 Depr Exp = \$934,200
Debt Service												
WTP SRF	\$0	\$0	\$735,127	\$735,127	\$735,127	\$735,127	\$735,127	\$735,127	\$735,127	\$735,127	\$735,127	Debt Schedule
Zion Bank Loan	44,957	44,957	22,478	0	0	0	0	0	0	0	0	Debt Schedule
Bank of America	43,661	0	0	0	0	0	0	0	0	0	0	Debt Schedule
New Debt	0	0	0	0	0	0	0	0	0	0	0	Calculated
Total Debt Service	88,617	44,957	757,606	735,127	735,127	735,127	735,127	735,127	735,127	735,127	735,127	
Less: Property Tax Revenues												
Portion of General Property Taxes	\$23,293	\$23,293	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	
Total Less: Property Tax Revenues	\$23,293	\$23,293	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	
Net Debt Service	\$65,324	\$21,664	\$390,042	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	\$367,564	
Reserve Funding												
Operating Reserve	\$32,554	(\$117,557)	(\$8,244)	\$218,218	\$254,772	\$300,224	\$274,819	\$253,138	\$223,020	\$169,564	\$152,481	
Capital Reserve	0	0	0	0	275,000	490,000	450,000	400,000	350,000	300,000	200,000	
Rolling Stock Reserve	0	0	0	0	0	0	0	0	0	0	0	
Property Tax Reserve	0	0	0	0	0	0	0	0	0	0	0	
Total Reserve Funding	\$32,554	(\$117,557)	(\$8,244)	\$218,218	\$529,772	\$790,224	\$724,819	\$653,138	\$573,020	\$469,564	\$352,481	

Tahoe City PUD
Water Cost of Service
Exhibit 3
Revenue Requirement

	<i>Budgeted</i>	<i>Projected</i>										<i>Notes</i>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Total Revenue Requirement	\$6,897,131	\$7,198,804	\$8,121,418	\$8,642,762	\$9,188,513	\$9,782,189	\$10,123,307	\$10,475,070	\$10,837,933	\$11,212,146	\$11,597,949	
Bal. / (Def.) of Funds	\$0	(\$338,657)	(\$1,091,956)	(\$1,505,312)	(\$1,947,370)	(\$2,420,014)	(\$2,678,682)	(\$2,947,310)	(\$3,226,252)	(\$3,515,876)	(\$3,816,561)	
Balance as a % of Rates	0.0%	6.0%	19.3%	26.4%	34.0%	42.0%	46.3%	50.7%	55.2%	59.9%	64.7%	
Proposed Rate Adjustment	0.0%	6.0%	12.5%	6.0%	6.0%	6.0%	3.0%	3.0%	3.0%	3.0%	3.0%	
Additional Revenue	\$0	\$338,657	\$1,091,956	\$1,505,312	\$1,947,370	\$2,420,014	\$2,678,682	\$2,947,310	\$3,226,252	\$3,515,876	\$3,816,561	
Total Bal. / (Def.) of Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Balance as a % of Rate Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Average Residential Bill (3/4" mtr + 6,000 gal)	\$90.58											
After Proposed Rate Adjustment	\$90.58	\$96.01	\$108.02	\$114.50	\$121.37	\$128.65	\$132.51	\$136.48	\$140.58	\$144.80	\$149.14	
Difference		5.43	12.00	6.48	6.87	7.28	3.86	3.98	4.09	4.22	4.34	
Cumulative		5.43	17.44	23.92	30.79	38.07	41.93	45.90	50.00	54.22	58.56	
Debt Service Coverage Ratio (Bonded Debt Only)												
Before Proposed Rate Adjustment	27.34	45.94	2.36	2.15	1.97	1.68	1.31	0.92	0.50	0.03	0.00	
After Proposed Rate Adjustment	27.34	53.48	3.80	4.20	4.62	4.98	4.95	4.93	4.88	4.81	4.72	
Reserve Funds												
Beginning Balance	\$3,652,292	\$3,705,272	\$3,605,825	\$5,400,593	\$3,775,413	\$4,325,394	\$5,084,073	\$5,827,439	\$6,499,216	\$7,090,969	\$7,579,360	
Operating Reserve												
Beginning Reserve Balance	\$553,754	\$586,308	\$468,751	\$460,507	\$678,725	\$933,497	\$1,233,721	\$1,508,540	\$1,761,678	\$1,984,698	\$2,154,262	
Plus: Additions	32,554	0	0	218,218	254,772	300,224	274,819	253,138	223,020	169,564	152,481	
Less: Uses	0	(117,557)	(8,244)	0	0	0	0	0	0	0	0	
Ending Reserve Balance	\$586,308	\$468,751	\$460,507	\$678,725	\$933,497	\$1,233,721	\$1,508,540	\$1,761,678	\$1,984,698	\$2,154,262	\$2,306,743	
Cash Available for Other Uses	\$32,554	(\$85,003)	(\$93,247)	\$124,971	\$379,743	\$679,967	\$954,786	\$1,207,924	\$1,430,944	\$1,600,508	\$1,752,989	
Capital Reserve												
Beginning Reserve Balance	\$1,689,903	\$1,707,903	\$1,725,993	\$3,529,005	\$1,685,608	\$1,978,971	\$2,487,425	\$2,955,972	\$3,374,611	\$3,743,344	\$4,062,170	
Plus: Additions	0	0	1,784,832	0	275,000	490,000	450,000	400,000	350,000	300,000	200,000	
Connection Fees	18,000	18,090	18,180	18,271	18,363	18,455	18,547	18,640	18,733	18,826	18,921	As Other Revenues
Debt Proceeds	0	8,000,000	4,000,000	0	0	0	0	0	0	0	0	
Less: Uses	0	(8,000,000)	(4,000,000)	(1,861,669)	0	0	0	0	0	0	0	
Ending Reserve Balance	\$1,707,903	\$1,725,993	\$3,529,005	\$1,685,608	\$1,978,971	\$2,487,425	\$2,955,972	\$3,374,611	\$3,743,344	\$4,062,170	\$4,281,091	

	<i>Budgeted</i>	<i>Projected</i>										<i>Notes</i>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
<i>Rolling Stock Reserve</i>												
Beginning Reserve Balance	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900
Plus: Additions	0	0	0	0	0	0	0	0	0	0	0	0
Less: Uses	0	0	0	0	0	0	0	0	0	0	0	0
Ending Reserve Balance	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900	\$140,900
Cash Available for Other Uses	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
<i>Property Tax Reserve</i>												
Beginning Reserve Balance	\$1,267,735	\$1,270,161	\$1,270,181	\$1,270,181	\$1,270,181	\$1,272,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027
Plus: Additions	0	0	0	0	0	0	0	0	0	0	0	0
Transfer: From GF Property Tax Reserve	3,220,000	2,485,650	0	300,000	240,000	76,540	0	0	0	0	0	0
Transfer: System Acquisition	0	0	0	0	0	0	0	0	0	0	0	0
Less: Stopgap for new acquisitions	0	0	0	0	0	0	0	0	0	0	0	0
Less: Uses	(3,217,574)	(2,485,630)	0	(300,000)	(238,154)	(126,540)	0	0	0	0	0	0
Ending Reserve Balance	\$1,270,161	\$1,270,181	\$1,270,181	\$1,270,181	\$1,272,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027	\$1,222,027
Cash Available for Other Uses	\$2,426	\$2,446	\$2,446	\$2,446	\$4,292	(\$45,708)	(\$45,708)	(\$45,708)	(\$45,708)	(\$45,708)	(\$45,708)	(\$45,708)
Ending Balance	\$3,705,272	\$3,605,825	\$5,400,593	\$3,775,413	\$4,325,394	\$5,084,073	\$5,827,439	\$6,499,216	\$7,090,969	\$7,579,360	\$7,950,761	
Target Minimum	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833	\$3,940,833
	321											
<i>General Fund - Property Tax Reserve</i>												
Current Balance	\$13,000,000											
Less: Minimum Balance	(\$3,000,000)											
Beginning Reserve Balance	\$10,000,000	\$10,955,028	\$12,739,767	\$16,261,791	\$19,441,085	\$22,518,742	\$25,713,050	\$28,918,114	\$32,049,225	\$35,097,844	\$38,045,872	\$38,045,872
Annual Revenue	7,427,646	7,724,751	7,879,246	8,036,831	8,197,567	8,361,518	8,528,748	8,699,323	8,873,309	9,050,776	9,231,791	
Transfer: to Water Property Tax Reserve	(3,220,000)	(2,485,650)	0	(300,000)	(240,000)	(76,540)	0	0	0	0	0	0
Less: Parks Operations	(1,767,493)	(1,982,008)	(2,094,496)	(2,212,460)	(2,399,039)	(2,522,063)	(2,658,178)	(2,800,973)	(2,950,685)	(3,112,950)	(3,284,149)	
Less: Recreation Operations	(571,779)	(753,453)	(799,243)	(847,229)	(922,905)	(974,330)	(1,030,727)	(1,089,913)	(1,152,007)	(1,219,309)	(1,290,344)	
Less: Golf / WSP Operations	(583,085)	(555,905)	(588,653)	(623,018)	(683,136)	(719,446)	(759,949)	(802,496)	(847,166)	(895,659)	(946,879)	
Less: Debt Service	(330,261)	(162,996)	(874,830)	(874,830)	(874,830)	(874,831)	(874,830)	(874,830)	(874,832)	(874,830)	(735,126)	
Less: Admin / Corp Yard	0	0	0	0	0	0	0	0	0	0	0	0
Less: Rec Center	0	0	0	0	0	0	0	0	0	0	0	0
Less: System Acquisition	0	0	0	0	0	0	0	0	0	0	0	0
Ending Reserve Balance	\$10,955,028	\$12,739,767	\$16,261,791	\$19,441,085	\$22,518,742	\$25,713,050	\$28,918,114	\$32,049,225	\$35,097,844	\$38,045,872	\$41,021,165	

Tahoe City PUD
 Water Cost of Service
 Exhibit 4
 Capital Improvement Projects

Inflation = 2.7%

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Notes
Engineering												
Bunker Water Tank	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
CA CLAP SR89 - Fanny Bridge - Water Relocation	0	0	0	0	0	0	0	0	0	0	0	
West Lake Tahoe Regional Water Treatment Plant	0	0	0	0	0	0	0	0	0	0	0	
West Shore Storage Augmentation	0	0	0	0	0	0	0	0	0	0	0	
Timberland Water Sys Metering & Distrib. Improv.	0	0	0	0	0	0	0	0	0	0	0	
Tahoe Cedars System Distrib. Improv.	0	0	0	0	0	0	0	0	0	0	0	
Madden Cr Wtr Sys Interconnect & Dist. Improv.	0	0	0	0	0	0	0	0	0	0	0	
Madden Creek Water System Distrib. Improv.	0	0	0	0	0	0	0	0	0	0	0	
Lower Meeks Bay PRV	0	0	0	0	0	0	0	0	0	0	0	
Smart Meter Replacement Program	0	0	0	0	0	0	0	0	0	0	0	
The Drive WLR	0	0	0	0	0	0	0	0	0	0	0	
Rubicon Tank No.1 Water Fee Line Replcmnt	0	0	0	0	0	0	0	0	0	0	0	
Highlands Easements Service Line Replcmnt	0	0	0	0	0	0	0	0	0	0	0	
TC Main Emergency Water Supply	0	0	0	0	0	0	0	0	0	0	0	
Rubicon Water system Trans. Improv.	0	0	0	0	0	0	0	0	0	0	0	
Moana Circle WLR	0	0	0	0	0	0	0	0	0	0	0	
Dardanelles WLR	0	0	0	0	0	0	0	0	0	0	0	
Water System Master Metering	0	0	0	0	0	0	0	0	0	0	0	
Tahoe City Main Source & Storage Augmentation	0	0	0	0	0	0	0	0	0	0	0	
Total Engineering	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Operational Projects												
Tahoe City Main Production Meter Replac.	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Water Leak Correlator	0	0	0	0	0	0	0	0	0	0	0	
Tahoe Cedars System Upgrades (Immediate)	0	0	0	0	0	0	0	0	0	0	0	
Madden Creek System Upgrades (Immediate)	0	0	0	0	0	0	0	0	0	0	0	
Timberland System Upgrades (Immediate)	0	0	0	0	0	0	0	0	0	0	0	
Large Com / Domestic Meter Replac.	0	0	0	0	0	0	0	0	0	0	0	
Rubicon Tank No.2 Exterior Recoating	0	0	0	0	0	0	0	0	0	0	0	
Meter Reading Equipment	0	0	0	0	0	0	0	0	0	0	0	
Water Tank Trailer	0	0	0	0	0	0	0	0	0	0	0	
HDPE Pipe Fusion Machine	0	0	0	0	0	0	0	0	0	0	0	
LFWS - Abandon Existing LFWS Facilities	0	0	0	0	0	0	0	0	0	0	0	
Cedar Point Condo Water Service Line Replac.	0	0	0	0	0	0	0	0	0	0	0	
Lower Highlands Tank Interior Recoating	0	0	0	0	0	0	0	0	0	0	0	
Lower Highlands Tank Exterior Recoating	0	0	0	0	0	0	0	0	0	0	0	
Four Seasons Tank Exterior Coating	0	0	0	0	0	0	0	0	0	0	0	
Riley Springs Vault Rehabilitation	0	0	0	0	0	0	0	0	0	0	0	
Misc. Ops Projects	0	0	0	0	0	0	0	0	0	0	0	
Total Operational Projects	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	

Tahoe City PUD
 Water Cost of Service
 Exhibit 4
 Capital Improvement Projects

Inflation = 2.7%

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Notes
Vehicles												
Utilities Truck	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
CCTV Van	0	0	0	0	0	0	0	0	0	0	0	
Boom / Lift Gate Truck	0	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 8	0	0	0	0	0	0	0	0	0	0	0	
Dump Truck - Veh# 60	0	0	0	0	0	0	0	0	0	0	0	
Loader Mounted Snow Blower	0	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 10	0	0	0	0	0	0	0	0	0	0	0	
Utilities Trailer	0	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 6	0	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 4	0	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 3	0	0	0	0	0	0	0	0	0	0	0	
Tech Services	0	0	0	0	0	0	0	0	0	0	0	
Total Vehicles	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Transfer to Capital Reserves	\$0	\$0	\$1,784,832	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Future Unidentified CIP	\$5,542,574	\$12,985,630	\$4,715,168	\$4,661,669	\$2,738,154	\$2,626,540	\$2,550,000	\$2,600,000	\$2,650,000	\$2,700,000	\$2,750,000	
Total Capital Outlays	\$5,542,574	\$12,985,630	\$6,500,000	\$4,661,669	\$2,738,154	\$2,626,540	\$2,550,000	\$2,600,000	\$2,650,000	\$2,700,000	\$2,750,000	
Less: Other Funding Sources												
Connection Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Property Tax Reserve	3,217,574	2,485,630	0	300,000	238,154	126,540	0	0	0	0	0	
Operating Reserve	0	0	0	0	0	0	0	0	0	0	0	
Capital Reserve	0	8,000,000	4,000,000	1,861,669	0	0	0	0	0	0	0	
Rolling Stock Reserve	0	0	0	0	0	0	0	0	0	0	0	
Assumed New Bonds	0	0	0	0	0	0	0	0	0	0	0	
State Revolving Fund	0	0	0	0	0	0	0	0	0	0	0	
Unfunded	0	0	0	0	0	0	0	0	0	0	0	
New Debt	0	0	0	0	0	0	0	0	0	0	0	Calculated
Total Funding Sources	\$3,217,574	\$10,485,630	\$4,000,000	\$2,161,669	\$238,154	\$126,540	\$0	\$0	\$0	\$0	\$0	
Rate Funded Capital	\$2,325,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,500,000	\$2,550,000	\$2,600,000	\$2,650,000	\$2,700,000	\$2,750,000	

Tahoe City PUD
 Water Cost of Service
 Exhibit 5
 Debt Service

Year	WTP SRF	Zion Bank Loan	Bank of America	Total
2019	\$0	\$44,957	\$43,661	\$88,617
2020	0	44,957	0	44,957
2021	735,127	22,478	0	757,606
2022	735,127	0	0	735,127
2023	735,127	0	0	735,127
2024	735,127	0	0	735,127
2025	735,127	0	0	735,127
2026	735,127	0	0	735,127
2027	735,127	0	0	735,127
2028	735,127	0	0	735,127
2029	735,127	0	0	735,127
2030	735,127	0	0	735,127
2031	735,127	0	0	735,127
2032	735,127	0	0	735,127
2033	735,127	0	0	735,127
2034	735,127	0	0	735,127
2035	735,127	0	0	735,127
2036	735,127	0	0	735,127
2037	735,127	0	0	735,127
2038	735,127	0	0	735,127
2039	735,127	0	0	735,127
2040	735,127	0	0	735,127
2041	0	0	0	0
2042	0	0	0	0
2043	0	0	0	0
	\$14,702,544	\$112,392	\$43,661	\$14,858,597

Tahoe City PUD
Water Revenue Requirement Rate Study
Exhibit 6
Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Residential														
Base Charge			\$6.00											
Meter Size	\$ / Mo													
3/4"	\$74.50	3,839	3,839	3,839	3,839	3,839	3,839	3,839	3,839	3,839	3,839	3,839	3,839	
1"	112.25	106	106	106	106	106	106	106	106	106	106	106	106	
1 1/4"	145.00	1	1	1	1	1	1	1	1	1	1	1	1	
1 1/2"	172.25	8	8	8	8	8	8	8	8	8	8	8	8	
2"	232.00	9	9	9	9	9	9	9	9	9	9	9	9	
2 1/2"	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
3"	350.75	0	0	0	0	0	0	0	0	0	0	0	0	
4"	462.00	0	0	0	0	0	0	0	0	0	0	0	0	
6"	693.50	0	0	0	0	0	0	0	0	0	0	0	0	
8"	0.00	0	0	0	0	0	0	0	0	0	0	0	0	
CFS - 3/4"	102.60	0	0	0	0	0	0	0	0	0	0	0	0	
CFS - 1"	112.00	0	0	0	0	0	0	0	0	0	0	0	0	
CFS - 1.5"	168.45	0	0	0	0	0	0	0	0	0	0	0	0	
CFS - 2"	187.15	0	0	0	0	0	0	0	0	0	0	0	0	
CFS - >2"	<i>as determined</i>	0	0	0	0	0	0	0	0	0	0	0	0	
		3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	3,963	
<i>Total Base Charge Revenue</i>		\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$301,515	\$3,618,180	
Consumption Charge	\$ / 1,000 Gal													
0 - 8,000 gal	\$2.68	9,111	6,778	6,429	6,755	9,965	16,772	21,022	20,958	18,613	13,619	7,997	4,191	142,210
8,000 - 20,000 gal	3.64	639	358	502	386	2,256	8,813	13,477	13,311	11,458	4,686	852	286	57,024
20,000 - 40,000 gal	5.32	241	108	416	239	1,089	3,801	7,777	7,583	6,363	2,053	308	187	30,162
40,000 + gal	8.25	105	30	811	222	735	2,861	5,020	5,054	5,190	1,502	136	246	21,913
		10,095	7,274	8,157	7,603	14,045	32,247	47,295	46,906	41,624	21,861	9,293	4,910	251,310
<i>Total Consumption Charge Revenue</i>		\$28,891	\$20,288	\$27,953	\$22,612	\$46,776	\$120,854	\$188,178	\$186,657	\$168,261	\$76,873	\$27,297	\$15,300	\$929,940
Total Residential Revenue		\$330,406	\$321,803	\$329,468	\$324,127	\$348,291	\$422,369	\$489,693	\$488,172	\$469,776	\$378,388	\$328,812	\$316,815	\$4,548,120

Tahoe City PUD
Water Revenue Requirement Rate Study
Exhibit 6
Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Commercial													
Base Charge													
Meter Size	\$ / Mo												
3/4"	95	95	95	95	95	95	95	95	95	95	95	95	95
1"	44	44	44	44	44	44	44	44	44	44	44	44	44
1 1/4"	1	1	1	1	1	1	1	1	1	1	1	1	1
1 1/2"	24	24	24	24	24	24	24	24	24	24	24	24	24
2"	24	24	24	24	24	24	24	24	24	24	24	24	24
2 1/2"	0	0	0	0	0	0	0	0	0	0	0	0	0
3"	1	1	1	1	1	1	1	1	1	1	1	1	1
4"	0	0	0	0	0	0	0	0	0	0	0	0	0
6"	4	4	4	4	4	4	4	4	4	4	4	4	4
8"	0	0	0	0	0	0	0	0	0	0	0	0	0
CFS - 3/4"	0	0	0	0	0	0	0	0	0	0	0	0	0
CFS - 1"	0	0	0	0	0	0	0	0	0	0	0	0	0
CFS - 1.5"	0	0	0	0	0	0	0	0	0	0	0	0	0
CFS - 2"	0	0	0	0	0	0	0	0	0	0	0	0	0
CFS - >2"	0	0	0	0	0	0	0	0	0	0	0	0	0
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	193	193	193	193	193	193	193	193	193	193	193	193	193
<i>Total Base Charge Revenue</i>	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$30,435	\$365,220
Consumption Charge													
	\$ / 1,000 Gal												
All Usage	4,013	3,219	3,020	2,853	3,921	7,958	10,592	10,478	9,710	8,198	3,630	2,939	70,531
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	4,013	3,219	3,020	2,853	3,921	7,958	10,592	10,478	9,710	8,198	3,630	2,939	70,531
<i>Total Consumption Charge Revenue</i>	\$27,045	\$21,693	\$20,354	\$19,230	\$26,428	\$53,634	\$71,392	\$70,622	\$65,448	\$55,258	\$24,466	\$19,811	\$475,379
Total Commercial Revenue	\$57,480	\$52,128	\$50,789	\$49,665	\$56,863	\$84,069	\$101,827	\$101,057	\$95,883	\$85,693	\$54,901	\$50,246	\$840,599

Tahoe City PUD
 Water Revenue Requirement Rate Study
 Exhibit 6
 Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Fireline													
Base Charge													
Meter Size	\$ / Mo												
CFS - 3/4"		0	0	0	0	0	0	0	0	0	0	0	0
CFS - 1"		0	0	0	0	0	0	0	0	0	0	0	0
CFS - 1.5"		0	0	0	0	0	0	0	0	0	0	0	0
CFS - 2"		0	0	0	0	0	0	0	0	0	0	0	0
CFS - >2"		0	0	0	0	0	0	0	0	0	0	0	0
Private Fire - \$ / Inch	\$37.50												
3/4"	10	10	10	10	10	10	10	10	10	10	10	10	10
1"	32	32	32	32	32	32	32	32	32	32	32	32	32
1 1/4"	4	4	4	4	4	4	4	4	4	4	4	4	4
1 1/2"	28	28	28	28	28	28	28	28	28	28	28	28	28
2"	80	80	80	80	80	80	80	80	80	80	80	80	80
3"	1	1	1	1	1	1	1	1	1	1	1	1	1
4"	20	20	20	20	20	20	20	20	20	20	20	20	20
6"	13	13	13	13	13	13	13	13	13	13	13	13	13
8"	2	2	2	2	2	2	2	2	2	2	2	2	2
10"	1	1	1	1	1	1	1	1	1	1	1	1	1
Fire Hydrant - \$ / Inch	\$37.50												
2"	9	9	9	9	9	9	9	9	9	9	9	9	9
4"	0	0	0	0	0	0	0	0	0	0	0	0	0
6"	9	9	9	9	9	9	9	9	9	9	9	9	9
	209	209	209	209	209	209	209	209	209	209	209	209	209
Total Base Charge Revenue	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$227,475
Total Fireline Revenue	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$18,956	\$227,475

Tahoe City PUD
 Water Revenue Requirement Rate Study
 Exhibit 6
 Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Madden Creek														
Base Charge														
Meter Size	\$ / Mo													
Year Round SFR	\$56.39	116	116	116	116	116	116	116	116	116	116	116	116	116
Seasonal SFR	41.90	19	19	19	19	19	19	19	19	19	19	19	19	19
Yr Round SFR +2nd Unit	88.71	16	16	16	16	16	16	16	16	16	16	16	16	16
3/4"	26.61	7	7	7	7	7	7	7	7	7	7	7	7	7
1"	44.36	18	18	18	18	18	18	18	18	18	18	18	18	18
1.5"	53.23	2	2	2	2	2	2	2	2	2	2	2	2	2
2"	70.97	0	0	0	0	0	0	0	0	0	0	0	0	0
4"	212.92	2	2	2	2	2	2	2	2	2	2	2	2	2
		180	180	180	180	180	180	180	180	180	180	180	180	180
<i>Total Base Charge Revenue</i>	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$10,274	\$123,285
Consumption Charge														
	\$ / 1,000 Gal													
All Usage	\$2.56	0	3	2	1	10,201	4	9	7	4,400	2	365	2,133	17,128
		0	3	2	1	10,201	4	9	7	4,400	2	365	2,133	17,128
<i>Total Consumption Charge Revenue</i>	\$0	\$7	\$6	\$3	\$26,116	\$11	\$22	\$18	\$11,265	\$6	\$934	\$5,460	\$43,848	
Total Madden Creek Revenue	\$10,274	\$10,281	\$10,280	\$10,277	\$36,389	\$10,285	\$10,296	\$10,291	\$21,538	\$10,280	\$11,208	\$15,733	\$167,133	

Tahoe City PUD
 Water Revenue Requirement Rate Study
 Exhibit 6
 Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Tahoe Cedars														
Base Charge														
Meter Size	\$ / Mo													
Year Round SFR	\$44.06	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129	1,129
Seasonal SFR	40.97	26	26	26	26	26	26	26	26	26	26	26	26	26
Yr Round SFR +2nd Unit	71.99	24	24	24	24	24	24	24	24	24	24	24	24	24
Yr Round SFR +2 Unit	99.92	8	8	8	8	8	8	8	8	8	8	8	8	8
3/4"	35.28	2	2	2	2	2	2	2	2	2	2	2	2	2
1"	54.88	24	24	24	24	24	24	24	24	24	24	24	24	24
2"	105.93	1	1	1	1	1	1	1	1	1	1	1	1	1
4"	248.01	3	3	3	3	3	3	3	3	3	3	3	3	3
1" Fireline	38.94	2	2	2	2	2	2	2	2	2	2	2	2	2
2" Fireline	77.88	1	1	1	1	1	1	1	1	1	1	1	1	1
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220	1,220
<i>Total Base Charge Revenue</i>		\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$55,729	\$668,754
Consumption Charge														
	\$ / 1,000 Gal													
All Usage	\$2.66	0	0	0	0	1,587	4	10	4,582	6,717	716	169	1,180	14,965
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		0	0	0	0	1,587	4	10	4,582	6,717	716	169	1,180	14,965
<i>Total Consumption Charge Revenue</i>		\$0	\$0	\$0	\$0	\$4,222	\$10	\$27	\$12,189	\$17,868	\$1,905	\$449	\$3,139	\$39,808
Total Tahoe Cedars Revenue		\$55,729	\$55,729	\$55,729	\$55,729	\$59,952	\$55,739	\$55,756	\$67,918	\$73,597	\$57,634	\$56,178	\$58,868	\$708,562

Tahoe City PUD
 Water Revenue Requirement Rate Study
 Exhibit 6
 Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Timberland														
Base Charge														
Meter Size	\$ / Mo													
SFR	\$81.02	104	104	104	104	104	104	104	104	104	104	104	104	104
SFR + 2nd Unit	131.20	4	4	4	4	4	4	4	4	4	4	4	4	4
3/4"	41.31	17	17	17	17	17	17	17	17	17	17	17	17	17
1"	62.00	8	8	8	8	8	8	8	8	8	8	8	8	8
1.5"	103.42	0	0	0	0	0	0	0	0	0	0	0	0	0
2"	206.83	3	3	3	3	3	3	3	3	3	3	3	3	3
3"	418.75	1	1	1	1	1	1	1	1	1	1	1	1	1
4"	553.75	0	0	0	0	0	0	0	0	0	0	0	0	0
1" Fireline	17.18	2	2	2	2	2	2	2	2	2	2	2	2	2
2" Fireline	34.36	4	4	4	4	4	4	4	4	4	4	4	4	4
		143	143	143	143	143	143	143	143	143	143	143	143	143
<i>Total Base Charge Revenue</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$11,360</i>	<i>\$136,322</i>
Consumption Charge														
	\$ / 1,000 Gal													
All Usage	\$4.11	0	80	27	16	701	633	175	176	3,842	90	21	982	6,744
		0	80	27	16	701	633	175	176	3,842	90	21	982	6,744
<i>Total Consumption Charge Revenue</i>	<i>\$0</i>	<i>\$329</i>	<i>\$112</i>	<i>\$67</i>	<i>\$2,881</i>	<i>\$2,600</i>	<i>\$720</i>	<i>\$725</i>	<i>\$15,792</i>	<i>\$369</i>	<i>\$87</i>	<i>\$4,036</i>	<i>\$27,717</i>	
Total Timberland Revenue	\$11,360	\$11,689	\$11,472	\$11,427	\$14,241	\$13,960	\$12,080	\$12,085	\$27,152	\$11,730	\$11,447	\$15,396	\$164,039	

Tahoe City PUD
 Water Cost of Service
 Exhibit 7
 Commodity Distribution Factor

	Metered Consumption (1,000 gal)	Unmetered Consumption (1,000 gal)	7.5% Losses	Net Water Delivered (Use + Losses)	Base Consumption (MGD)	% of Total
Residential						78.1%
Tier 1	142,210	0	10,666	152,876	0.42	44.2%
Tier 2	57,024	0	4,277	61,301	0.17	17.7%
Tier 3	30,162	0	2,262	32,425	0.09	9.4%
Tier 4	21,913	0	1,644	23,557	0.06	6.8%
Commercial	70,531	0	5,290	75,821	0.21	21.9%
Fireline	0	0	0	0	0.00	0.0%
Total	321,841	0	24,138	345,979	0.95	100.0%
			<i>Annual Production</i> ^[1]		1.53	
Distribution Factor						(COM)

Notes

[1] - Production for 2018 for the City; does not include Madden, TC, or Timberland

Tahoe City PUD
 Water Cost of Service
 Exhibit 8
 Capacity Distribution Factor

	Average Consumption (MGD)	Peaking Factors ^[1]	Peak Day Use (MGD)	% of Total
Residential				73.9%
Tier 1	0.42	1.93	0.81	35.2%
Tier 2	0.17	2.62	0.44	19.1%
Tier 3	0.09	2.88	0.26	11.1%
Tier 4	0.06	3.01	0.19	8.5%
Commercial	0.21	2.31	0.48	20.9%
Fireline	0.00	0.00	0.12	5.2%
	-----		-----	-----
Total	0.95		2.30	100.0%
		Historical Peak Day ^[2]	3.63	

Distribution Factor (CAP)

Notes

[1] - Based on

[2] - For 2018 provided by TCPUD

Tahoe City PUD
 Water Cost of Service
 Exhibit 9
 Customer Distribution Factor

	<i>Actual Customer</i>		<i>Customer Service & Accounting</i>			<i>Meters & Services Capacity Demand</i>	
	Number of Meters	% of Total	Weighting Factor	Weighted Customer	% of Total	Weighted Customer	% of Total
Residential	3,963	90.8%	1.00	3,963	90.8%	4,093	84.8%
Commercial	193	4.4%	1.00	193	4.4%	522	10.8%
Fireline	209	4.8%	1.00	209	4.8%	209	4.3%
Total	4,365	100.0%		4,365	100.0%	\$4,824	100.0%
<i>Distribution Factor</i>		<i>(AC)</i>			<i>(WCA)</i>		<i>(WCMS)</i>

Development of the Weighted Meter Distribution Factor

	3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	Total
Residential	3,839	106	1	8	9	0	0	0	0	0	3,963
Commercial	95	44	1	24	24	1	0	4	0	0	193
Fireline w/hydrant	10	32	4	28	89	1	20	22	2	1	209
<i>Equivalent Meters</i> ^[1]	<i>1.00</i>	<i>1.67</i>	<i>2.50</i>	<i>3.33</i>	<i>5.33</i>	<i>10.00</i>	<i>16.67</i>	<i>33.33</i>	<i>53.33</i>	<i>76.67</i>	
Residential	3,839	177	3	27	48	0	0	0	0	0	4,093
Commercial	95	73	3	80	128	10	0	133	0	0	522
Fireline w/hydrant	10	53	10	93	474	10	333	733	107	77	1,901
	3,944	304	15	200	650	20	333	867	107	77	6,516

Notes

[1] - Based on the meter safe operation capacity from the AWWA M1 Manual, 7th Edition, page 386

Tahoe City PUD
 Water Cost of Service
 Exhibit 10
 Fire Protection Distribution Factor

	Number of Meters	Fire Prot. Requirements (gals/min) ^[1]	Duration (minutes) ^[1]	Total FP Requirements (1,000 g/min)	% of Total
Residential	3,963	1,000	60	237,780	87.3%
Commercial	193	1,500	120	34,740	12.7%
Fireline	209	0	0	0	0.0%
Total	4,365			272,520	100.0%

Distribution Factor (FP)

Private Fire					Public Fire - Hydrants				
Connection Size	# of Connections	Factor ^[2]	Equivalent Services	% of Total	Hydrant Size	# of Hydrants	Factor ^[2]	Equivalent Services	% of Total
3/4"	10	1.00	10	0.2%	3/4"	0	1.00	0	0.0%
1"	36	1.00	36	0.7%	1"	0	1.00	0	0.0%
1 1/4"	4	1.00	4	0.1%	1 1/4"	0	1.00	0	0.0%
1 1/2"	28	2.90	81	1.7%	1 1/2"	0	2.90	0	0.0%
2"	85	6.19	526	10.9%	2"	0	6.19	0	0.0%
3"	1	17.98	18	0.4%	3"	0	17.98	0	0.0%
4"	20	38.32	766	15.8%	4"	0	38.32	0	0.0%
6"	13	111.31	1,447	29.9%	6"	540	111.31	60,107	100.0%
8"	2	237.21	474	9.8%	8"	0	237.21	0	0.0%
10"	1	426.58	427	8.8%	10"	0	426.58	0	0.0%
hydrants									
2"	9	6.19	56	1.1%					
4"	0	38.32	0	0.0%					
6"	9	111.31	1,002	20.7%					
	218		4,847	100.0%		540		60,107	100.0%
				7.5%					92.5%
Distribution Factor				(PVFP)					(PBFP)

Notes

[1] - Based on Industry Standard Fire Protection Requirements
 [2] - Based on demand factors from the AWWA M1 Manual, 7th Edition, page 163

Tahoe City PUD
 Water Cost of Service
 Exhibit 11
 Revenue Related Distribution Factor

	Projected 2020	% of Total
Residential	\$4,570,861	81.0%
Commercial	844,802	15.0%
Fireline	228,612	4.1%
	-----	-----
Total	\$5,644,275	100.0%
 <i>Distribution Factor</i>		 <i>(RR)</i>

Tahoe City PUD
Water Cost of Service
Exhibit 12
Net Plant in Service

	Plant 2017	<i>Customer Related</i>									<i>Basis of Classification</i>
		Commodity (COM)	Capacity (CAP)	Actual Customer (AC)	Cust. Acctg. (WCA)	Meters & Services (WCMS)	Capacity Demand (CD)	Fire Protection (FP)	Revenue Related (RR)	Direct Assign. (DA)	
Source of Supply											
Buildings / Land	\$49,768	\$20,952	\$9,221	\$0	\$0	\$0	\$19,595	\$0	\$0	\$0	42.1% COM 57.9% CAP / CD
Wells	2,853,855	1,201,473	528,762	0	0	0	1,123,620	0	0	0	42.1% COM 57.9% CAP / CD
Equipment	15,797	6,651	2,927	0	0	0	6,220	0	0	0	42.1% COM 57.9% CAP / CD
Total Source of Supply	\$2,903,623	\$1,222,425	\$537,983	\$0	\$0	\$0	\$1,143,214	\$0	\$0	\$0	
Transmission & Distribution											
Meters	\$1,786,140	\$0	\$0	\$0	\$0	\$1,786,140	\$0	\$0	\$0	\$0	100.0% WCMS
Hydrants	350,983	0	0	0	0	0	0	350,983	0	0	100.0% FP
Buildings / Land	1,000	0	278	0	0	0	590	132	0	0	24.0% AC 62.8% CAP / CD 13.2% FP
Mains	14,819,064	0	4,113,895	0	0	0	8,742,027	1,963,141	0	0	24.0% AC 62.8% CAP / CD 13.2% FP
Tanks	2,635,316	0	0	0	0	0	1,436,277	1,199,039	0	0	45.5% FP 54.5% CAP / CD
Pump Stations	184,298	77,589	34,147	0	0	0	72,562	0	0	0	42.1% COM 57.9% CAP / CD
SCADA	89,632	37,735	16,607	0	0	0	35,290	0	0	0	42.1% COM 57.9% CAP / CD
Total Transmission & Distribution	\$19,866,433	\$115,325	\$4,164,927	\$0	\$0	\$1,786,140	\$10,286,746	\$3,513,296	\$0	\$0	
Plant Before General Plant	\$22,770,056	\$1,337,750	\$4,702,910	\$0	\$0	\$1,786,140	\$11,429,960	\$3,513,296	\$0	\$0	
<i>Percent Plant Before General Plant</i>	<i>100.0%</i>	<i>5.9%</i>	<i>20.7%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>7.8%</i>	<i>50.2%</i>	<i>15.4%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>Factor PBG</i>
General Plant											
Equipment	\$212,021	\$12,456	\$43,791	\$0	\$0	\$16,631	\$106,429	\$32,714	\$0	\$0	As Factor PBG
Engineering	167,412	9,836	34,577	0	0	13,132	84,036	25,831	0	0	As Factor PBG
Water / Sewer Equipment	220,887	12,977	45,622	0	0	17,327	110,879	34,082	0	0	As Factor PBG
Water / Sewer Vehicles	636,081	37,370	131,376	0	0	49,896	319,296	98,144	0	0	As Factor PBG
Total General Plant	\$1,236,401	\$72,639	\$255,365	\$0	\$0	\$96,986	\$620,640	\$190,770	\$0	\$0	
Total Plant in Service	\$24,006,457	\$1,410,389	\$4,958,275	\$0	\$0	\$1,883,126	\$12,050,600	\$3,704,066	\$0	\$0	

Tahoe City PUD
 Water Cost of Service
 Exhibit 13
 Distribution System Analysis

Fire Protection			
	Tank Capacity	Fire Related	Total Fire Related
Upper Highlands	1,071,000	25.0%	267,750
Highlands	522,000	50.0%	261,000
Rocky Ridge	449,000	50.0%	224,500
Bunker (Old)	409,000	50.0%	204,500
Bunker (New)	1,279,525	50.0%	639,763
Tahoe Tavern	466,000	50.0%	233,000
Four Seasons	418,000	50.0%	209,000
Riley's	453,000	50.0%	226,500
Quail	343,000	50.0%	171,500
Rubicon # 1	168,000	50.0%	84,000
Rubicon # 2	301,000	50.0%	150,500
Rubicon # 3	69,000	50.0%	34,500
	5,948,525		2,706,513
% Public Fire Protection			45.5%
% Capacity			54.5%

Source of Supply			
Average Day	1.53	COM	42.1%
Peak Day	3.63	(1-COM) = (57.9%

Distribution Main Analysis			
Main Size	Length (ft)	Replcmt \$	Total
1.5"	2,117	\$5.00	\$10,586
2"	9,281	6.75	62,648
2.5"	2,784	9.11	25,365
3"	1,902	12.30	23,392
4"	31,404	16.61	521,549
6"	170,559	22.42	3,823,970
8"	71,237	30.27	2,156,160
10"	27,743	40.86	1,133,583
12"	40,724	55.16	2,246,426
14"	154	74.47	11,476
Total	357,906		\$10,015,155
Customer			24.0%
(1) Total @ 2" & < Equip		\$2,415,863	
Capacity			62.8%
(2) Cost for 1.5-6"		\$4,467,511	
(3) Equip 8" for larger		4,233,122	
Fire Protection			13.2%

Tahoe City PUD
 Water Cost of Service
 Exhibit 14
 Allocation of the Revenue Requirement

Test Year 2020	Commodity (COM)	Capacity (CAP)	Customer Related				Fire Protection (FP)	Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification	
			Actual Customer (AC)	Cust. Acctg. (WCA)	Meters & Services (WCMS)	Capacity Demand (CD)					
Water Production											
Personnel Cost											
Salaries - Full Time Classic	\$317,947	\$133,856	\$58,909	\$0	\$0	\$0	\$125,182	\$0	\$0	\$0	As Source of Supply
Salaries - Full Time - PEPR	103,136	43,420	19,109	0	0	0	40,607	0	0	0	As Source of Supply
Salaries - OT	12,754	5,370	2,363	0	0	0	5,022	0	0	0	As Source of Supply
Salaries - Part Time	0	0	0	0	0	0	0	0	0	0	As Source of Supply
New Position - Classic	14,882	6,265	2,757	0	0	0	5,859	0	0	0	As Source of Supply
Employee Benefits - Pension-CLASSIC + DC	113,098	47,614	20,955	0	0	0	44,529	0	0	0	As Source of Supply
Employee Benefits - Pension-PEPRA + DC	9,774	4,115	1,811	0	0	0	3,848	0	0	0	As Source of Supply
Employee Benefits - FICA	34,110	14,360	6,320	0	0	0	13,430	0	0	0	As Source of Supply
Employee Benefits - OPEB	20,749	8,735	3,844	0	0	0	8,169	0	0	0	As Source of Supply
Employee Benefits - SUI	4,340	1,827	804	0	0	0	1,709	0	0	0	As Source of Supply
Employee Benefits - Life / LTD / Flex	2,599	1,094	482	0	0	0	1,023	0	0	0	As Source of Supply
Worker's Comp	16,816	7,080	3,116	0	0	0	6,621	0	0	0	As Source of Supply
ACA Excise Tax - effective 2022	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Employee Assistance Fund	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Benefits-Dental	5,959	2,509	1,104	0	0	0	2,346	0	0	0	As Source of Supply
Benefits-Vision	1,249	526	231	0	0	0	492	0	0	0	As Source of Supply
Benefits - Health	57,735	24,306	10,697	0	0	0	22,731	0	0	0	As Source of Supply
Total Personnel Cost	\$715,149	\$301,078	\$132,503	\$0	\$0	\$0	\$281,568	\$0	\$0	\$0	
Professional Services											
Consultants Fees	\$18,153	\$7,642	\$3,363	\$0	\$0	\$0	\$7,147	\$0	\$0	\$0	As Source of Supply
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Legal Fees	5,150	2,168	954	0	0	0	2,028	0	0	0	As Source of Supply
Total Professional Services	\$23,303	\$9,811	\$4,318	\$0	\$0	\$0	\$9,175	\$0	\$0	\$0	
Charges & Services											
Advertising and Printing	\$8,137	\$3,426	\$1,508	\$0	\$0	\$0	\$3,204	\$0	\$0	\$0	As Source of Supply
Bank Charges V/MC Fees	12,153	5,116	2,252	0	0	0	4,785	0	0	0	As Source of Supply
Cash Over/short	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Community Promotion	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Conservation	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Directors Fees & Benefits	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Dues, Subscriptions & Pubs.	17,731	7,465	3,285	0	0	0	6,981	0	0	0	As Source of Supply
Employee Morale	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Equipment Rental	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Fees and Permits	54,384	22,896	10,076	0	0	0	21,412	0	0	0	As Source of Supply
Meeting, Training & Travel	4,190	1,764	776	0	0	0	1,650	0	0	0	As Source of Supply
Mileage Reimbursement	260	109	48	0	0	0	102	0	0	0	As Source of Supply
Other Purchased Services	16,728	7,042	3,099	0	0	0	6,586	0	0	0	As Source of Supply
R & M Contracts	0	0	0	0	0	0	0	0	0	0	As Source of Supply
Snow Removal	11,330	4,770	2,099	0	0	0	4,461	0	0	0	As Source of Supply
Software & Maintenance	2,759	1,162	511	0	0	0	1,086	0	0	0	As Source of Supply
Telemetry	5,562	2,342	1,031	0	0	0	2,190	0	0	0	As Source of Supply
Water Quality Analysis	4,120	1,735	763	0	0	0	1,622	0	0	0	As Source of Supply
Total Charges & Services	\$137,354	\$57,826	\$25,449	\$0	\$0	\$0	\$54,079	\$0	\$0	\$0	

Tahoe City PUD
Water Cost of Service
Exhibit 14
Allocation of the Revenue Requirement

Test Year 2020	Commodity (COM)	Capacity (CAP)	Customer Related				Fire Protection (FP)	Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification	
			Actual Customer (AC)	Cust. Acctg. (WCA)	Meters & Services (WCMS)	Capacity Demand (CD)					
Materials & Supplies											
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	As Source of Supply	
Cost of Goods Sold	0	0	0	0	0	0	0	0	0	As Source of Supply	
Meeting Food	0	0	0	0	0	0	0	0	0	As Source of Supply	
Miscellaneous	2,633	1,108	488	0	0	0	1,037	0	0	As Source of Supply	
Postage	9,326	3,926	1,728	0	0	0	3,672	0	0	As Source of Supply	
R & M Equipment	13,390	5,637	2,481	0	0	0	5,272	0	0	As Source of Supply	
R & M Facility	85,000	35,785	15,749	0	0	0	33,466	0	0	As Source of Supply	
Small Equipment Expense	12,051	5,073	2,233	0	0	0	4,745	0	0	As Source of Supply	
Supplies	19,570	8,239	3,626	0	0	0	7,705	0	0	As Source of Supply	
Vehicle - TV Van & Vactor	0	0	0	0	0	0	0	0	0	As Source of Supply	
Vehicle Expense	18,300	7,704	3,391	0	0	0	7,205	0	0	As Source of Supply	
Insurance	12,471	5,250	2,311	0	0	0	4,910	0	0	As Source of Supply	
Telephone	2,369	997	439	0	0	0	933	0	0	As Source of Supply	
Utilities	205,518	205,518	0	0	0	0	0	0	0	100.0% COM	
Total Materials & Supplies	\$380,628	\$279,239	\$32,444	\$0	\$0	\$0	\$68,944	\$0	\$0	\$0	
Governance & Admin Services	\$328,375	\$0	\$0	\$0	\$0	\$0	\$328,375	\$0	\$0	\$0 100.0% CD	
Engineering / Technology Svcs / GIS Allocation	\$537,327	\$219,688	\$66,017	\$0	\$0	\$0	\$251,622	\$0	\$0	\$0 As Above Water Production	
Total Water Production	\$2,122,136	\$867,641	\$260,731	\$0	\$0	\$0	\$993,764	\$0	\$0	\$0	
Water Storage, Transmission, & Distribution											
Personnel Cost											
Salaries - Full Time Classic	\$436,180	\$2,532	\$91,444	\$0	\$0	\$39,216	\$225,852	\$77,137	\$0	\$0	As T&D Plant
Salaries - Full Time - PEPR	141,487	821	29,662	0	0	12,721	73,261	25,021	0	0	As T&D Plant
Salaries - OT	19,438	113	4,075	0	0	1,748	10,065	3,437	0	0	As T&D Plant
Salaries - Part Time	55,195	320	11,571	0	0	4,962	28,580	9,761	0	0	As T&D Plant
New Position - Classic	14,882	86	3,120	0	0	1,338	7,706	2,632	0	0	As T&D Plant
Employee Benefits -Pension-CLASSIC + DC	153,263	890	32,131	0	0	13,779	79,359	27,104	0	0	As T&D Plant
Employee Benefits -Pension-PEPRA + DC	13,408	78	2,811	0	0	1,205	6,943	2,371	0	0	As T&D Plant
Employee Benefits -FICA	46,518	270	9,752	0	0	4,182	24,087	8,227	0	0	As T&D Plant
Employee Benefits - OPEB	28,200	164	5,912	0	0	2,535	14,602	4,987	0	0	As T&D Plant
Employee Benefits -SUI	4,557	26	955	0	0	410	2,360	806	0	0	As T&D Plant
Employee Benefits -Life / LTD / Flex	3,533	21	741	0	0	318	1,829	625	0	0	As T&D Plant
Worker's Comp	24,936	145	5,228	0	0	2,242	12,912	4,410	0	0	As T&D Plant
ACA Excise Tax - effective 2022	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Employee Assistance Fund	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Benefits-Dental	6,671	39	1,399	0	0	600	3,454	1,180	0	0	As T&D Plant
Benefits-Vision	1,385	8	290	0	0	125	717	245	0	0	As T&D Plant
Benefits - Health	109,016	633	22,855	0	0	9,801	56,448	19,279	0	0	As T&D Plant
Total Personnel Cost	\$1,058,669	\$6,146	\$221,946	\$0	\$0	\$95,182	\$548,174	\$187,221	\$0	\$0	

Tahoe City PUD
Water Cost of Service
Exhibit 14
Allocation of the Revenue Requirement

Test Year	Commodity (COM)	Capacity (CAP)	Customer Related				Fire Protection (FP)	Revenue Related (RR)	Direct Assign. (DA)	Basis of Classification	
			Actual Customer (AC)	Cust. Acctg. (WCA)	Meters & Services (WCMS)	Capacity Demand (CD)					
2020											
Professional Services											
Consultants Fees	\$38,753	\$225	\$8,124	\$0	\$0	\$3,484	\$20,066	\$6,853	\$0	\$0	As T&D Plant
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Legal Fees	3,605	21	756	0	0	324	1,867	638	0	0	As T&D Plant
Total Professional Services	\$42,358	\$246	\$8,880	\$0	\$0	\$3,808	\$21,933	\$7,491	\$0	\$0	
Charges & Services											
Advertising and Printing	\$9,013	\$52	\$1,890	\$0	\$0	\$810	\$4,667	\$1,594	\$0	\$0	As T&D Plant
Bank Charges V/MC Fees	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Cash Over/short	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Community Promotion	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Conservation	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Directors Fees & Benefits	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Dues, Subscriptions & Pubs.	17,731	103	3,717	0	0	1,594	9,181	3,136	0	0	As T&D Plant
Employee Morale	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Equipment Rental	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Fees and Permits	18,944	110	3,972	0	0	1,703	9,809	3,350	0	0	As T&D Plant
Meeting, Training & Travel	4,190	24	878	0	0	377	2,170	741	0	0	As T&D Plant
Mileage Reimbursement	260	2	55	0	0	23	135	46	0	0	As T&D Plant
Other Purchased Services	15,082	88	3,162	0	0	1,356	7,809	2,667	0	0	As T&D Plant
R & M Contracts	27,040	157	5,669	0	0	2,431	14,001	4,782	0	0	As T&D Plant
Snow Removal	7,725	45	1,620	0	0	695	4,000	1,366	0	0	As T&D Plant
Software & Maintenance	2,850	17	597	0	0	256	1,476	504	0	0	As T&D Plant
Telemetry	5,459	32	1,144	0	0	491	2,827	965	0	0	As T&D Plant
Water Quality Analysis	13,390	13,390	0	0	0	0	0	0	0	0	100.0% COM
Total Charges & Services	\$121,684	\$14,019	\$22,703	\$0	\$0	\$9,736	\$56,074	\$19,151	\$0	\$0	
Materials & Supplies											
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	As T&D Plant
Cost of Goods Sold	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Meeting Food	0	0	0	0	0	0	0	0	0	0	As T&D Plant
Miscellaneous	2,060	12	432	0	0	185	1,067	364	0	0	As T&D Plant
Postage	10,341	60	2,168	0	0	930	5,355	1,829	0	0	As T&D Plant
R & M Equipment	118,450	688	24,833	0	0	10,650	61,333	20,947	0	0	As T&D Plant
R & M Facility	31,000	180	6,499	0	0	2,787	16,052	5,482	0	0	As T&D Plant
Small Equipment Expense	25,750	149	5,398	0	0	2,315	13,333	4,554	0	0	As T&D Plant
Supplies	56,650	329	11,876	0	0	5,093	29,333	10,018	0	0	As T&D Plant
Vehicle - TV Van & Vactor	8,642	50	1,812	0	0	777	4,475	1,528	0	0	As T&D Plant
Vehicle Expense	18,292	106	3,835	0	0	1,645	9,472	3,235	0	0	As T&D Plant
Insurance	18,756	109	3,932	0	0	1,686	9,712	3,317	0	0	As T&D Plant
Telephone	3,090	18	648	0	0	278	1,600	546	0	0	As T&D Plant
Utilities	67,556	67,556	0	0	0	0	0	0	0	0	100.0% COM
Total Materials & Supplies	\$360,587	\$69,257	\$61,433	\$0	\$0	\$26,346	\$151,730	\$51,821	\$0	\$0	

	Test Year 2020	Customer Related								Direct Assign. (DA)	Basis of Classification
		Commodity (COM)	Capacity (CAP)	Actual Customer (AC)	Cust. Acctg. (WCA)	Meters & Services (WCMS)	Capacity Demand (CD)	Fire Protection (FP)	Revenue Related (RR)		
Governance & Admin Services	\$413,175	\$0	\$0	\$0	\$0	\$0	\$413,175	\$0	\$0	\$0	100.0% CD
Engineering / Technology Svcs / GIS Allocation	\$676,088	\$3,925	\$141,739	\$0	\$0	\$60,785	\$350,075	\$119,563	\$0	\$0	As T&D Plant
Total Water Storage, Transmission, & Distribution	\$2,672,561	\$93,592	\$456,702	\$0	\$0	\$195,858	\$1,541,161	\$385,248	\$0	\$0	
Additional O&M - WTP	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	As Net Plant
Total Operation & Maintenance Expense	\$4,794,697	\$961,233	\$717,433	\$0	\$0	\$195,858	\$2,534,925	\$385,248	\$0	\$0	
Rate Funded Capital	\$2,500,000	\$0	\$0	\$0	\$0	\$0	\$2,500,000	\$0	\$0	\$0	As Net Plant
Debt Service											
WTP SRF	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	As Net Plant
Zion Bank Loan	44,957	2,641	9,285	0	0	3,527	22,567	6,937	0	0	As Net Plant
Bank of America	0	0	0	0	0	0	0	0	0	0	As Net Plant
New Debt	0	0	0	0	0	0	0	0	0	0	As Net Plant
Total Debt Service	\$44,957	\$2,641	\$9,285	\$0	\$0	\$3,527	\$22,567	\$6,937	\$0	\$0	
<i>Less: Property Tax Revenues</i>											
Portion of General Property Taxes	\$23,293	\$1,368	\$4,811	\$0	\$0	\$1,827	\$11,692	\$3,594	\$0	\$0	As Debt
Total Less: Property Tax Revenues	\$23,293	\$1,368	\$4,811	\$0	\$0	\$1,827	\$11,692	\$3,594	\$0	\$0	
Net Debt Service	\$21,664	\$1,273	\$4,474	\$0	\$0	\$1,699	\$10,875	\$3,343	\$0	\$0	
Reserve Funding											
Operating Reserve	(\$117,557)	(\$23,568)	(\$17,590)	\$0	\$0	(\$4,802)	(\$62,151)	(\$9,446)	\$0	\$0	As O&M Expenses
Capital Reserve	0	0	0	0	0	0	0	0	0	0	As O&M Expenses
Rolling Stock Reserve	0	0	0	0	0	0	0	0	0	0	As O&M Expenses
Property Tax Reserve	0	0	0	0	0	0	0	0	0	0	As O&M Expenses
Total Reserve Funding	(\$117,557)	(\$23,568)	(\$17,590)	\$0	\$0	(\$4,802)	(\$62,151)	(\$9,446)	\$0	\$0	
Total Revenue Requirement	\$7,198,804	\$938,938	\$704,318	\$0	\$0	\$2,692,755	\$2,483,648	\$379,145	\$0	\$0	
<i>Less: Miscellaneous Revenues</i>											
Penalties on delinquencies	\$45,186	\$0	\$0	\$0	\$0	\$45,186	\$0	\$0	\$0	\$0	100.0% WCMS
User Fee - Supplemental #6	21,665	0	0	0	0	21,665	0	0	0	0	100.0% WCMS
Grant Revenue	0	0	0	0	0	0	0	0	0	0	As Total Revenue Requirements
Other Non-Operating Revenue	0	0	0	0	0	0	0	0	0	0	As Total Revenue Requirements
Discounts Earned	0	0	0	0	0	0	0	0	0	0	As Total Revenue Requirements
Proceeds from Asset Sales	0	0	0	0	0	0	0	0	0	0	As Total Revenue Requirements
Other Operating Revenue	7,500	978	734	0	0	2,805	2,588	395	0	0	As Total Revenue Requirements
Interest Income	16,889	2,203	1,652	0	0	6,317	5,827	890	0	0	As Total Revenue Requirements
Rental Income	22,515	2,937	2,203	0	0	8,422	7,768	1,186	0	0	As Total Revenue Requirements
Madden Creek	177,161	23,107	17,333	0	0	66,268	61,122	9,331	0	0	As Total Revenue Requirements
Tahoe Cedars	751,075	97,963	73,484	0	0	280,944	259,127	39,557	0	0	As Total Revenue Requirements
Timberland	173,881	22,679	17,012	0	0	65,041	59,991	9,158	0	0	As Total Revenue Requirements
Total Miscellaneous Revenues	\$1,215,872	\$149,867	\$112,418	\$0	\$0	\$496,649	\$396,422	\$60,516	\$0	\$0	
Total Net Revenue Requirement	\$5,982,932	\$789,072	\$591,899	\$0	\$0	\$2,196,106	\$2,087,226	\$318,629	\$0	\$0	

Tahoe City PUD
 Water Cost of Service
 Exhibit 15
 Summary of the Distributed Volumetric Costs

	Total	<i>Residential</i>			
		Tier 1	Tier 2	Tier 3	Tier 4
Commodity	\$616,148	\$348,663	\$139,808	\$73,950	\$53,726
Capacity	\$437,452	\$72,997	\$81,451	\$94,513	\$188,491
Direct Assignment	\$0	\$0	\$0	\$0	\$0
Total	\$1,053,600	\$421,661	\$221,259	\$168,464	\$242,217

Tahoe City PUD
Water Cost of Service
Exhibit 16
Distribution of the Revenue Requirement

	Net Revenue Requirement	Residential	Commercial	Fireline	Allocation Factor
Commodity	\$789,072	\$616,148	\$172,924	\$0	(COM)
Capacity	\$591,899	\$437,452	\$123,550	\$30,897	(CAP)
Customer Related					
Actual Customer	\$0	\$0	\$0	\$0	(AC)
Wt. for Cust. Acctg.	0	0	0	0	(WCA)
Wt. for Meters & Services	2,196,106	1,863,276	237,689	95,141	(WCMS)
Wt. for Capacity Demand	2,087,226	1,770,897	225,904	90,424	(CD)
Total Customer Related	\$4,283,332	\$3,634,173	\$463,593	\$185,565	
Public Fire Protection Related	\$294,851	\$257,264	\$37,587	\$0	(PBFP)
Private Fire Protection Related	\$23,778	\$0	\$0	\$23,778	(PVFP)
Revenue Related	\$0	\$0	\$0	\$0	(RR)
Direct Assignment	\$0	\$0	\$0	\$0	(DA)
Revenue Requirement	\$5,982,932	\$4,945,038	\$797,654	\$240,240	

Tahoe City PUD
 Water Cost of Service
 Exhibit 17
 Summary Of The Cost Of Service Analysis

	2020 Expenses	Residential	Commercial	Fireline
Revenues at Present Rates	\$5,644,275	\$4,570,861	\$844,802	\$228,612
Allocated Revenue Requirement	\$5,982,932	\$4,945,038	\$797,654	\$240,240
<i>Bal. / (Def.)</i>	(\$338,657)	(\$374,177)	\$47,148	(\$11,628)
Required % Change in Rates	6.0%	8.2%	-5.6%	5.1%

Tahoe City PUD
 Water Cost of Service
 Exhibit 18
 Average Unit Costs

	Total	Residential				Commercial	Fireline
		Tier 1	Tier 2	Tier 3	Tier 4		
Commodity - \$ / 1,000 gal	\$2.45	\$2.45	\$2.45	\$2.45	\$2.45	\$2.45	\$0.00
Capacity - \$ / 1,000 gal	1.84	0.51	1.43	3.13	8.60	1.75	0.00
DA - \$ / 1,000 gal	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	\$4.29	\$2.97	\$3.88	\$5.59	\$11.05	\$4.20	\$0.00
<i>Current Rates</i>		\$2.68	\$3.64	\$5.32	\$8.25	\$6.74	\$0.00
Customer Costs - \$ / acct. / mo	\$79.31						\$29.70
<i>Current Rates</i>		\$74.50				\$89.50	\$28.13
Avg Total Cost \$ / 1,000 gal	\$18.59	\$19.68				\$11.31	\$0.00
Avg Current Cost \$ / 1,000 gal	17.54	18.19				11.98	0.00
Basic Data							
Water Consumption	321,841	142,210	57,024	30,162	21,913	70,531	0
Equiv Meters	4,615	4,093				522	674



Technical Appendix B – Sewer Analysis



Tahoe City PUD
Sewer Cost of Service
Revenue Requirement Summary
Exhibit 1

	<i>Budget</i>	<i>Projected</i>									
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues											
Rate Revenues	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992
Other Revenues	103,414	112,446	124,278	122,621	118,653	118,364	117,795	116,914	115,705	114,081	111,933
Total Revenues	\$5,079,406	\$5,088,438	\$5,100,270	\$5,098,613	\$5,094,645	\$5,094,356	\$5,093,787	\$5,092,906	\$5,091,697	\$5,090,073	\$5,087,925
Expenses											
Personnel Cost	\$1,531,886	\$1,706,783	\$1,817,329	\$1,939,366	\$2,066,673	\$2,212,794	\$2,361,122	\$2,516,555	\$2,681,221	\$2,862,142	\$3,055,034
Professional Services	32,732	33,714	34,725	35,767	36,840	37,945	39,083	40,256	41,463	42,707	43,988
Charges & Services	193,878	199,693	205,684	211,855	218,210	224,757	231,501	238,446	245,601	252,970	260,559
Materials & Supplies	389,536	398,583	407,901	417,498	427,383	437,566	448,054	458,856	469,983	481,443	493,247
Governanace & Admin. Services	622,749	610,436	644,356	680,736	810,363	855,787	902,191	950,932	1,002,119	1,058,004	1,117,105
Eng / Tech Srvcs / GIS Allocation	914,488	998,870	1,095,162	1,198,092	1,110,343	1,204,180	1,303,891	1,408,900	1,519,454	1,640,826	1,769,532
Total O & M Expense	\$3,685,269	\$3,948,079	\$4,205,157	\$4,483,314	\$4,669,812	\$4,973,029	\$5,285,842	\$5,613,945	\$5,959,841	\$6,338,092	\$6,739,465
<i>Revenues Over / (Under) O&M</i>	<i>\$1,394,137</i>	<i>\$1,140,359</i>	<i>\$895,113</i>	<i>\$615,299</i>	<i>\$424,833</i>	<i>\$121,327</i>	<i>(\$192,055)</i>	<i>(\$521,040)</i>	<i>(\$868,143)</i>	<i>(\$1,248,019)</i>	<i>(\$1,651,540)</i>
Rate Funded Capital	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000
Net Debt Service	0	0	0	0	0	0	0	0	0	0	0
Reserve Funding	(105,863)	(61,082)	10,146	(18,073)	54,379	25,623	31,255	37,236	41,845	31,269	15,511
Total Revenue Requirements	\$5,079,406	\$5,386,998	\$5,715,303	\$5,965,242	\$6,224,192	\$6,498,652	\$6,817,097	\$7,151,181	\$7,501,686	\$7,869,361	\$8,254,976
Bal. / (Def.) of Funds	\$0	(\$298,560)	(\$615,033)	(\$866,629)	(\$1,129,547)	(\$1,404,296)	(\$1,723,310)	(\$2,058,275)	(\$2,409,989)	(\$2,779,288)	(\$3,167,052)
Total Incr. as a % of Current Rates	0.0%	6.0%	12.4%	17.4%	22.7%	28.2%	34.6%	41.4%	48.4%	55.9%	63.6%
Proposed Rate Adjustment	0.0%	6.0%	6.0%	4.5%	4.5%	4.5%	5.0%	5.0%	5.0%	5.0%	5.0%
Additional Revenue from Adjustment	\$0	\$298,560	\$615,033	\$866,629	\$1,129,547	\$1,404,296	\$1,723,310	\$2,058,275	\$2,409,989	\$2,779,288	\$3,167,052
Total Balance/(Deficiency) of Funds	\$0	(\$0)	\$0	(\$0)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Additional Rate Adjustment Required	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Average Residential Rate - \$ / Month											
	\$44.14										
After Proposed Rate Adjustment	\$44.14	\$46.79	\$49.60	\$51.83	\$54.16	\$56.60	\$59.43	\$62.40	\$65.52	\$68.79	\$72.23
Difference	0.00	2.65	2.81	2.23	2.33	2.44	2.83	2.97	3.12	3.28	3.44
Cumulative	0.00	2.65	5.46	7.69	10.02	12.46	15.29	18.26	21.38	24.65	28.09
Debt Service Coverage Ratio											
Before Proposed Rate Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
After Proposed Rate Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ending Reserve Balance	\$7,391,620	\$7,366,098	\$6,208,881	\$5,174,479	\$4,888,494	\$4,564,184	\$4,194,993	\$3,779,511	\$3,314,955	\$2,784,690	\$2,182,046

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 2
 Escalation Factors

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Revenues											
Rate Revenue	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Misc Revenues	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
One Time Revenue	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Expenses											
Salaries	Budget	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%	7.0%
Benefits	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Professional Services	Budget	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Materials & Supplies	Budget	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Equipment	Budget	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Miscellaneous	Budget	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%	2.7%
Utilities	Budget	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%
Flat	Budget	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest Rate		0.6%	0.7%	0.9%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Long-Term Debt Assumptions											
Revenue Bond											
Term in Years		20	20	20	20	20	20	20	20	20	20
Rate		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
Low Interest Loan											
Term in Years		20	20	20	20	20	20	20	20	20	20
Rate		2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%

	Budget	Projected										Notes
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Revenues												
<i>Rate Revenues</i>												
Residential	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	\$4,135,741	As Rate Revenue
Commercial	840,251	840,251	840,251	840,251	840,251	840,251	840,251	840,251	840,251	840,251	840,251	As Rate Revenue
Total Rate Revenues	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	\$4,975,992	
<i>Other Revenues</i>												
Other Operating Revenue	\$23,108	\$24,494	\$25,964	\$27,522	\$29,173	\$30,923	\$32,778	\$34,745	\$36,830	\$39,040	\$41,382	
Penalties on Delinquencies	30,000	30,900	31,827	32,782	33,765	34,778	35,821	36,896	38,003	39,143	40,317	LT Financial Plan
Other Non-Operating Revenue	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	LT Financial Plan
Proceeds from Asset Sales	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	LT Financial Plan
Interest Income	44,906	51,652	61,087	56,917	50,315	47,263	43,796	39,873	35,472	30,498	24,834	Calculated on Reserves
Total Other Revenues	\$103,414	\$112,446	\$124,278	\$122,621	\$118,653	\$118,364	\$117,795	\$116,914	\$115,705	\$114,081	\$111,933	
Total Revenues	\$5,079,406	\$5,088,438	\$5,100,270	\$5,098,613	\$5,094,645	\$5,094,356	\$5,093,787	\$5,092,906	\$5,091,697	\$5,090,073	\$5,087,925	
Expenses												
<i>Personnel Cost</i>												
Salaries - Full Time Classic	\$706,695	\$756,164	\$809,095	\$865,732	\$926,333	\$991,176	\$1,060,559	\$1,134,798	\$1,214,234	\$1,299,230	\$1,390,176	As Salaries
Salaries - Full Time - PEPR	220,409	235,838	252,346	270,011	288,911	309,135	330,774	353,929	378,704	405,213	433,578	As Salaries
Salaries - OT	30,685	32,833	35,131	37,590	40,222	43,037	46,050	49,273	52,723	56,413	60,362	As Salaries
Salaries - Part Time	42,016	44,957	48,104	51,471	55,074	58,930	63,055	67,469	72,191	77,245	82,652	As Salaries
Add Position - Classic	0	29,765	31,848	34,078	36,463	39,016	41,747	44,669	47,796	51,141	54,721	As Salaries
Employee Benefits -Pension-CLASSIC + DC	271,900	267,052	285,746	305,748	327,150	350,051	374,554	400,773	428,827	458,845	490,964	As Salaries
Employee Benefits -Pension-PEPRA + DC	0	22,349	23,913	25,587	27,378	29,295	31,346	33,540	35,888	38,400	41,088	As Salaries
Employee Benefits -FICA	55,768	80,164	82,794	88,010	93,555	99,448	105,714	112,374	119,453	126,979	134,978	LT Financial Plan
Employee Benefits - OPEB	49,307	48,627	52,142	57,242	59,649	60,959	65,068	66,301	66,074	70,650	74,927	LT Financial Plan
Employee Benefits -SUI	3,906	4,774	4,774	4,774	4,774	4,774	4,774	4,774	4,774	4,774	4,774	LT Financial Plan
Employee Benefits -Life / LTD / Flex	0	6,092	6,286	6,682	7,103	7,550	8,026	8,531	9,069	9,640	10,247	LT Financial Plan
Worker's Comp	27,972	41,152	43,690	46,387	49,252	52,297	55,531	58,967	62,617	66,496	70,617	LT Financial Plan
ACA Excise Tax - effective 2022	0	0	0	0	0	11,400	13,108	15,074	17,336	19,936	22,927	LT Financial Plan
Employee Assistance Fund	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Benefits-Dental	9,756	11,041	11,703	12,405	13,149	13,938	14,774	15,660	16,600	17,596	18,652	LT Financial Plan
Benefits-Vision	2,028	2,189	2,255	2,323	2,393	2,465	2,539	2,615	2,693	2,774	2,857	LT Financial Plan
Benefits - Health	111,444	123,787	127,501	131,326	135,266	139,324	143,504	147,809	152,243	156,810	161,514	LT Financial Plan
Total Personnel Cost	\$1,531,886	\$1,706,783	\$1,817,329	\$1,939,366	\$2,066,673	\$2,212,794	\$2,361,122	\$2,516,555	\$2,681,221	\$2,862,142	\$3,055,034	
<i>Professional Services</i>												
Accounting & Audit Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	LT Financial Plan
Consultants Fees	29,332	30,212	31,118	32,052	33,014	34,004	35,024	36,075	37,157	38,272	39,420	LT Financial Plan
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Legal Fees	3,400	3,502	3,607	3,715	3,826	3,941	4,059	4,181	4,306	4,435	4,568	LT Financial Plan
Total Professional Services	\$32,732	\$33,714	\$34,725	\$35,767	\$36,840	\$37,945	\$39,083	\$40,256	\$41,463	\$42,707	\$43,988	

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 3
 Revenue Requirement

	Budget	Projected										Notes
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Charges & Services												
Advertising and Printing	\$13,400	\$13,802	\$14,216	\$14,642	\$15,081	\$15,533	\$15,999	\$16,479	\$16,973	\$17,482	\$18,006	LT Financial Plan
Bank Charges V/MC Fees	8,348	8,598	8,856	9,122	9,396	9,678	9,968	10,267	10,575	10,892	11,219	LT Financial Plan
Cash Over/short	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Community Promotion	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Conservation	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Directors Fees & Benefits	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Dues, Subscriptions & Pubs.	15,630	16,099	16,582	17,079	17,591	18,119	18,663	19,223	19,800	20,394	21,006	LT Financial Plan
Employee Morale	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Equipment Rental	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Fees and Permits	28,559	29,416	30,298	31,207	32,143	33,107	34,100	35,123	36,177	37,262	38,380	LT Financial Plan
Meeting, Training & Travel	6,600	6,798	7,002	7,212	7,428	7,651	7,881	8,117	8,361	8,612	8,870	LT Financial Plan
Mileage Reimbursement	492	507	522	538	554	571	588	606	624	643	662	LT Financial Plan
Other Purchased Services	32,515	33,490	34,495	35,530	36,596	37,694	38,825	39,990	41,190	42,426	43,699	LT Financial Plan
R & M Contracts	41,604	42,852	44,138	45,462	46,826	48,231	49,678	51,168	52,703	54,284	55,913	LT Financial Plan
Snow Removal	26,880	27,686	28,517	29,373	30,254	31,162	32,097	33,060	34,052	35,074	36,126	LT Financial Plan
Software & Maintenance	11,146	11,480	11,824	12,179	12,544	12,920	13,308	13,707	14,118	14,542	14,978	LT Financial Plan
Telemetry	8,200	8,446	8,699	8,960	9,229	9,506	9,791	10,085	10,388	10,700	11,021	LT Financial Plan
Water Quality Analysis	504	519	535	551	568	585	603	621	640	659	679	LT Financial Plan
Total Charges & Services	\$193,878	\$199,693	\$205,684	\$211,855	\$218,210	\$224,757	\$231,501	\$238,446	\$245,601	\$252,970	\$260,559	
Materials & Supplies												
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	LT Financial Plan
Cost of Goods Sold	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Meeting Food	0	0	0	0	0	0	0	0	0	0	0	LT Financial Plan
Miscellaneous	3,500	3,605	3,713	3,824	3,939	4,057	4,179	4,304	4,433	4,566	4,703	LT Financial Plan
Postage	19,222	19,799	20,393	21,005	21,635	22,284	22,953	23,642	24,351	25,082	25,834	LT Financial Plan
R & M Equipment	35,504	36,569	37,666	38,796	39,960	41,159	42,394	43,666	44,976	46,325	47,715	LT Financial Plan
R & M Facility	87,996	87,996	87,996	87,996	87,996	87,996	87,996	87,996	87,996	87,996	87,996	LT Financial Plan
Small Equipment Expense	20,600	21,218	21,855	22,511	23,186	23,882	24,598	25,336	26,096	26,879	27,685	LT Financial Plan
Supplies	31,004	31,934	32,892	33,879	34,895	35,942	37,020	38,131	39,275	40,453	41,667	LT Financial Plan
Vehicle - TV Van & Vactor	33,550	34,557	35,594	36,662	37,762	38,895	40,062	41,264	42,502	43,777	45,090	LT Financial Plan
Vehicle Expense	35,528	36,594	37,692	38,823	39,988	41,188	42,424	43,697	45,008	46,358	47,749	LT Financial Plan
Insurance	29,042	29,913	30,810	31,734	32,686	33,667	34,677	35,717	36,789	37,893	39,030	LT Financial Plan
Telephone	4,000	4,120	4,244	4,371	4,502	4,637	4,776	4,919	5,067	5,219	5,376	LT Financial Plan
Utilities	89,590	92,278	95,046	97,897	100,834	103,859	106,975	110,184	113,490	116,895	120,402	LT Financial Plan
Total Materials & Supplies	\$389,536	\$398,583	\$407,901	\$417,498	\$427,383	\$437,566	\$448,054	\$458,856	\$469,983	\$481,443	\$493,247	
Governance & Admin. Services	\$622,749	\$610,436	\$644,356	\$680,736	\$810,363	\$855,787	\$902,191	\$950,932	\$1,002,119	\$1,058,004	\$1,117,105	LT Financial Plan
Eng / Tech Svcs / GIS Allocation	\$914,488	\$998,870	\$1,095,162	\$1,198,092	\$1,110,343	\$1,204,180	\$1,303,891	\$1,408,900	\$1,519,454	\$1,640,826	\$1,769,532	LT Financial Plan
Total Operating & Maintenance Expense	\$3,685,269	\$3,948,079	\$4,205,157	\$4,483,314	\$4,669,812	\$4,973,029	\$5,285,842	\$5,613,945	\$5,959,841	\$6,338,092	\$6,739,465	
Revenues Over / (Under) O&M	\$1,394,137	\$1,140,359	\$895,113	\$615,299	\$424,833	\$121,327	(\$192,055)	(\$521,040)	(\$868,143)	(\$1,248,019)	(\$1,651,540)	

Tahoe City PUD
Sewer Cost of Service
Exhibit 3
Revenue Requirement

	<i>Budget</i>	<i>Projected</i>										<i>Notes</i>
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Rate Funded Capital	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	2019 Depreciation = \$461,160
Debt Service												
State Revolving Fund	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	Debt Schedule Calculated
New Debt	0	0	0	0	0	0	0	0	0	0	0	
Total Debt Service	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$0
Less: Property Tax Revenues												
General Property Taxes	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$0
Total Less: Property Tax Revenues	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$139,703	\$0
Net Debt Service	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Reserve Funding												
Operating Reserve	(\$105,863)	(\$61,082)	\$10,146	(\$18,073)	\$54,379	\$25,623	\$31,255	\$37,236	\$41,845	\$31,269	\$15,511	
Capital Reserve	0	0	0	0	0	0	0	0	0	0	0	
Rolling Stock Reserve	0	0	0	0	0	0	0	0	0	0	0	
Property Tax Reserve	0	0	0	0	0	0	0	0	0	0	0	
Total Reserve Funding	(\$105,863)	(\$61,082)	\$10,146	(\$18,073)	\$54,379	\$25,623	\$31,255	\$37,236	\$41,845	\$31,269	\$15,511	
Total Revenue Requirement	\$5,079,406	\$5,386,998	\$5,715,303	\$5,965,242	\$6,224,192	\$6,498,652	\$6,817,097	\$7,151,181	\$7,501,686	\$7,869,361	\$8,254,976	
Bal. / (Def.) of Funds	\$0	(\$298,560)	(\$615,033)	(\$866,629)	(\$1,129,547)	(\$1,404,296)	(\$1,723,310)	(\$2,058,275)	(\$2,409,989)	(\$2,779,288)	(\$3,167,052)	
Total Incr. as a % of Current Rates	0.0%	6.0%	12.4%	17.4%	22.7%	28.2%	34.6%	41.4%	48.4%	55.9%	63.6%	
Proposed Rate Adjustment	0.0%	6.0%	6.0%	4.5%	4.5%	4.5%	5.0%	5.0%	5.0%	5.0%	5.0%	
Add'l Revenue from Rate Increase	\$0	\$298,560	\$615,033	\$866,629	\$1,129,547	\$1,404,296	\$1,723,310	\$2,058,275	\$2,409,989	\$2,779,288	\$3,167,052	
Total Bal. /(Def.) of Funds	\$0	(\$0)	\$0	(\$0)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Deficiency as a % of Rate Revenues	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Average Residential Rate - \$ / Month	\$44.14											
After Proposed Rate Adjustment	\$44.14	\$46.79	\$49.60	\$51.83	\$54.16	\$56.60	\$59.43	\$62.40	\$65.52	\$68.79	\$72.23	
<i>Difference</i>	0.00	2.65	2.81	2.23	2.33	2.44	2.83	2.97	3.12	3.28	3.44	
<i>Cumulative</i>	0.00	2.65	5.46	7.69	10.02	12.46	15.29	18.26	21.38	24.65	28.09	
Debt Service Coverage Ratio												
Before Proposed Rate Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
After Proposed Rate Adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

	Budget	Projected										Notes
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	
Reserve Funds												
Beginning Reserve Balance	\$7,576,994	\$7,391,620	\$7,366,098	\$6,208,881	\$5,174,479	\$4,888,494	\$4,564,184	\$4,194,993	\$3,779,511	\$3,314,955	\$2,784,690	
<i>Operating Reserve</i>												
Beginning Reserve Balance	\$3,186,094	\$2,965,275	\$2,904,193	\$2,464,339	\$1,996,266	\$2,050,646	\$2,076,268	\$2,107,523	\$2,144,759	\$2,186,604	\$2,217,874	
Plus: Additions	0	0	10,146	0	54,379	25,623	31,255	37,236	41,845	31,269	15,511	
Less: Uses	(220,819)	(61,082)	(450,000)	(468,073)	0	0	0	0	0	0	0	
Ending Reserve Balance	\$2,965,275	\$2,904,193	\$2,464,339	\$1,996,266	\$2,050,646	\$2,076,268	\$2,107,523	\$2,144,759	\$2,186,604	\$2,217,874	\$2,233,385	
Cash Available for Other Uses	\$2,229,681	\$2,168,599	\$1,728,745	\$1,260,672	\$1,315,052	\$1,340,674	\$1,371,929	\$1,409,165	\$1,451,010	\$1,482,280	\$1,497,791	
<i>Capital Reserve</i>												
Beginning Reserve Balance	\$4,250,000	\$4,285,560	\$4,321,120	\$3,604,959	\$3,039,680	\$2,699,692	\$2,350,144	\$1,949,698	\$1,496,980	\$990,579	\$429,045	
Plus: Additions	0	0	0	0	0	0	0	0	0	0	0	
Connection Fees	35,560	35,560	35,560	35,560	35,560	35,560	35,560	35,560	35,560	35,560	35,560	
Less: Uses	0	0	(751,721)	(600,839)	(375,548)	(385,108)	(436,006)	(488,278)	(541,961)	(597,094)	(653,716)	
Ending Reserve Balance	\$4,285,560	\$4,321,120	\$3,604,959	\$3,039,680	\$2,699,692	\$2,350,144	\$1,949,698	\$1,496,980	\$990,579	\$429,045	(\$189,111)	
Cash Available for Other Uses	\$2,384,419	\$2,419,979	\$1,703,818	\$1,138,539	\$798,551	\$449,003	\$48,557	(\$404,161)	(\$910,562)	(\$1,472,096)	(\$2,090,252)	
<i>Rolling Stock Reserve</i>												
Beginning Reserve Balance	\$140,900	\$140,785	\$140,785	\$139,583	\$138,532	\$138,157	\$137,772	\$137,772	\$137,772	\$137,772	\$137,772	
Plus: Additions	0	0	0	0	0	0	0	0	0	0	0	
Less: Uses	(115)	(0)	(1,202)	(1,051)	(376)	(385)	0	0	0	0	0	
Ending Reserve Balance	\$140,785	\$140,785	\$139,583	\$138,532	\$138,157	\$137,772	\$137,772	\$137,772	\$137,772	\$137,772	\$137,772	
Cash Available for Other Uses	(\$115)	(\$115)	(\$1,317)	(\$2,368)	(\$2,743)	(\$3,128)	(\$3,128)	(\$3,128)	(\$3,128)	(\$3,128)	(\$3,128)	
<i>Property Tax Reserve</i>												
Beginning Reserve Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Plus: Additions	0	0	0	0	0	0	0	0	0	0	0	
Less: Uses	0	0	0	0	0	0	0	0	0	0	0	
Ending Reserve Balance	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Ending Reserve Balance	\$7,391,620	\$7,366,098	\$6,208,881	\$5,174,479	\$4,888,494	\$4,564,184	\$4,194,993	\$3,779,511	\$3,314,955	\$2,784,690	\$2,182,046	
Target Minimum	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	\$2,777,635	

Tahoe City PUD
Sewer Cost of Service
Exhibit 4
Capital Improvement Plan

Inflation = 2.7%

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Notes
Engineering												
Line Replace / Slipline / Manhole Rehab / Laterals	\$50,000	\$51,350	\$52,736	\$54,160	\$55,623	\$57,124	\$58,667	\$60,251	\$61,878	\$63,548	\$65,264	
Tahoe City Residential Sewer System Rehab - Phase 3	265,642	0	0	0	0	0	0	0	0	0	0	
Dollar 1 (Edgewater) Backup Power	248,478	0	0	0	0	0	0	0	0	0	0	
CA FLAP SR89 - Fanny Bridge - Sewer Relocations	165,750	0	0	0	0	0	0	0	0	0	0	
Glenridge Sewer Pump Station Generator Building	218,754	0	0	0	0	0	0	0	0	0	0	
Dollar/Edgewater Lakefront SLR	158,931	592,784	0	0	0	0	0	0	0	0	0	
McKinney Sewer Pump Station Modifications	0	147,173	0	0	0	0	0	0	0	0	0	
Emergency Bypass Facilities	0	83,572	461,839	0	0	0	0	0	0	0	0	
Satellite Pump Station Overflow Wet Wells	0	81,708	380,842	0	0	0	0	0	0	0	0	
Projects as Defined by Future Sewer Master Plan	0	0	1,582,094	1,624,810	1,668,680	1,713,734	1,760,005	1,807,525	1,856,328	1,906,449	1,957,923	
Metering Manholes	0	0	79,738	690,219	0	0	0	0	0	0	0	
West Shore H2S Control Facilities	0	0	0	43,328	0	0	0	0	0	0	0	
Total Engineering	\$1,107,555	\$956,588	\$2,557,248	\$2,412,518	\$1,724,303	\$1,770,859	\$1,818,672	\$1,867,776	\$1,918,206	\$1,969,998	\$2,023,188	
Operational												
Satellite Pump Station Controls	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Pump Station Flow Meters & Bypass Ports	50,000	0	0	0	0	0	0	0	0	0	0	
Spare Pumps	50,000	0	0	0	0	0	0	0	0	0	0	
Lonely Gulch Pump Station Generator Replacement	16,000	0	0	0	0	0	0	0	0	0	0	
Transfer Switch Replacement	51,000	52,377	0	0	0	0	0	0	0	0	0	
Portable Sewer Flow Meters	10,000	10,270	0	0	0	0	0	0	0	0	0	
Equipment or Facility Replacement/Upgrades	0	102,700	105,473	108,321	111,245	114,249	117,334	120,502	123,755	127,097	130,528	
Total Operational	\$217,000	\$165,347	\$105,473	\$108,321	\$111,245	\$114,249	\$117,334	\$120,502	\$123,755	\$127,097	\$130,528	
Vehicles												
Utilities Truck	\$21,500	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
CCTV Van	207,500	0	0	0	0	0	0	0	0	0	0	
Boom / Lift Gate Truck	48,901	0	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 8	0	75,000	0	0	0	0	0	0	0	0	0	
Dump Truck - Veh# 60	0	28,750	0	0	0	0	0	0	0	0	0	
Loader Mounted Snow Blower	0	23,433	0	0	0	0	0	0	0	0	0	
Utilities Truck - Veh# 10	0	0	39,000	0	0	0	0	0	0	0	0	
Utilities Trailer	0	0	0	7,500	0	0	0	0	0	0	0	
Utilities Truck - Veh# 6	0	0	0	22,500	0	0	0	0	0	0	0	
Utilities Truck - Veh# 4	0	0	0	0	16,500	0	0	0	0	0	0	
Utilities Truck - Veh# 3	0	0	0	0	23,500	0	0	0	0	0	0	
Tech Services	12,500	0	0	0	0	0	0	0	0	0	0	
Total Vehicles	\$290,401	\$127,183	\$39,000	\$30,000	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	Notes
Unidentified Capital Improvement Projects	\$0	\$250,883	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Trasnfer to Capital Reserve	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Total Capital Outlays	\$1,614,956	\$1,500,000	\$2,701,721	\$2,550,839	\$1,875,548	\$1,885,108	\$1,936,006	\$1,988,278	\$2,041,961	\$2,097,094	\$2,153,716	
Less: Other Funding Sources												
Connection Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
General Property Taxes	0	0	0	0	0	0	0	0	0	0	0	
Capital Reserve	0	0	751,721	600,839	375,548	385,108	436,006	488,278	541,961	597,094	653,716	
Operating Reserve	114,956	0	450,000	450,000	0	0	0	0	0	0	0	
Grants	0	0	0	0	0	0	0	0	0	0	0	
Assumed New Bonds	0	0	0	0	0	0	0	0	0	0	0	Calculated
Total Other Funding Sources	\$114,956	\$0	\$1,201,721	\$1,050,839	\$375,548	\$385,108	\$436,006	\$488,278	\$541,961	\$597,094	\$653,716	
Rate Funded Capital	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	\$1,500,000	

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 5
 Debt Service Schedule

	State Revolving Fund	Total Payments
2018	\$139,703	\$139,703
2019	139,703	139,703
2020	139,703	139,703
2021	139,703	139,703
2022	139,703	139,703
2023	139,703	139,703
2024	139,703	139,703
2025	139,703	139,703
2026	139,703	139,703
2027	139,703	139,703
2028	139,703	139,703
2029	0	0
2030	0	0
2031	0	0
2032	0	0
2033	0	0
2034	0	0
2035	0	0
2036	0	0
2037	0	0
2038	0	0
2039	0	0
	\$1,536,733	\$1,536,733

Sewer Cost of Service
Tahoe City PUD
Exhibit 6
Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	
Sewer Service w/Water														
Rate Code														
Type														
\$ / Mo														
201 Residential	\$44.14	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733	5,733
204 Motel W/O Kitchen	17.96	166	166	166	166	166	166	166	166	166	166	166	166	166
205 Motel W/Kitchen	19.14	78	78	78	78	78	78	78	78	78	78	78	78	78
206 Seating - Per 1/2 Seat	1.23	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315	1,315
207 Seating - Per Seat	2.46	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570	2,570
211 Laundry - Per Machine	8.98	33	33	33	33	33	33	33	33	33	33	33	33	33
212 Hotel W/Kitchen	17.96	16	16	16	16	16	16	16	16	16	16	16	16	16
213 Hotel W/O Kitchen	11.33	2	2	2	2	2	2	2	2	2	2	2	2	2
215 Campsite W/Sewer	22.26	30	30	30	30	30	30	30	30	30	30	30	30	30
216 Campsite W/O Sewer	19.14	214	214	214	214	214	214	214	214	214	214	214	214	214
220 Snackbar	66.34	4	4	4	4	4	4	4	4	4	4	4	4	4
221 Service Station	66.34	1	1	1	1	1	1	1	1	1	1	1	1	1
222 Beauty / Barber Shop (Per Chair)	23.92	16	16	16	16	16	16	16	16	16	16	16	16	16
223 Theatre	132.61	1	1	1	1	1	1	1	1	1	1	1	1	1
224 Boat Pump	66.34	1	1	1	1	1	1	1	1	1	1	1	1	1
225 Standby Sewer Service	8.69	0	0	0	0	0	0	0	0	0	0	0	0	0
226 Food Service Estab Lic	29.40	0	0	0	0	0	0	0	0	0	0	0	0	0
230 Backwash (Pool/Spa Filters)	22.26	8	8	8	8	8	8	8	8	8	8	8	8	8
235 Unclassified Sewer	44.14	14	14	14	14	14	14	14	14	14	14	14	14	14
236 Unclassified Sewer W/O Kitchen	17.96	0	0	0	0	0	0	0	0	0	0	0	0	0
240 .5 Sewer Unit (1-10 Fixtures)	22.26	88	88	88	88	88	88	88	88	88	88	88	88	88
241 1.0 Sewer Unit (11-20 Fixtures)	44.14	248	248	248	248	248	248	248	248	248	248	248	248	248
270 Comm'Cl Non-Rest < 1,000 Sq Ft	44.14	147	147	147	147	147	147	147	147	147	147	147	147	147
271 Comm'Cl Non-Rest > 1,000 Sq Ft	22.26	636	636	636	636	636	636	636	636	636	636	636	636	636
299 Pro-Rated Sewer Charge	1.21	0	0	0	0	0	0	0	0	0	0	0	0	0
		11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321	11,321
Total Sewer Service w/Water	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$306,081	\$3,672,976

Sewer Cost of Service
Tahoe City PUD
Exhibit 6
Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Sewer Service w/o Water													
Rate Code													
Type													
\$ / Qtr													
301 Residential	\$132.42	2,075		2,075			2,075			2,075			2,075
302 Residential - .50"	66.21	0		0			0			0			0
303 Residential - .75"	99.31	0		0			0			0			0
304 Motel W/O Kitchen	53.88	29		29			29			29			29
305 Motel W/Kitchen	57.42	37		37			37			37			37
306 Seating - Per 1/2 Seat	3.69	322		322			322			322			322
307 Seating - Per Seat	7.38	958		958			958			958			958
311 Laundry - Per Machine	26.49	0		0			0			0			0
312 Hotel W/Kitchen	53.88	0		0			0			0			0
313 Hotel W/O Kitchen	33.99	0		0			0			0			0
315 Campsite W/Sewer	66.78	10		10			10			10			10
316 Campsite W/O Sewer	57.42	291		291			291			291			291
320 Snackbar	199.02	0		0			0			0			0
321 Service Station	199.02	0		0			0			0			0
322 Beauty / Barber Shop (Per Chair)	71.76	2		2			2			2			2
323 Theatre	397.83	0		0			0			0			0
324 Boat Pump	199.02	1		1			1			1			1
325 Standby Sewer Service	26.07	0		0			0			0			0
326 Food Service Estab Lic	88.20	10		10			10			10			10
330 Backwash	66.78	17		17			17			17			17
335 Unclassified Sewer	132.42	7		7			7			7			7
336 Unclassified Sewer W/O Kitchen	53.88	1		1			1			1			1
340 .5 Sewer Unit (1-10 Fixtures)	66.78	18		18			18			18			18
341 1.0 Sewer Unit (11-20 Fixtures)	132.42	62		62			62			62			62
370 Comm'Cl Non-Rest < 1,000 Sq Ft	132.42	36		36			36			36			36
371 Comm'Cl Non-Rest > 1,000 Sq Ft	66.78	62		62			62			62			62
399 Pro-Rated Sewer Charge	3.63	0		0			0			0			0
	3,938			3,938			3,938			3,938			3,938
Total Sewer Service w/o Water	\$325,754			\$325,754			\$325,754			\$325,754			\$1,303,016

Sewer Cost of Service
Tahoe City PUD
Exhibit 6
Revenue At Present Rates

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Summary													
Customer													
Residential	7,808	5,733	5,733	7,808	5,733	5,733	7,808	5,733	5,733	7,808	5,733	5,733	7,808
Commercial	7,451	5,588	5,588	7,451	5,588	5,588	7,451	5,588	5,588	7,451	5,588	5,588	7,451
	<u>15,259</u>	<u>11,321</u>	<u>11,321</u>	<u>15,259</u>	<u>11,321</u>	<u>11,321</u>	<u>15,259</u>	<u>11,321</u>	<u>11,321</u>	<u>15,259</u>	<u>11,321</u>	<u>11,321</u>	15,259
Revenues													
Residential	\$527,826	\$253,055	\$253,055	\$527,826	\$253,055	\$253,055	\$527,826	\$253,055	\$253,055	\$527,826	\$253,055	\$253,055	\$4,135,741
Commercial	104,009	53,027	53,027	104,009	53,027	53,027	104,009	53,027	53,027	104,009	53,027	53,027	840,251
	<u>\$631,835</u>	<u>\$306,081</u>	<u>\$306,081</u>	<u>\$631,835</u>	<u>\$306,081</u>	<u>\$306,081</u>	<u>\$631,835</u>	<u>\$306,081</u>	<u>\$306,081</u>	<u>\$631,835</u>	<u>\$306,081</u>	<u>\$306,081</u>	\$4,975,992
													FY 2019
													<i>difference</i>
													<i>percent</i>
													\$4,975,904
													88
													0.0%

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 7
 Volume Distribution Factor

	Annual flow (1,000 gal) ^[1]	50.0% Inflow and Infiltration ^[2]	Total Annual Flow at Plant (1,000 Gallons)	Avg. Daily Flow At Plant (MGD)	% of Total
Residential	562,176	281,088	843,264	2.3	15.6%
Commercial	3,039,873	1,519,937	4,559,810	12.5	84.4%
Total	3,602,049	1,801,025	5,403,074	14.8	100.0%

Allocation Factor (VOL)

Notes

[1] - Based on average use of metered customers

[2] - Wet Weather flow = 1.5x dry weather - per comp plan pg. 4-5

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 8
 Customer Distribution Factor

	<i>Actual Customer</i>		<i>EDU</i>	
	Number of Customers	% of Total	Number of Customers	% of Total
Residential	7,808	51.2%	7,808	83.1%
Commercial	7,451	48.8%	1,586	16.9%
Total	15,259	100.0%	9,394	100.0%
<i>Allocation Factor</i>		<i>(AC)</i>		<i>(EDU)</i>

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 9
 Strength Allocation Factor

	<i>BOD</i>				<i>TSS</i>		
	Annual Flow (1,000 gal)	Avg. Factor (mg/l)	Calculated Pounds	% of Total	Avg. Factor (mg/l)	Calculated Pounds	% of Total
Residential	562,176	200	938	15.6%	200	938	15.6%
Commercial	3,039,873	200	5,074	84.4%	200	5,074	84.4%
Total	3,602,049		6,012	100.0%		6,012	100.0%
<i>Allocation Factor</i>				<i>(BOD)</i>			<i>(SS)</i>

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 10
 Revenue Related Allocation Factor

	Test Year 2020	% of Total
Residential	\$4,135,741	83.1%
Commercial	840,251	16.9%
Total	\$4,975,992	100.0%
Allocation Factor		(RR)

Tahoe City PUD
Sewer Cost of Service
Exhibit 11
Net Plant in Service

	Net Plant 2017	Volume (VOL)	Bio-oxygen Demand (BOD)	Customer Related			Revenue (RR)	Direct (DA)	Basis of Classification
				Total Suspended Solids (TSS)	Weighted for: Actual Customer				
					EDU (EDU)				
Collection									
Sewer Pump Stations	\$3,746,263	\$3,371,637	\$0	\$0	\$374,626	\$0	\$0	\$0	90.0% VOL 10.0% AC
Sewer Lines	3,532,142	3,178,928	0	0	353,214	0	0	0	90.0% VOL 10.0% AC
Equipment	63,191	56,872	0	0	6,319	0	0	0	90.0% VOL 10.0% AC
Total Collection	\$7,341,596	\$6,607,436	\$0	\$0	\$734,160	\$0	\$0	\$0	
Plant Before General Plant	\$7,341,596	\$6,607,436	\$0	\$0	\$734,160	\$0	\$0	\$0	
<i>Percent Plant Before General Plant</i>	<i>100.0%</i>	<i>90.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>10.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	Factor PBG
General Plant									
Engineering	\$167,412	\$150,671	\$0	\$0	\$16,741	\$0	\$0	\$0	Factor PBG
Sewer Equipment	750,896	675,806	0	0	75,090	0	0	0	Factor PBG
Vehicles	702,609	632,348	0	0	70,261	0	0	0	Factor PBG
W / S Equipment	220,887	198,798	0	0	22,089	0	0	0	Factor PBG
W / S Vehicles	636,081	572,473	0	0	63,608	0	0	0	Factor PBG
Total General Plant	\$1,841,804	\$1,657,624	\$0	\$0	\$184,180	\$0	\$0	\$0	
Net Plant in Service	\$9,183,400	\$8,265,060	\$0	\$0	\$918,340	\$0	\$0	\$0	

Tahoe City PUD
Sewer Cost of Service
Exhibit 12
Classification of the Revenue Requirement

Test Year 2020	Strength Related			Customer		Revenue Related (RR)	Direct Assignment (DA)	Basis of Classification
	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (SS)	Actual Customer (AC)	EDU (EDU)			
Expenses								
Personnel Cost								
Salaries - Full Time Classic	\$756,164	\$0	\$0	\$0	\$0	\$756,164	\$0	\$0 100.0% EDU
Salaries - Full Time - PEPRA	235,838	0	0	0	0	235,838	0	0 100.0% EDU
Salaries - OT	32,833	0	0	0	0	32,833	0	0 100.0% EDU
Salaries - Part Time	44,957	0	0	0	0	44,957	0	0 100.0% EDU
Add Position - Classic	29,765	0	0	0	0	29,765	0	0 100.0% EDU
Employee Benefits -Pension-CLASSIC + DC	267,052	0	0	0	0	267,052	0	0 100.0% EDU
Employee Benefits -Pension-PEPRA + DC	22,349	0	0	0	0	22,349	0	0 100.0% EDU
Employee Benefits -FICA	80,164	0	0	0	0	80,164	0	0 100.0% EDU
Employee Benefits - OPEB	48,627	0	0	0	0	48,627	0	0 100.0% EDU
Employee Benefits -SUI	4,774	0	0	0	0	4,774	0	0 100.0% EDU
Employee Benefits -Life / LTD / Flex	6,092	0	0	0	0	6,092	0	0 100.0% EDU
Worker's Comp	41,152	0	0	0	0	41,152	0	0 100.0% EDU
ACA Excise Tax - effective 2022	0	0	0	0	0	0	0	0 100.0% EDU
Employee Assistance Fund	0	0	0	0	0	0	0	0 100.0% EDU
Benefits-Dental	11,041	0	0	0	0	11,041	0	0 100.0% EDU
Benefits-Vision	2,189	0	0	0	0	2,189	0	0 100.0% EDU
Benefits - Health	123,787	0	0	0	0	123,787	0	0 100.0% EDU
Total Personnel Cost	\$1,706,783	\$0	\$0	\$0	\$0	\$1,706,783	\$0	\$0
Professional Services								
Accounting & Audit Total	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0 100.0% EDU
Consultants Fees	30,212	0	0	0	0	30,212	0	0 100.0% EDU
Consultants Fees - Special Studies	0	0	0	0	0	0	0	0 100.0% EDU
Legal Fees	3,502	0	0	0	0	3,502	0	0 100.0% EDU
Total Professional Services	\$33,714	\$0	\$0	\$0	\$0	\$33,714	\$0	\$0

Classification of the Revenue Requirement

Test Year	Strength Related			Customer		Revenue Related (RR)	Direct Assignment (DA)	Basis of Classification
	Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (SS)	Actual Customer (AC)	EDU (EDU)			
2020								
Charges & Services								
Advertising and Printing	\$13,802	\$0	\$0	\$0	\$0	\$13,802	\$0	\$0 100.0% EDU
Bank Charges V/MC Fees	8,598	0	0	0	0	8,598	0	0 100.0% EDU
Cash Over/short	0	0	0	0	0	0	0	0 100.0% EDU
Community Promotion	0	0	0	0	0	0	0	0 100.0% EDU
Conservation	0	0	0	0	0	0	0	0 100.0% EDU
Directors Fees & Benefits	0	0	0	0	0	0	0	0 100.0% EDU
Dues, Subscriptions & Pubs.	16,099	0	0	0	0	16,099	0	0 100.0% EDU
Employee Morale	0	0	0	0	0	0	0	0 100.0% EDU
Equipment Rental	0	0	0	0	0	0	0	0 100.0% EDU
Fees and Permits	29,416	0	0	0	0	29,416	0	0 100.0% EDU
Meeting, Training & Travel	6,798	0	0	0	0	6,798	0	0 100.0% EDU
Mileage Reimbursement	507	0	0	0	0	507	0	0 100.0% EDU
Other Purchased Services	33,490	0	0	0	0	33,490	0	0 100.0% EDU
R & M Contracts	42,852	0	0	0	0	42,852	0	0 100.0% EDU
Snow Removal	27,686	0	0	0	0	27,686	0	0 100.0% EDU
Software & Maintenance	11,480	0	0	0	0	11,480	0	0 100.0% EDU
Telemetry	8,446	0	0	0	0	8,446	0	0 100.0% EDU
Water Quality Analysis	519	0	0	0	0	519	0	0 100.0% EDU
Total Charges & Services	\$199,693	\$0	\$0	\$0	\$0	\$199,693	\$0	\$0
Materials & Supplies								
Computer Supplies	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0 100.0% EDU
Cost of Goods Sold	0	0	0	0	0	0	0	0 100.0% EDU
Meeting Food	0	0	0	0	0	0	0	0 100.0% EDU
Miscellaneous	3,605	0	0	0	0	3,605	0	0 100.0% EDU
Postage	19,799	0	0	0	0	19,799	0	0 100.0% EDU
R & M Equipment	36,569	0	0	0	0	36,569	0	0 100.0% EDU
R & M Facility	87,996	0	0	0	0	87,996	0	0 100.0% EDU
Small Equipment Expense	21,218	0	0	0	0	21,218	0	0 100.0% EDU
Supplies	31,934	0	0	0	0	31,934	0	0 100.0% EDU
Vehicle - TV Van & Vactor	34,557	0	0	0	0	34,557	0	0 100.0% EDU
Vehicle Expense	36,594	0	0	0	0	36,594	0	0 100.0% EDU
Insurance	29,913	0	0	0	0	29,913	0	0 100.0% EDU
Telephone	4,120	0	0	0	0	4,120	0	0 100.0% EDU
Utilities	92,278	0	0	0	0	92,278	0	0 100.0% EDU
Total Materials & Supplies	\$398,583	\$0	\$0	\$0	\$0	\$398,583	\$0	\$0
Governance & Admin. Services	\$610,436	\$0	\$0	\$0	\$0	\$610,436	\$0	\$0 100.0% EDU

Tahoe City PUD
Sewer Cost of Service
Exhibit 12
Classification of the Revenue Requirement

	Test Year 2020	Strength Related			Customer		Revenue Related (RR)	Direct Assignment (DA)	Basis of Classification
		Volume (VOL)	Bio-oxygen Demand (BOD)	Suspended Solids (SS)	Actual Customer (AC)	EDU (EDU)			
<i>Eng / Tech Svcs / GIS Allocation</i>	\$998,870	\$0	\$0	\$0	\$0	\$998,870	\$0	\$0	100.0% EDU
Total Operating & Maintenance Expense	\$3,948,079	\$0	\$0	\$0	\$0	\$3,948,079	\$0	\$0	
Rate Funded Capital	\$1,500,000	\$0	\$0	\$0	\$0	\$1,500,000	\$0	\$0	100.0% EDU
Debt Service									
State Revolving Fund	\$139,703	\$0	\$0	\$0	\$0	\$139,703	\$0	\$0	100.0% EDU
New Debt	\$0	0	0	0	0	0	0	0	100.0% EDU
<i>Total Debt Service</i>	<i>\$139,703</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$139,703</i>	<i>\$0</i>	<i>\$0</i>	
<i>Less: Property Tax Revenues</i>									
General Property Taxes	\$139,703	\$0	\$0	\$0	\$0	\$139,703	\$0	\$0	100.0% EDU
<i>Total Less: Property Tax Revenues</i>	<i>\$139,703</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>\$139,703</i>	<i>\$0</i>	<i>\$0</i>	
Net Debt Service	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	
Reserve Funding									
Operating Reserve	(\$61,082)	\$0	\$0	\$0	\$0	(\$61,082)	\$0	\$0	100.0% EDU
Capital Reserve	0	0	0	0	0	0	0	0	100.0% EDU
Rolling Stock Reserve	0	0	0	0	0	0	0	0	100.0% EDU
Property Tax Reserve	0	0	0	0	0	0	0	0	100.0% EDU
Total Reserve Funding	(\$61,082)	\$0	\$0	\$0	\$0	(\$61,082)	\$0	\$0	
Total Revenue Requirement	\$5,386,998	\$0	\$0	\$0	\$0	\$5,386,998	\$0	\$0	
Less: Other Revenue									
Other Operating Revenue	\$24,494	\$0	\$0	\$0	\$0	\$24,494	\$0	\$0	Total Revenue Requirement
Penalties on Delinquencies	30,900	0	0	0	0	30,900	0	0	Total Revenue Requirement
Other Non-Operating Revenue	2,400	0	0	0	0	2,400	0	0	Total Revenue Requirement
Proceeds from Asset Sales	3,000	0	0	0	0	3,000	0	0	Total Revenue Requirement
Interest Income	51,652	0	0	0	0	51,652	0	0	Total Revenue Requirement
Total Other Revenues	\$112,446	\$0	\$0	\$0	\$0	\$112,446	\$0	\$0	
Net Revenue Requirement	\$5,274,552	\$0	\$0	\$0	\$0	\$5,274,552	\$0	\$0	

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 13
 Allocation of the Revenue Requirement

	Net Revenue Requirement	Residential	Commercial	Allocation Factor
Volume Related	\$0	\$0	\$0	(VOL)
Strength Related				
Biochemical Oxygen Demand	\$0	\$0	\$0	(BOD)
Total Suspended Solids	0	0	0	(SS)
Total Strength Related	\$0	\$0	\$0	
Customer Related				
Actual Customer	\$0	\$0	\$0	(AC)
Weighted Customer	5,274,552	4,383,886	890,666	(EDU)
Total Customer Related	\$5,274,552	\$4,383,886	\$890,666	
Revenue Related	\$0	\$0	\$0	(RR)
Direct Assignment	\$0	\$0	\$0	(DA)
Net Revenue Requirement	\$5,274,552	\$4,383,886	\$890,666	

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 14
 Summary Of The Cost Of Service Analysis

	2020 Expenses	Residential	Commercial
Revenues at Present Rates	\$4,975,992	\$4,135,741	\$840,251
Allocated Revenue Requirement	\$5,274,552	\$4,383,886	\$890,666
Subtotal Balance/(Deficiency) of Funds	(\$298,560)	(\$248,144)	(\$50,415)
Required % Change in Rates	6.0%	6.0%	6.0%

Tahoe City PUD
 Sewer Cost of Service
 Exhibit 15
 Average Unit Costs

	Total	Residential	Commercial
Volume \$ / 1,000 gal	\$0.00	\$0.00	\$0.00
Strength \$ / 1,000 gal	\$0.00	\$0.00	\$0.00
RR / DA \$ / 1,000 gal	\$0.00	\$0.00	\$0.00
<i>Total</i>	\$0.00	\$0.00	\$0.00
Customer Costs - \$ / EDU / mo	\$46.79	\$46.79	\$46.79
Average Total Cost \$/1,000 gal	\$1.46	\$7.80	\$0.29
Average Current Cost \$/1,000 gal	\$1.38	\$7.36	\$0.28
Basic Data + growth			
Annual Water Consumption	3,602,049	562,176	3,039,873
# of EDU	9,394	7,808	1,586