



TILTON- NORTHFIELD WATER DISTRICT

2023 Water Rate Study Report

Final Report / March 13, 2023

March 13, 2023

Mr. John Chase
Superintendent
Tilton-Northfield Water District
14 Academy Street
Tilton, NH 03276

Subject: Final 2023 Water Rate Study Report

Dear Mr. Chase,

Raftelis is pleased to present this draft report describing the assumptions and findings of our Water Rate Study (Study) performed for the Tilton-Northfield Water District (TNWD or District). Over the past several months, we have worked closely with the District and its engineering firm, Stantec, on completing this engagement. We would like to take this opportunity to thank you, your staff, the Commission, and Stantec for the efforts and participation put forth during the Study.

The major objectives of the Study included the following:

- » Develop a sustainable financial plan to ensure financial sufficiency, meet operation and maintenance (O&M) costs, ensure sufficient funding for capital renewal and replacement (R&R) needs, and mitigate any resulting rate shock on the District's customers; and
- » Review the District's existing rate revenue stream and make recommendations for across-the-board rate increases necessary to fully support the financial plan.

This report summarizes the key assumptions, findings, and recommendations related to the development of the financial plan and corresponding rate increases and fee modifications. It has been a pleasure working with you, and we thank you and the District for the support provided over the course of the Study.

Sincerely,

RAFTELIS FINANCIAL CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read 'Dave Fox', with a stylized flourish at the end.

Dave Fox
Vice President

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1. INTRODUCTION

Raftelis was engaged by the Tilton-Northfield Water District (TNWD or District) to perform a water rate study (Study) for a five-year forecast period. This report summarizes the Study and recommends rate adjustments to address the District's financial objectives.

1.1 SCOPE OF SERVICES

Raftelis was retained by the District in the fall of 2022 to perform a Water Rate Study. The main goals of this Study were to assess the appropriateness of the District's current water rates in comparison to the District's financial objectives and to develop a forecast of water rates and charges to fund current and future operating and capital needs. The District also requested that Raftelis analyze the financial impact of not receiving payment for its public fire protection charges.

Raftelis held multiple meetings with the District and its Commissioners to identify the primary objectives and financial goals for the water utility. During this meeting, and in subsequent discussions, the following objectives were identified:

- » Evaluate revenue sufficiency and recommend rates that recover the necessary revenues to meet existing and future operating and capital revenue requirements;
- » Evaluate the cost recovery equity of the District's existing rates and make recommendations for improvements; and
- » Provide an update to the financial planning and rate model, designed for continuous use by District Staff.

Raftelis has developed a financial planning and rate model to forecast annual revenue requirements, customer demand, rates, and system revenues over a five-year planning period. The model provides a module for analyzing the District's current financial position and the future impacts of the recommended program of rate adjustments to the system and its customers.

1.2 RATE STUDY PROCESS

Raftelis utilizes a systematic approach for rate setting, which was tailored to the District's goals and objectives. The first step in the rate setting process was the identification of pricing objectives, which occurred during a project kick-off meeting with District Staff. During this meeting, Raftelis also discussed the advantages and disadvantages of the District's current rate structure, as well as potential rate structure modifications. This allowed Raftelis to identify rate adjustments that address as many of the District's objectives as possible and that were the most applicable to the District's current operation and customer characteristics.

The next step in the rate setting process was the development of a financial plan, which summarizes the revenue requirements and projected revenues for the five-year planning period. The financial plan projects revenue shortfalls under the District's existing rates and indicates the additional level of revenues necessary to support the projected revenue requirements.

Revenue requirements include all operations and maintenance (O&M) costs, capital costs (including debt service payments and other cash funded capital), and any other need for purposes of maintaining financial viability. The methodology for determining the District's revenue requirements is discussed in detail in Section 2.1. After identifying the revenue requirements, Raftelis analyzed customer demand, which is a critical element in developing rate recommendations. As will be discussed in Section 2.2, the District's billing data for the utility customers was reviewed to develop a projection of accounts and billable consumption, upon which revenues were forecast using existing rates.

After the financial plan was developed, Raftelis began the process of calculating rate structure adjustments and the resulting rates necessary to recover the revenue shortfall identified. Based on information provided during the kick-off meeting and subsequent correspondence, Raftelis developed preliminary rate recommendations to address the objectives identified.

1.3 KICKOFF MEETING

The first step in the rate setting process was understanding the District's utility pricing objectives. As mentioned previously, Raftelis conducted project kick-off meetings with District Staff. The purpose of these meetings were to: (1) discuss the overall rate setting process, (2) provide a forum for District staff to communicate the utility's short- and long-term rate and financial goals, (3) discuss the advantages and disadvantages of the District's current rates and potential rate adjustments, and (4) identify the District's most important utility pricing objectives to guide the Study.

Utility pricing objectives are defined as a broad range of rate setting and rate structure objectives that reflect the values and goals of the utility and community and properly communicate the utility's pricing message. The importance and priority assigned to pricing objectives can vary significantly from one utility or community to the next. It is also important to note that several of these pricing criteria can conflict with each other. For example, increasing revenue stability through increases to fixed charges can cause affordability issues for low-income users, since they cannot control that portion of their bill.

District staff indicated that its most important pricing objectives were: Financial Sufficiency; Minimization of Customer Impacts; Revenue Stability; and Affordability.

2. FINANCIAL AND RATE PLAN

The next step in the rate setting process was the development of a financial plan, which includes establishing a forecast of revenue requirements, determining the necessary revenue increases using demand projections, and examining the forecasted operating results over the five-year forecast period.

2.1 REVENUE REQUIREMENTS

The first major task in establishing a financial plan is developing an understanding of the revenue requirements of the utility over the forecast period. As previously discussed, revenue requirements are comprised of cash-based expenses including: O&M expenses, annual debt service payments, cash-funded capital, and contributions to financial viability, as necessary.

2.1.1 Operating Expenses

O&M expenses represent normal, recurring expenses necessary to sustainably operate and maintain the system during the District's annual accounting cycle. The FY 2023 operating budget was provided to Raftelis by District Staff and serves as the baseline for the projection of utility operating costs.

To develop a five-year forecast of system operating costs and account for growing utility costs and inflation, escalation factors are used for each major operating expense category. These escalation factors resulted in an increase of 4% per year to operating expenses throughout the five-year forecast period. These cost escalation factors are consistent with historical trends seen in the consumer price index, construction cost index, and actual District historical results.

2.1.2 Capital Improvement Plan

One of the major components of establishing a financial plan was incorporating the District's Capital Improvement Plans (CIP) and corresponding capital financing plan based on the anticipated capital expenditures for the system over the forecast period.

The District provided Raftelis with a CIPs for the forecast period. Major elements of the CIP include a new water treatment facility, water main improvements, water tank restoration, and a new water supply. The water CIP identifies about \$8.1 million in capital expenditures from FY 2024 – FY 2028. In addition to the CIP projects, the District provided Raftelis with its proposed financing plan. Funding for system projects is expected to be addressed through a combination of debt and cash financing.

The capital financing plan assumes future debt issuances and rate-funded capital (PAYGO). In total, the capital financing plan assumes that approximately 97% of the plan will be funded with future debt issuances, and some ARPA grants, and the remaining 3% funded with cash.

The District's current outstanding indebtedness includes a combination of both private bonds and SRF loans. The projected existing debt service payments for the forecast period are based on payment schedules provided by District and Stantec staff.

In addition to the existing debt, and as indicated in the capital financing plan, the District plans to issue additional debt in years FY 2024 – FY 2028. The underlying assumptions are that the new bonds will be issued with a 6- to 30-year repayment terms, at varying interest rates. It is also assumed that a portion of the projects will be open to ARPA grants and loan forgiveness.

Exhibit 1 below presents the full CIP assumed, with project descriptions, funding sources, and projected cost in 2022 dollars. All future years have been escalated.

Exhibit 1: System Revenue Requirements

Project	Funding Approach (See notes below)	Present Project Cost (2022 \$'s)
Water Main Replacement (1000 ft/yr)	1,7	\$ 150,000
Copper Service Replacement (500 services @ \$2000 ea.)	2 - 20 yr term	1,000,000
Excavator (JD 190)	3, 8 - 6 yr term	175,000
Dump Truck (F-750)	3, 8 - 6 yr term	100,000
Loader	3, 8 - 6 yr term	125,000
Existing Tank Cleaning - 2 cells	1	20,000
Existing Tank Roof Coating	1	45,000
New 650,000 Gallon Tank w/ Water Main	2 - 30 yr term	3,500,000
Existing Tank Repairs	6	250,000
Water Treatment Facility	5 - 30 year term	6,500,000
4th Source	2 - 30 year term	2,000,000
Well Redevelopment	1	9,000
WTF Upgrades	2	1,950,000
TOTALS		\$ 15,824,000

Notes:

1. Carried in annual budget
2. SRF, CDBG, RD loan or similar - assumes 20% grant and 1.5% Loan 30 year term and 10% loan forgiveness
3. Conventional Bank Loan at 5% Term Varies
4. Escalation of item costs is 4% annual increase
5. SRF loan @ 1.125% and 30 yr term, 30% ARPA Grant and 10% NHDES Loan Forgiveness
6. Bank loan @ 2.5% interest
7. 2023 Water Main Improvements to be paid from the unreserved fund
8. TNWD intends to purchase used equipment at approximately 65% of the full value of the equipment

The total revenue requirements, O&M expenses, the existing and proposed annual debt service, and the cash funded capital discussed in the proceeding sections are shown below in Exhibit 2.

Exhibit 2: System Revenue Requirements

Revenue Requirements	Year 1	Year 2	Year 3	Year 4	Year 5
<u>Operating & Maintenance Expenses</u>					
Outside Services	\$ 21,013	\$ 21,538	\$ 22,076	\$ 22,628	\$ 23,194
Payroll Expense	1,576	1,615	1,656	1,697	1,740
Commissioners	9,771	10,015	10,265	10,522	10,785
Clerk	3,152	3,231	3,311	3,394	3,479
Moderator	525	538	552	566	580
Office	105	108	110	113	116
Treasurer	3,152	3,231	3,311	3,394	3,479
Meetings	1,576	1,615	1,656	1,697	1,740
Treatment Operations	1,576	1,615	1,656	1,697	1,740
Power Purchased for Pumps	50,430	51,691	52,983	54,308	55,665
Pumping Equipment	5,253	5,384	5,519	5,657	5,798
Chemicals	63,038	64,613	66,229	67,884	69,582
Treatment Equipment	3,677	3,769	3,863	3,960	4,059
Expenses/Distribution Main	5,253	5,384	5,519	5,657	5,798
Expenses/SCADA	3,152	3,231	3,311	3,394	3,479
Maintenance Services	525	538	552	566	580
Customer Complaints/Expenses	2,101	2,154	2,208	2,263	2,319
Expenses/Meters	15,759	16,153	16,557	16,971	17,395
Maintenance - Hydrants	5,253	5,384	5,519	5,657	5,798
Taxes - Property - Northfield	1,576	1,615	1,656	1,697	1,740
Taxes - Federal Payroll	24,164	24,768	25,388	26,022	26,673
Taxes - FUTA	315	323	331	339	348
Taxes - SUTA	1,051	1,077	1,104	1,131	1,160
Taxes - NH BPT	7,354	7,538	7,727	7,920	8,118
Taxes - NH BET	30,468	31,230	32,011	32,811	33,631
Miscellaneous Non-Utility Expense	5,253	5,384	5,519	5,657	5,798
Expenses - Pump Station	3,152	3,231	3,311	3,394	3,479
Billing & Collection	2,627	2,692	2,760	2,829	2,899
Education & Seminars	1,576	1,615	1,656	1,697	1,740
Dues & Subscriptions	3,152	3,231	3,311	3,394	3,479
Accounting & Legal Fees	18,911	19,384	19,869	20,365	20,874
Wages - Field (Based on Gross Wages)	108,740	111,458	114,245	117,101	120,028
Wages - Office & Administration	177,556	181,995	186,544	191,208	195,988
Office Expense	9,981	10,230	10,486	10,748	11,017
Outside Services/Engineering	3,152	3,231	3,311	3,394	3,479
Insurance	12,608	12,923	13,246	13,577	13,916
Employee Benefits	78,797	80,767	82,786	84,856	86,977
Franchise Requirements	525	538	552	566	580
Postage	1,576	1,615	1,656	1,697	1,740
Miscellaneous General Expenses	5,778	5,923	6,071	6,223	6,378
Utilities	12,608	12,923	13,246	13,577	13,916
Maintenance - General Plant	4,728	4,846	4,967	5,091	5,219
Management Fees to TNWD	21,013	21,538	22,076	22,628	23,194
Maintenance/Office	1,576	1,615	1,656	1,697	1,740
Maintenance/Vehicle & Equipment	6,304	6,461	6,623	6,788	6,958
Uniform Expense	3,152	3,231	3,311	3,394	3,479
Transportation Expense	5,778	5,923	6,071	6,223	6,378
Bank Service Charges	105	108	110	113	116
Loan Forgiveness/NHDES	18,893	19,365	19,849	20,345	20,854
<i>Subtotal: Operating & Maintenance Expenses</i>	<i>\$ 769,354</i>	<i>\$ 788,588</i>	<i>\$ 808,303</i>	<i>\$ 828,510</i>	<i>\$ 849,223</i>
<u>Debt Service</u>					
Existing	\$ 478,800	\$ 478,800	\$ 478,800	\$ 478,800	\$ 478,800
Proposed	224,991	224,991	245,241	245,241	245,241
<i>Subtotal: Debt Service</i>	<i>\$ 703,791</i>	<i>\$ 703,792</i>	<i>\$ 724,041</i>	<i>\$ 724,041</i>	<i>\$ 724,042</i>
<u>PAYGO Capital</u>	\$ 31,366	\$ 172,364	\$ 10,529	\$ 179,679	\$ 11,388
Total: Revenue Requirements	\$ 1,504,511	\$ 1,664,743	\$ 1,542,873	\$ 1,732,231	\$ 1,584,653

2.2 REVENUES

The District collects revenue from several sources. Operating revenues consist primarily of revenues from water retail rates and charges. Other water system operating revenues include sprinkler and hydrant charges, along with other miscellaneous revenue sources.

2.2.1 Demand for Services

To estimate system user charge revenue, a customer demand forecast must be developed and applied to rates and charges. To calculate demand, Raftelis reviewed the District’s historical demand and customer growth and projected future demand for service over the forecast period. Detailed billing data was provided to Raftelis by the District. Raftelis then analyzed the detailed billing data to develop the demand forecast used in the model.

After discussions with District staff, it was agreed that Raftelis would assume the following customer growth and usage assumptions over the forecast period. Customer accounts are projected to remain flat throughout the duration of the forecast. For customer consumption demand, usage is projected to decrease by 1% per year for all customer classes. Raftelis believes these assumptions to be reasonable particularly when considering the nationwide and regional trend of declining per capita water usage.

Exhibit 2 presents the forecast of accounts and consumption over the forecast period.

Exhibit 3: Schedule of Accounts and Consumption

Accounts	Year 1	Year 2	Year 3	Year 4	Year 5
Water Service Accounts					
3/4"	835	835	835	835	835
1"	19	19	19	19	19
1.5"	47	47	47	47	47
2"	26	26	26	26	26
3"	2	2	2	2	2
4"	0	0	0	0	0
<i>Subtotal: Water Service Accounts</i>	929	929	929	929	929
<i>Change</i>	0.0%	0.0%	0.0%	0.0%	0.0%
Fire Sprinkler Heads	28,702	28,702	28,702	28,702	28,702
Private Hydrants	86	86	86	86	86
Tilton	76	76	76	76	76
Northfield	10	10	10	10	10
Public Hydrants	103	103	103	103	103
Tilton	62	62	62	62	62
Northfield	41	41	41	41	41
Consumption					
Water Consumption by Meter Size (in 100 Cubic Feet)					
3/4"	48,510	48,025	47,545	47,070	46,599
1"	6,331	6,268	6,205	6,143	6,082
1.5"	29,800	29,502	29,207	28,915	28,626
2"	31,232	30,920	30,611	30,305	30,002
3"	3,963	3,923	3,884	3,845	3,807
4"	0	0	0	0	0
<i>Subtotal: Consumption</i>	119,836	118,638	117,452	116,278	115,116
<i>Change</i>	-1.0%	-1.0%	-1.0%	-1.0%	-1.0%

2.2.2 Existing Rates and Revenues

Operating revenues are generated primarily from user rates and charges assessed to retail customers. The District's existing retail rate structure consists of a volumetric charge of \$5.14 per hundred cubic feet (Ccf) for all customer classes, and a quarterly fixed charge which increases by meter size. The vast majority of the District's customers have a ¾ inch (¾") meter, which currently has a quarterly charge of \$28.17.

On top of the retail rates, the District also generates revenues from its private and public fire protection charges. Currently, the District has private fire protection charges which are based on either sprinkler heads or hydrants. The District also assesses public fire protection charges to the Tilton-Northfield Fire District, based on the number of public hydrants, although the Fire District has been disputing their fire protection charges, so future payments are not guaranteed. For the purposes of this report, it is assumed that the District will not recover revenue from this source. The District's existing user charges are presented in Exhibit 4.

Exhibit 4: Existing User Charges

Rates	
Customer Service Charge (per Quarter)	
¾"	\$ 28.17
1"	39.43
1.5"	50.68
2"	81.65
3"	309.74
4"	309.22
Volumetric Rate (per 100 cubic feet)	\$ 5.14
Fire Sprinkler Heads (per Head)	\$ 2.78
Private Hydrants	\$513.48
Public Hydrants	\$513.48
Fixture Rate/Unmetered Service	\$ 75.37

Current year revenues have been projected based on the projected number of customer bills and billable units and the rates currently in place. The forecast period has been projected in the same way, using the projected number of bills and billable units of service and the future rates.

In addition to user charge revenues, the District collects revenue from a few other operating and non-operating sources such as new service fees, final meter reading fees, and interest income, among others.

2.3 REVENUE SUFFICIENCY

The most important element to any rate study is to ensure that a utility generates revenues that are sufficient for the operation of the system. Once the revenue requirements for user charges have been forecasted over the forecast period, the next step was determining the ability of the existing user charges to recover sufficient revenues to fully meet the anticipated operating and capital needs of the utility.

Based on the assumptions laid out in this report, the existing rates are not sufficient to recover the system revenue requirements over the forecast period. To achieve revenue sufficiency, rate increases are needed. Raftelis has assumed rate revenue increases for the duration of the forecast period. In order to fund system revenue requirements and meet debt service coverage and adequate reserve fund balance targets, 8.0% across-the-board increases will be needed for retail water rates for the duration of the forecast period (FY 2024 – FY 2028). Raftelis recommends that the District reevaluate these increases annually to ensure that they continue to sufficiently recover utility costs. Exhibit 5 presents the District’s proposed rates and charges over the forecast period.

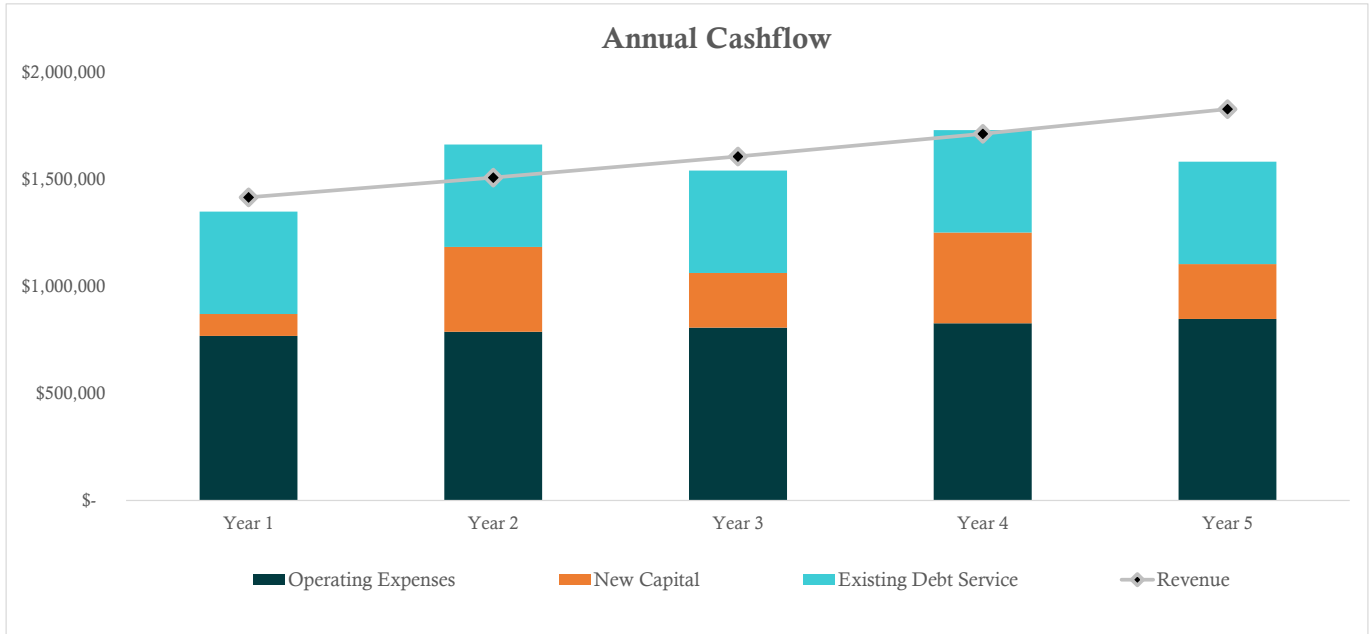
Exhibit 5: Proposed User Charges

Rates	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Customer Service Charge (per Quarter)					
3/4"	\$ 30.42	\$ 32.86	\$ 35.49	\$ 38.32	\$ 41.39
1"	42.58	45.99	49.67	53.64	57.94
1.5"	54.73	59.11	63.84	68.95	74.47
2"	88.18	95.24	102.86	111.08	119.97
3"	334.52	361.28	390.18	421.40	455.11
4"	333.96	360.67	389.53	420.69	454.35
Volumetric Rate (per 100 cubic feet)	\$ 5.55	\$ 6.00	\$ 6.47	\$ 6.99	\$ 7.55
Fire Sprinkler Heads (per Head)	\$ 3.00	\$ 3.24	\$ 3.50	\$ 3.78	\$ 4.08
Private Hydrants	\$ 554.56	\$ 598.92	\$ 646.84	\$ 698.58	\$ 754.47
Public Hydrants	\$ 554.56	\$ 598.92	\$ 646.84	\$ 698.58	\$ 754.47
Fixture Rate/Unmetered Service	\$ 81.40	\$ 87.91	\$ 94.94	\$ 102.54	\$ 110.74

Based on the projected revenue requirements (Section 2.1) and the projected revenues (Section 2.2), Exhibit 6 shows the resulting financial performance of the projected results using the rate increases proposed by Raftelis.

Although in Year 2 of the forecast the District is projected to operate in a deficit, the District will maintain adequate fund balance and operate a net surplus over the 5-year planning horizon.

Exhibit 6: Projected Financial Plan



Given these rate increases, the District can expect all of its retail customers to pay approximately 8% more per bill. This results in an increase of \$8.42 for the District’s typical Residential customer. Exhibit 7 presents the quarterly bills and bill impacts associated with the proposed rate increases.

Exhibit 7: Quarterly Customer Impacts

Customer Impacts - Quarterly Bill	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Low-Volume Residential Customer (3/4"; 7 Ccf)	\$ 69.28	\$ 74.82	\$ 80.81	\$ 87.28	\$ 94.26
<i>\$ Change</i>	\$ 5.13	\$ 5.54	\$ 5.99	\$ 6.46	\$ 6.98
<i>% Change</i>	8.0%	8.0%	8.0%	8.0%	8.0%
Typical Residential Customer (3/4"; 15 Ccf)	\$ 113.69	\$ 122.79	\$ 132.61	\$ 143.22	\$ 154.68
<i>\$ Change</i>	\$ 8.42	\$ 9.10	\$ 9.82	\$ 10.61	\$ 11.46
<i>% Change</i>	8.0%	8.0%	8.0%	8.0%	8.0%
High-Volume Residential Customer (3/4"; 25 Ccf)	\$ 169.20	\$ 182.74	\$ 197.36	\$ 213.15	\$ 230.20
<i>\$ Change</i>	\$ 12.53	\$ 13.54	\$ 14.62	\$ 15.79	\$ 17.05
<i>% Change</i>	8.0%	8.0%	8.0%	8.0%	8.0%

3. RECOMMENDATIONS

The following are Raftelis' recommendations following the completion of the Rate Study:

1. Increase all rates and charges by 8% in order to ensure financial sufficiency;
2. Continue to monitor the situation with the Fire District, and make adjustments to the financial plan as needed based on payment of public fire protection charges;
3. Update rate and financial planning model frequently to reflect changes in operations, revenue, capital improvements plans, and actual debt service obligations;
4. Make adjustments as necessary to annual rate increases.