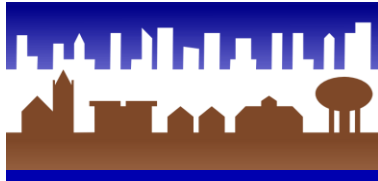




**Town of Exeter**  
**Water & Sewer Rate Study**  
**Final Draft Report**  
**November 2016**

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## Municipal & Financial Services Group

November 28, 2016

Jennifer Perry  
Director of Public Works  
Town of Exeter  
13 Newfields Road  
Exeter, NH 03833

RE: Water and Sewer Rate Study

Dear Ms. Perry,

The Municipal & Financial Service Group is pleased to submit to the Town of Exeter this report summarizing the water and sewer rate study. This document represents the results of our analysis of the forecasted costs of providing water and sewer service to the Town's customers and our recommendations for recovering these costs over the next five years. The study provides a number of recommendations that will enhance the financial health and stability of the Town's water and sewer operations while equitably charging its customers for the services provided.

It has been a distinct pleasure to work with the Town of Exeter. The assistance provided by management, staff and the Water & Sewer Advisory Committee was essential to the completion of this study. The dedication of everyone who assisted in the study process should be acknowledged and was vital to the success of the study. Thank you for the opportunity to work with the Town on this important project.

Very truly yours,

Michael Maker  
Senior Manager  
Municipal & Financial Services Group

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## EXECUTIVE SUMMARY

This document was prepared to present the work performed by the Municipal & Financial Services Group during the water and sewer rate study for the Town of Exeter. The study provides a financial plan for funding of the operating and capital costs of the Town's water and sewer systems over a five-year planning period (FY 2017 to FY 2021).

### Objective and Scope

The objective and scope of services set forth between the Town of Exeter ("The Town") and the Municipal & Financial Services Group ("MFSG") consists of the following related tasks:

- Determine the cost of system services with the intent of establishing a usage rate and fee schedule
- Evaluating alternative rate structures
- Update or replace the existing rate model to allow adjustment for changes in general economic conditions
- Prepare a 5-year forward-looking financial plan for:
  - implementing capital improvements and associated debt service
  - accumulating capital reserves to fund scheduled replacements and upgrades of critical equipment and systems; and
  - funding anticipated water and sewer operations budgets

The water and sewer rate study has been completed based on these tasks, which are documented in this report.

### Background

The Town of Exeter is located in Rockingham County and was one of the four original townships in the province. The Town is located where the Exeter River meets the Squamscott River on the eastern side of the state less than 10 miles from the coast. The Town has a population of slightly over 14,000 and covers approximately 20.76 square miles. The governing body of the Town is represented by the Board of Selectmen which is reorganized each March after the Annual Town Election.

The Town of Exeter provides water and sewer service to residents and businesses located within the Town limits, as well as a small number of accounts within the Towns of Stratham and Hampton. The day-to-day operation and maintenance of the water and sewer systems are managed by the Divisions of Water and Sewer within the Town's Public Works Department. The Town of Exeter owns and operates its own water and sewer systems and accounts for them in a separate Water and Sewer Enterprise Fund. As such, the operations and maintenance of the water and sewer utilities are fully supported by the users of the systems through user rates and fees. There are 15 employees who support the water treatment, wastewater treatment and distribution and collection system operations.

The Town maintains a water system consisting of approximately 30 miles of water lines, 3 storage tanks, 4 pumping stations and a water treatment plant. The water supply for the Town comes from a combination of ground water and surface water but the primary source is the Exeter River. The treatment plant maintains a maximum capacity of 1.56 mgd (million gallons per day), but the Town has future plans to install a fourth filter to increase the capacity to 2.06 mgd.

The wastewater system includes a collection system consisting of 49 miles of lines, 1,500 manholes, 9 pumping stations and 3 combined sewer overflow diversion structures. Wastewater is conveyed to the Town's wastewater treatment plant designed to treat an average flow of 3.00 mgd and sustain a peak flow of 7.50 mgd. Mandated by an Administrative Order on Consent (AOC) with the U.S. Environmental Protection Agency (EPA), the Town will be replacing its current lagoon system with an advanced secondary wastewater treatment facility (WWTF) system with nitrogen removal. Plans also include improving the Main Pump Station, constructing a new 16-inch diameter sewer forcemain from the Main Pump Station to the WWTF site, relining the existing forcemain and decommissioning three of the four existing lagoons.

## Guiding Principles

The following principles were used to guide the rate study and were developed with the assistance of Town staff and the Water & Sewer Advisory Committee:

- The water and sewer systems must each be financially self-supporting. It is assumed that the cost of operating and maintaining the systems must be supported by the water and sewer fees and charges collected from customers with no support from one fund to the other. If at any time, water (or sewer) resources must be used to support the sewer (or water) system, repayment shall be made in an appropriate amount of time.
- The Town should maintain reserves to provide for contingencies and unplanned expenses and to ensure that funds are generated to allow for appropriate future system replacement.
- Water and sewer rates and charges shall be kept as low as possible *over time*. It is possible to keep rates low for a period of time by not investing sufficiently in the maintenance of the water and sewer systems, but eventually the systems will deteriorate and require substantial investments leading to the need for significant and immediate rate increases. The assumption that the Town will continually reinvest in the water and sewer systems to replace assets as they reach the end of their useful lives is built into the analysis and allows for timely and predictable rate increases.

## Assumptions

The following high-level assumptions were used to guide the rate study and were developed with the assistance of Town staff and the Water & Sewer Advisory Committee:

- Operating and maintenance expenses: 2.0% escalation rate per year for all expenses, unless specified otherwise
- Customer and water usage/sewage generation changes: 0.0% growth per year
- Miscellaneous revenues: 0.0% growth per year
- Projected debt: interest rate of 3.0%, maturity of 20 years and contingency and issuance expense of 1.5%
  - The WWTF project debt has a 2.0% interest rate, maturity of 20 years and separate contingency and issuance expenses via specific funding terms provided by the New Hampshire Department of Environmental Services (DES)
- Minimum cash balance: 90 days of operating expenses

Depending on availability, actual Fiscal Year (FY) 2015, budgeted FY 2016 or proposed FY 2017 data was used as the base upon which forecasted figures were developed. All years within this report refer to the



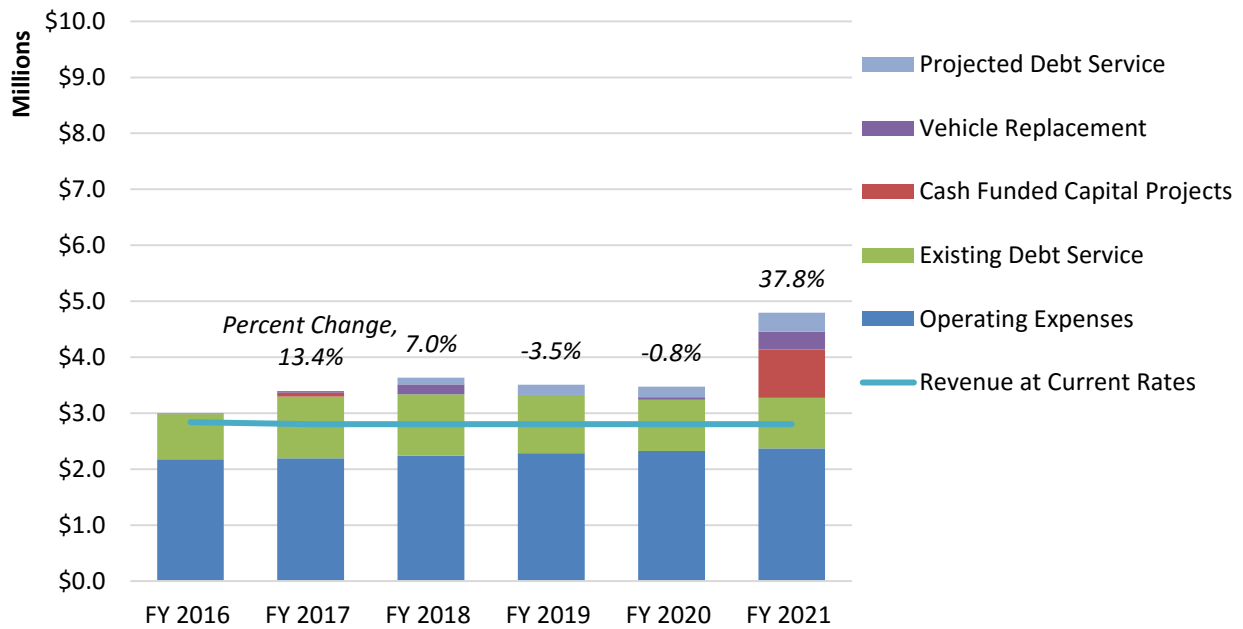
Town’s fiscal year (January 1 to December 31). While the study identifies needed water and sewer rates on a year-by-year basis for a 10-year planning period (FY 2017 – FY 2026), the charts and tables within this report provide data for the first five years in which rates and charges have been calculated.

## Findings

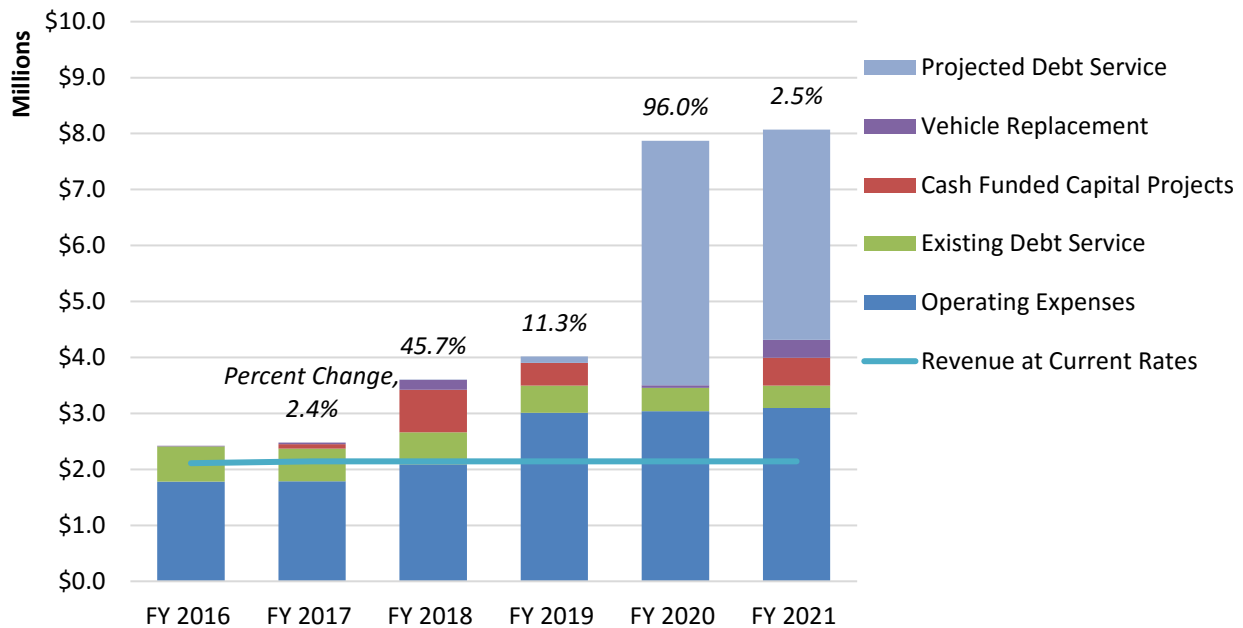
The following findings were developed during the course of the study:

- Revenue collected at current rates are insufficient to cover the water and sewer revenue requirements for FY 2017 through FY 2021. As shown in the exhibits below, current water and sewer rates, if left in place, would not generate sufficient revenue to fund the revenue requirements.

**Water Revenue Requirements and Revenue at Current Rates**



**Sewer Revenue Requirements and Revenue at Current Rates**

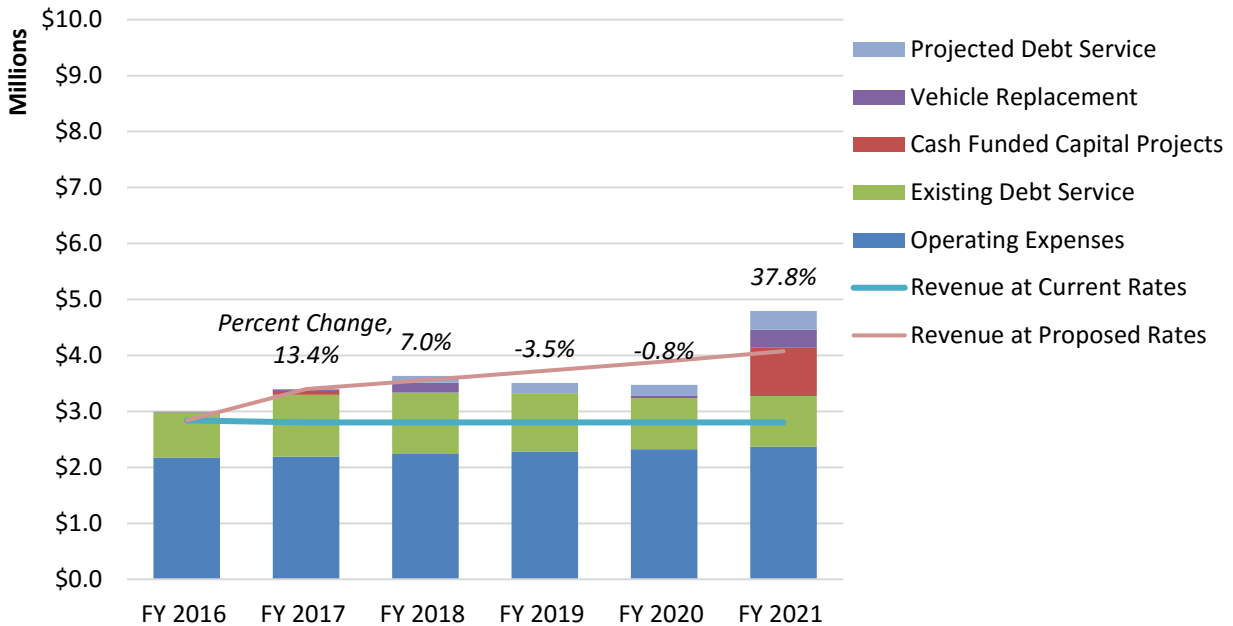


**Conclusions**

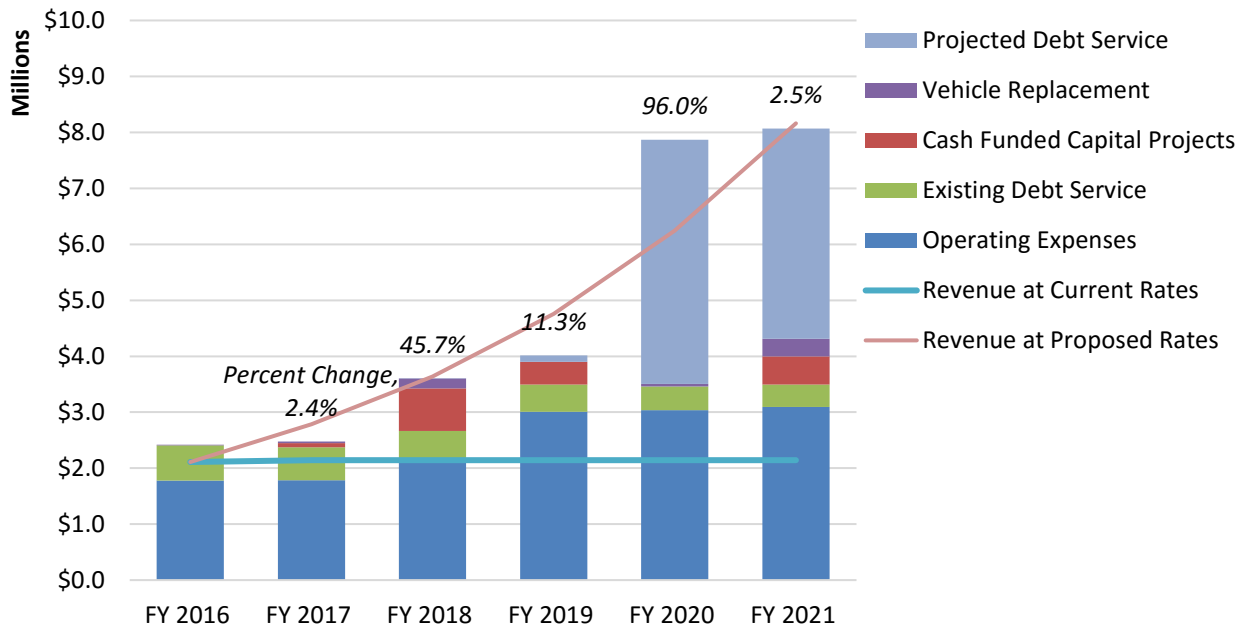
Based on our findings, the following conclusions were drawn:

- The Town needs to increase water and sewer rates over the first five years of the planning period to keep revenues in line with expenses, to fund the required operating and capital costs identified and to meet the minimum cash balance requirement.
- The Town should implement required rate increases through a multi-year financial plan. This will allow the Town to smooth rate increases over the planning period (as shown by the revenue at proposed rates in the exhibit below) and mitigate customer rate shock while meeting its cash requirements.

**Water Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



**Sewer Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



**Recommendations**

Based on our conclusions, the following recommendations were made:

- Adopt the following recommended quarterly water and sewer rates for the next five years.

***Recommended Quarterly Water Rates***

	<b>Current</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.50	\$40.50	\$41.50	\$42.00	\$43.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$6.86	\$7.19	\$7.57	\$7.96	\$8.38	\$8.82
Tier 2 (21,001 - 105,000 gallons)	\$6.86/\$7.45	\$8.99	\$9.46	\$9.95	\$10.48	\$11.03
Tier 3 (Over 105,000 gallons)	\$7.45/\$8.00	\$10.79	\$11.36	\$11.94	\$12.57	\$13.23

***Recommended Quarterly Sewer Rates***

	<b>Current</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.00	\$40.00	\$41.00	\$41.00	\$41.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$4.44	\$5.25	\$7.30	\$10.00	\$13.63	\$18.31
Tier 2 (21,001 - 105,000 gallons)	\$4.44/\$5.23	\$6.56	\$9.13	\$12.50	\$17.04	\$22.89
Tier 3 (Over 105,000 gallons)	\$5.23/\$5.62	\$7.88	\$10.95	\$15.00	\$20.45	\$27.46
<b>Flat Fee Sewer Customers (per bill)</b>	\$75.95	\$95.70	\$118.84	\$149.00	\$188.20	\$238.75

- Review rates and charges on an annual basis and revise as needed. Consider a full cost of service study for all rates and charges every five years. While it is recommended to adopt rates and charges for five years so they do not have to be revisited and voted on every year by the Board, it is financially prudent to review expenses and revenues annually to ensure actual values are relatively in line with those projected.

## 1. BASIS FOR THE STUDY

### 1.1 Objective and Scope

The objective and scope of services set forth between the Town of Exeter (“The Town”) and the Municipal & Financial Services Group (“MFSG”) consists of the following related tasks:

- Determine the cost of system services with the intent of establishing a usage rate and fee schedule
- Evaluating alternative rate structures
- Update or replace the existing rate model to allow adjustment for changes in general economic conditions
- Prepare a 5-year forward-looking financial plan for:
  - implementing capital improvements and associated debt service
  - accumulating capital reserves to fund scheduled replacements and upgrades of critical equipment and systems; and
  - funding anticipated water and sewer operations budgets

The water and sewer rate study has been completed based on these tasks, which are documented in this report.

### 1.2 Background

The Town of Exeter is located in Rockingham County and was one of the four original townships in the province. The Town is located where the Exeter River meets the Squamscott River on the eastern side of the state less than 10 miles from the coast. The Town has a population of slightly over 14,000 and covers approximately 20.76 square miles. The governing body of the Town is represented by the Board of Selectmen which is reorganized each March after the Annual Town Election.

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The Town maintains a water system consisting of approximately 30 miles of water lines, three storage tanks, four pumping stations and a water treatment plant. The water supply for the Town comes from a combination of ground water and surface water but the primary source is the Exeter River. The treatment plant maintains a maximum capacity of 1.56 mgd (million gallons per day), but the Town has future plans to install a fourth filter to increase the capacity to 2.06 mgd.

The wastewater system includes a collection system consisting of 49 miles of lines, 1,500 manholes, nine pumping stations and three combined sewer overflow diversion structures. Wastewater is conveyed to the Town’s wastewater treatment plant designed to treat an average flow of 3.00 mgd and sustain a peak flow of 7.50 mgd. Mandated by an Administrative Order on Consent (AOC) with the U.S. Environmental Protection Agency (EPA), the Town will be replacing its current lagoon system with an advanced secondary

wastewater treatment facility (WWTF) system with nitrogen removal. Plans also include improving the Main Pump Station, constructing a new 16-inch diameter sewer forcemain from the Main Pump Station to the WWTF site, relining the existing forcemain and decommissioning three of the four existing lagoons.

### 1.3 Guiding Principles

The following principles were used to guide the rate study and were developed with the assistance of Town staff and the Water & Sewer Advisory Committee:

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- The Town should maintain reserves to provide for contingencies and unplanned expenses and to ensure that funds are generated to allow for appropriate future system replacement.
- Water and sewer rates and charges shall be kept as low as possible *over time*. It is possible to keep rates low for a period of time by not investing sufficiently in the maintenance of the water and sewer systems, but eventually the systems will deteriorate and require substantial investments leading to the need for significant and immediate rate increases. The assumption that the Town will continually reinvest in the water and sewer systems to replace assets as they reach the end of their useful lives is built into the analysis and allows for timely and predictable rate increases.

### 1.4 Assumptions

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- Operating and maintenance expenses: 2.0% escalation rate per year for all expenses, unless specified otherwise
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  - The WWTF project debt has a 2.0% interest rate, maturity of 20 years and separate contingency and issuance expenses via specific funding terms provided by the New Hampshire Department of Environmental Services (DES)
- Minimum cash balance: 90 days of operating expenses

Depending on availability, actual Fiscal Year (FY) 2015, budgeted FY 2016 or proposed FY 2017 data was used as the base upon which forecasted figures were developed. All years within this report refer to the Town's fiscal year (January 1 to December 31). While the study identifies needed water and sewer rates on a year-by-year basis for a 10-year planning period (FY 2017 – FY 2026), the charts and tables within this report provide data for the first five years in which rates and charges have been calculated.

## 2. REVENUE REQUIREMENTS

This section of the report outlines the historical and future costs of operating and maintaining the Town's systems, which constitute the water and sewer systems' revenue requirements (i.e., the amount of revenue required to be collected from customers). Our approach includes a detailed review of each of the costs incurred by the Town. The cost analysis is broken into two main categories of costs: (1) operating costs and (2) capital costs (including debt and cash funding). This section describes each of the categories of costs incurred by the Town as it provides water and sewer service. The costs are based on official documents and data provided by the Town.

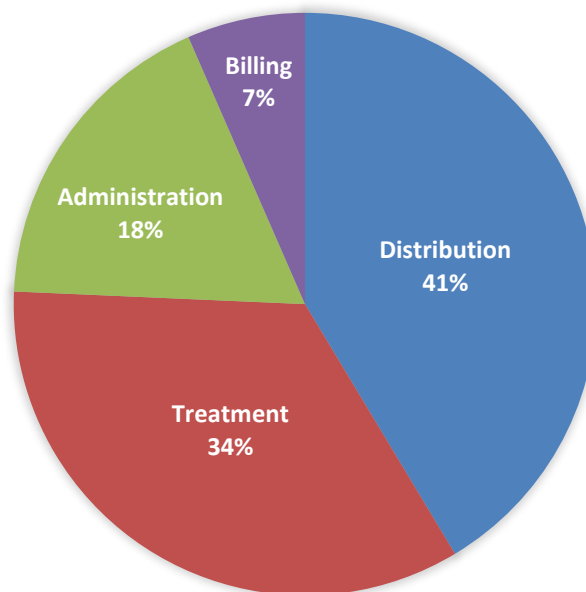
### 2.1 Operating Costs

The day-to-day operating and maintenance (O&M) expenses of the water system are grouped into the following categories:

- Distribution
- Treatment
- Administration
- Billing

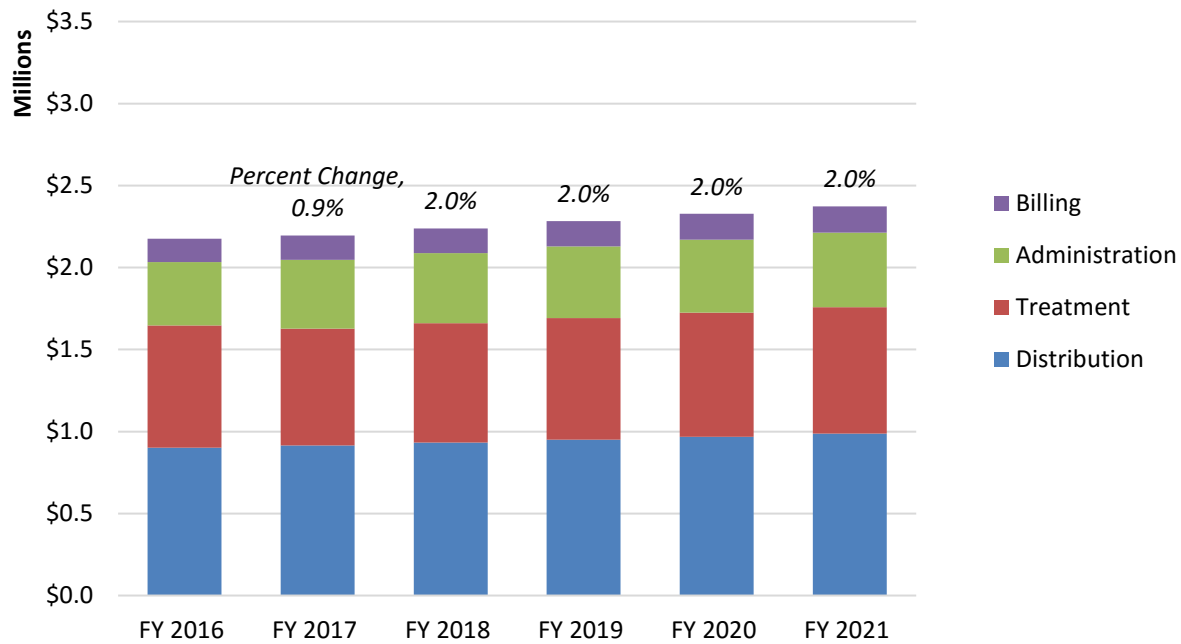
Budgeted FY 2016 expenses total approximately \$2.1 million. Exhibit 2.1.1 provides a breakdown by category (with percent of total budget) for FY 2016.

***Exhibit 2.1.1 FY 2016 Water Operating Expenses***



Budgeted FY 2017 expenses total approximately \$2.2 million. To project operating expenses, FY 2017 water budget line items were escalated using a 2.0% escalation rate. Exhibit 2.1.2 shows water budgeted O&M expenses for the base year (FY 2016) and FY 2017 and projected O&M expenses for the remaining four years (FY 2018 to FY 2021) of the planning period (with percent change from the previous year).

**Exhibit 2.1.2 Projected Water Operating Expenses**



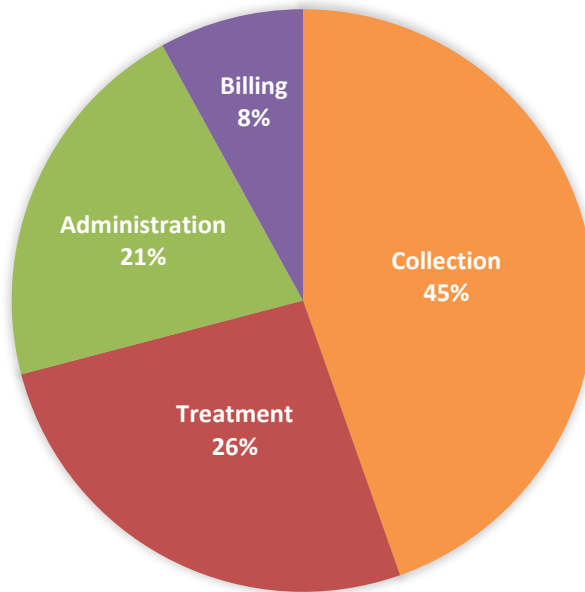
The day-to-day operating and maintenance expenses of the sewer system are grouped into the following categories:

- Collection
- Treatment
- Administration
- Billing

Budgeted FY 2016 expenses total approximately \$1.7 million. Exhibit 2.1.3 provides a breakdown by category (with percent of total budget) for FY 2016.

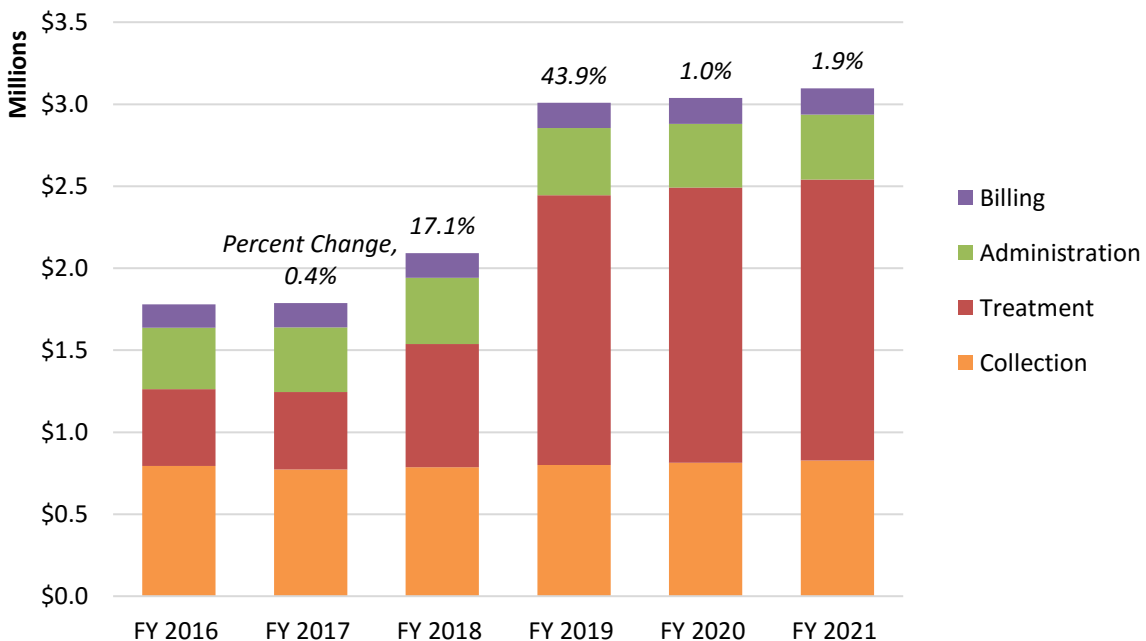


**Exhibit 2.1.3 FY 2016 Sewer Operating Expenses**



Budgeted FY 2017 expenses total just under \$1.7 million. To project operating expenses, FY 2017 sewer budget line items were escalated in the same manner as water expenses, with a 2.0% escalation rate. Operating expenses associated with the new advanced secondary wastewater treatment facility are expected to begin in FY 2018 and be fully implemented in FY 2019. Exhibit 2.1.4 shows sewer budgeted O&M expenses for the base year (FY 2016) and FY 2017 and projected O&M expenses for the remaining four years (FY 2018 to FY 2021) of the planning period (with percent change from the previous year).

**Exhibit 2.1.4 Projected Sewer Operating Expenses**



## 2.2 Capital Costs

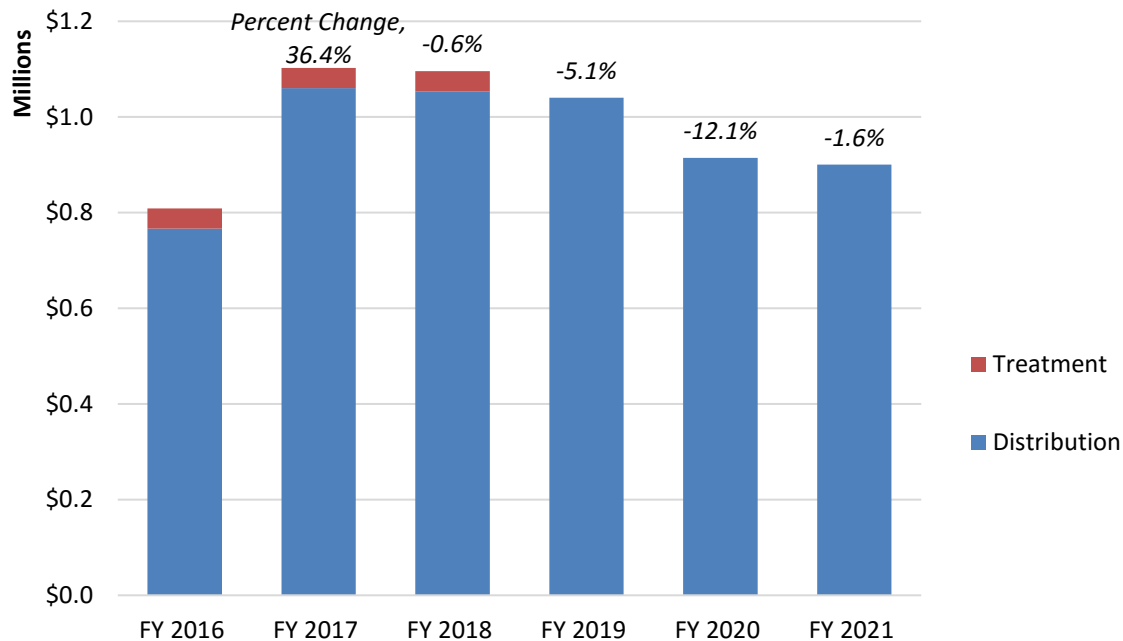
The annualized capital costs related to providing water and sewer service are generally comprised of existing debt service and any anticipated capital projects, which may be funded via the issuance of debt (typically bonds, loans or similar financial instruments) or funded from cash (either reserves on hand or cash derived from operations).

### 2.2.1 Existing Debt Service

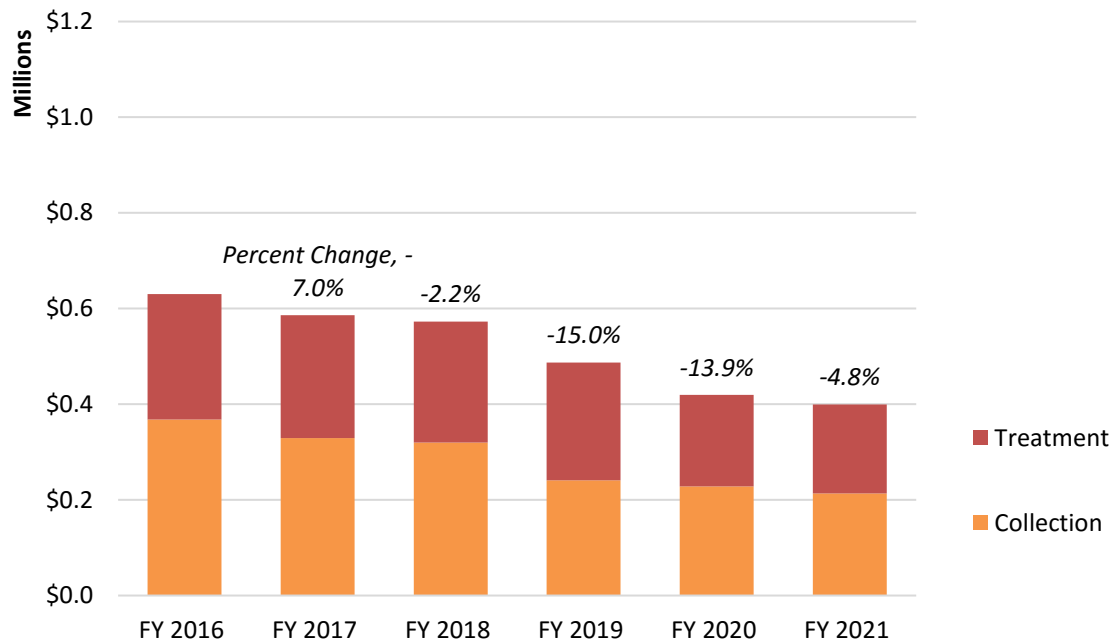
The Town issues bonds to fund capital projects to mitigate the financial burden on customers and the Town’s available fund balance by spreading the costs of long lived assets over several years. The Town is currently paying principal and interest payments on several debt instruments.

Exhibit 2.2.1 and Exhibit 2.2.2 provide a breakdown by project type of the Town’s existing principal and interest payments (with percent change from the previous year) for the base year and the first five years of the planning period (FY 2017 to FY 2021) for water and sewer, respectively.

**Exhibit 2.2.1 Existing Water Debt Service by Project Type**



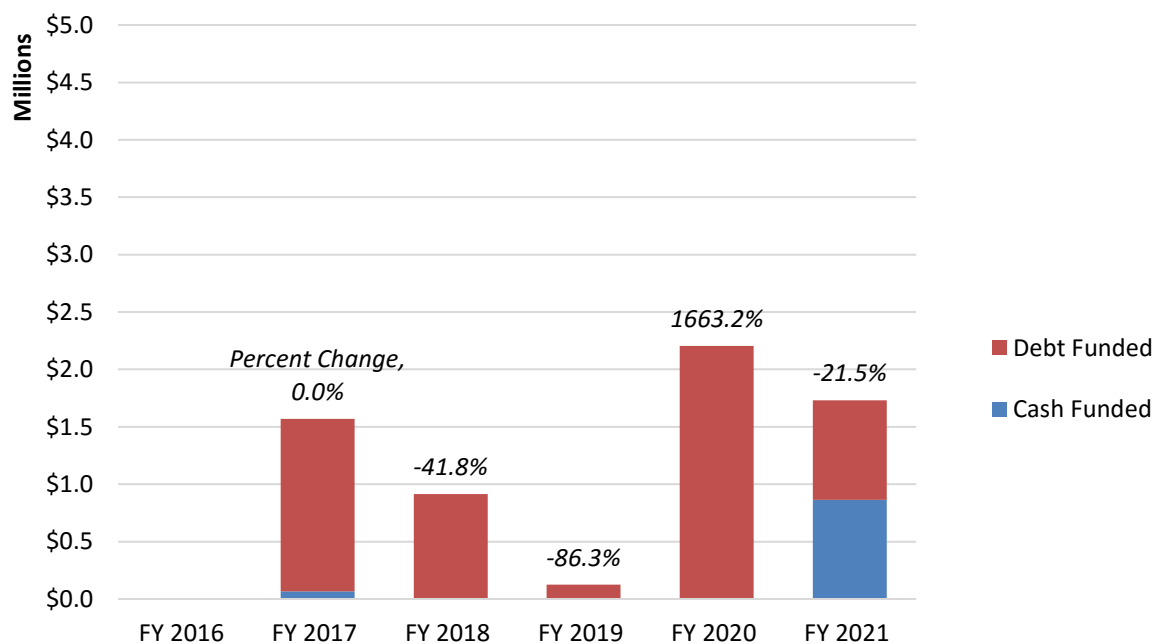
**Exhibit 2.2.2 Existing Sewer Debt Service by Project Type**



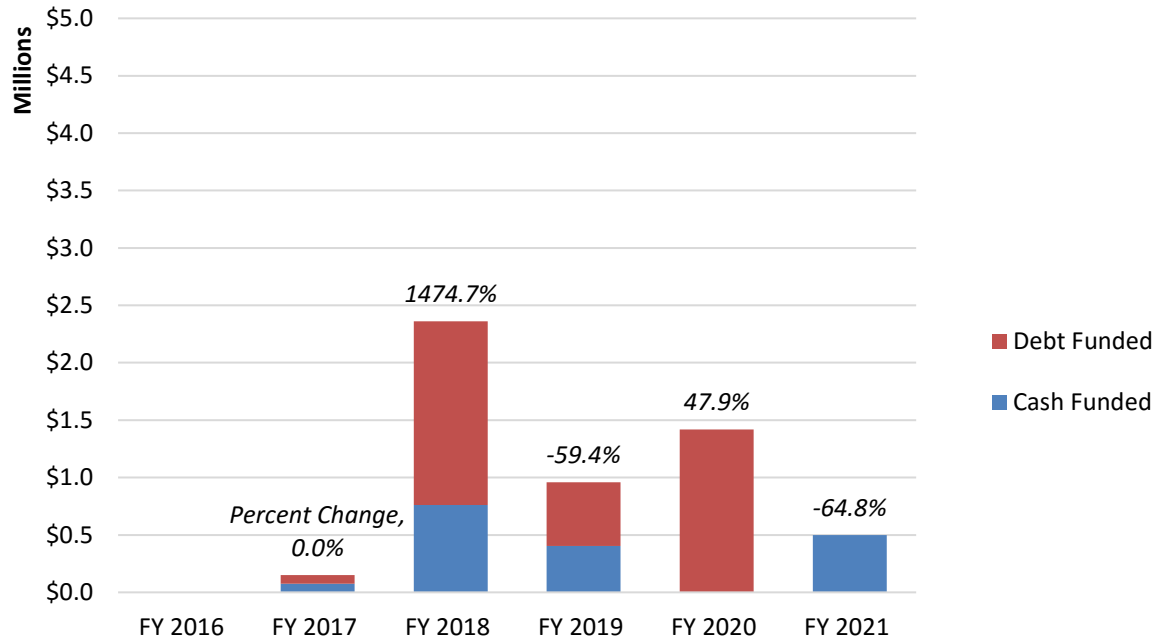
**2.2.2 Planned Capital Improvement Projects**

The Town’s capital improvement program (CIP) includes seven water projects and six sewer projects totaling an estimated \$65.5 million over the five-year period from FY 2017 to FY 2021. Of this total, \$53.6 million is for the engineering and construction of the advanced secondary wastewater treatment facility and main pump station upgrade. Exhibit 2.2.3 and Exhibit 2.2.4 provide a breakdown of CIP spending (excluding the wastewater treatment facility project which would greatly skew the y-axis) by funding source (with percent change from the previous year) for the first five years of the planning period for water and sewer, respectively.

**Exhibit 2.2.3 Planned Water CIP Projects by Funding Source**



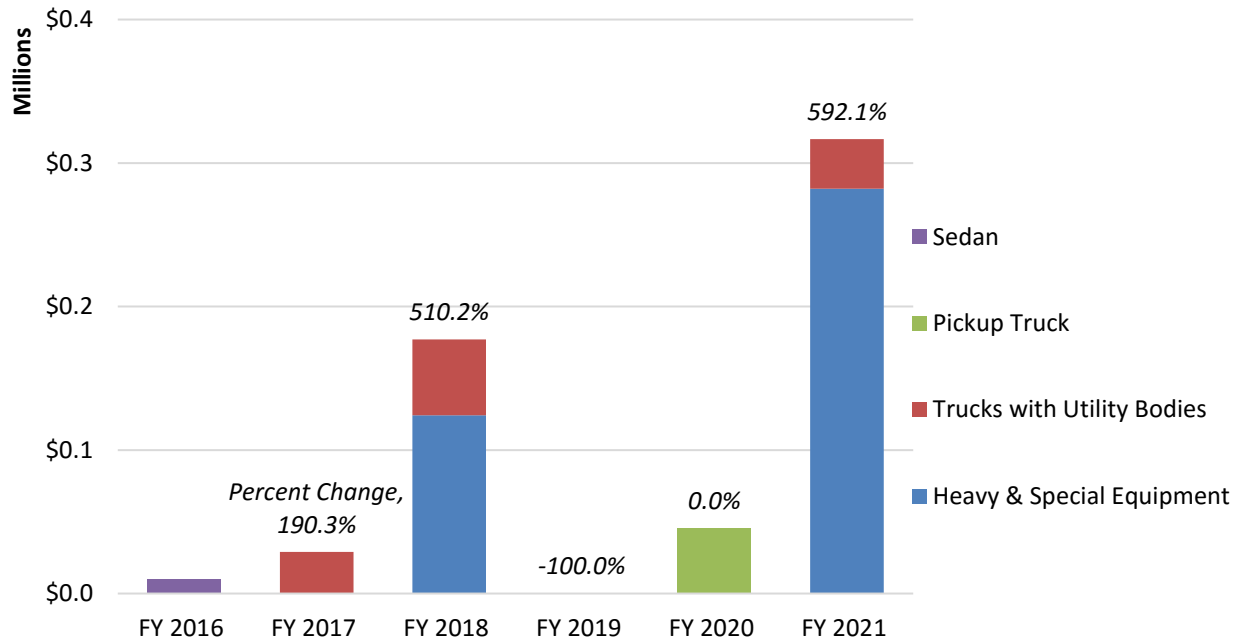
**Exhibit 2.2.4 Planned Sewer CIP Projects by Funding Source**



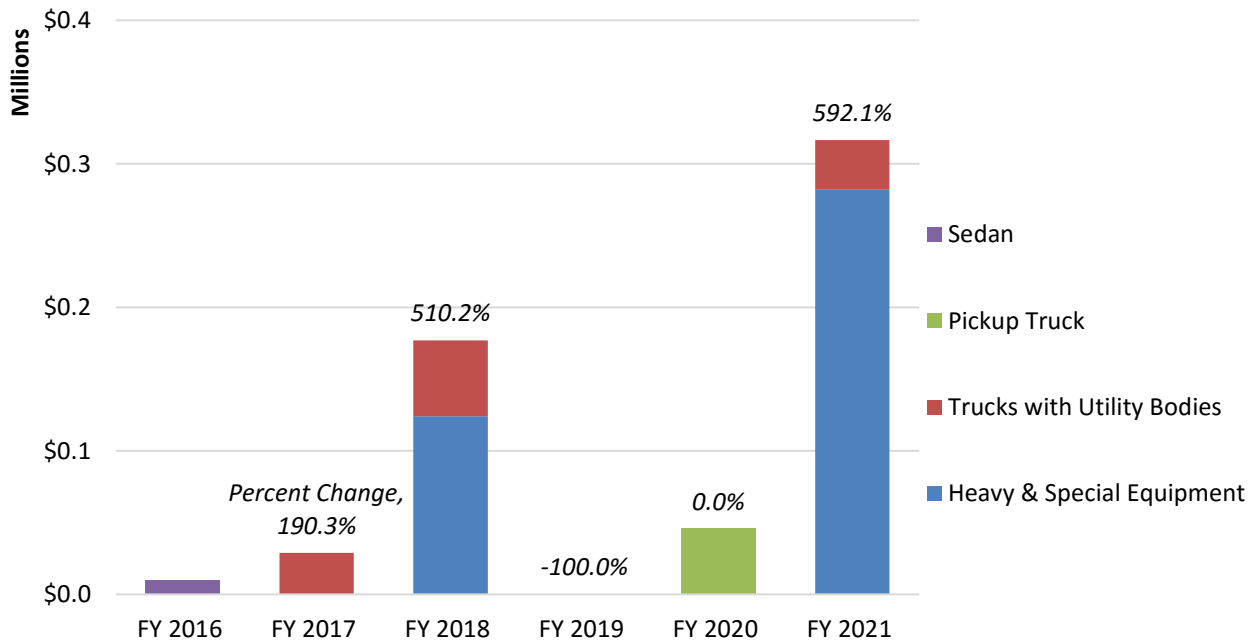
**2.2.3 Vehicle Replacement**

The Water and Sewer Divisions currently have a shared fleet of nine vehicles (trucks with utility bodies, pickup trucks and sedans) and seven pieces of heavy and special equipment. Over the next five years (FY 2017 to FY 2021) as they exceed their useful lives, the Town plans on replacing seven of the vehicles and three of the pieces of equipment. Exhibit 2.2.5 and Exhibit 2.2.6 provide a breakdown by vehicle type of the planned vehicle replacement (with percent change from the previous year) for the base year and the first five years of the planning period (FY 2017 to FY 2021) for water and sewer, respectively.

**Exhibit 2.2.5 Planned Water Vehicle Replacement by Vehicle Type**



**Exhibit 2.2.6 Planned Sewer Vehicle Replacement by Vehicle Type**

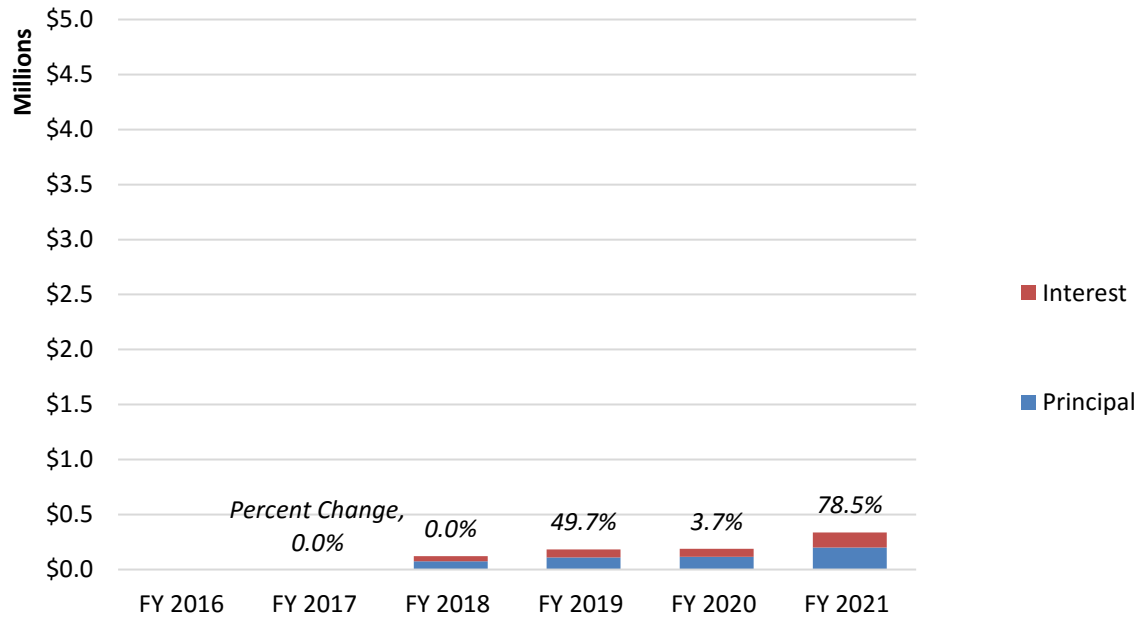


**2.2.4 Projected Debt Service**

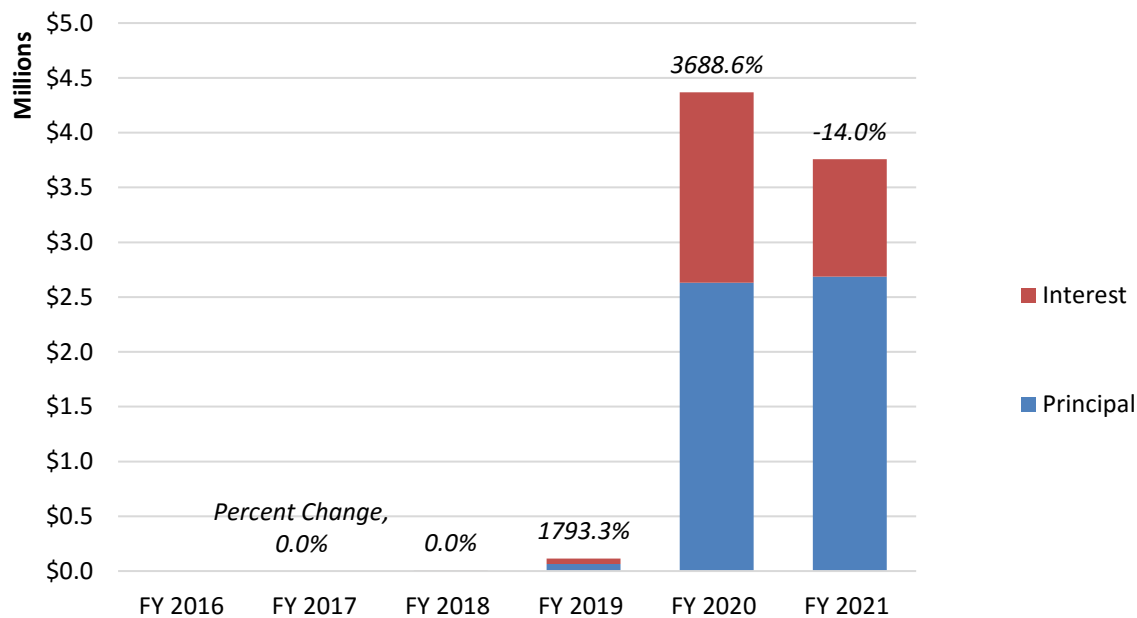
The capital projects anticipated to be debt funded over the next five years are indicated in Exhibit 2.2.3 and Exhibit 2.2.4. The debt issuances for these projects are assumed to have an interest rate of 3.0%, maturity of 20 years and contingency and issuance expense of 1.5%. In addition to these projects, the advanced secondary wastewater treatment facility and main pump station upgrade is anticipated to be debt funded through a loan from the New Hampshire Department of Environmental Services (DES) with

an interest rate of 2.0%, maturity of 20 years (with anticipated issuance in FY 2019) and principal forgiveness of 5.0%. Payment for each issuance is assumed to begin the year after issuance. Exhibit 2.2.7 and Exhibit 2.2.8 provide a breakdown of the principal and interest payments resulting from these debt issuances (with percent change from the previous year) for the first five years of the planning period for water and sewer, respectively. Sewer projected debt payments increase significantly in FY 2020 due to the expected payments of the wastewater treatment.

**Exhibit 2.2.7 Projected Water Debt Payments**



**Exhibit 2.2.8 Projected Sewer Debt Payments**

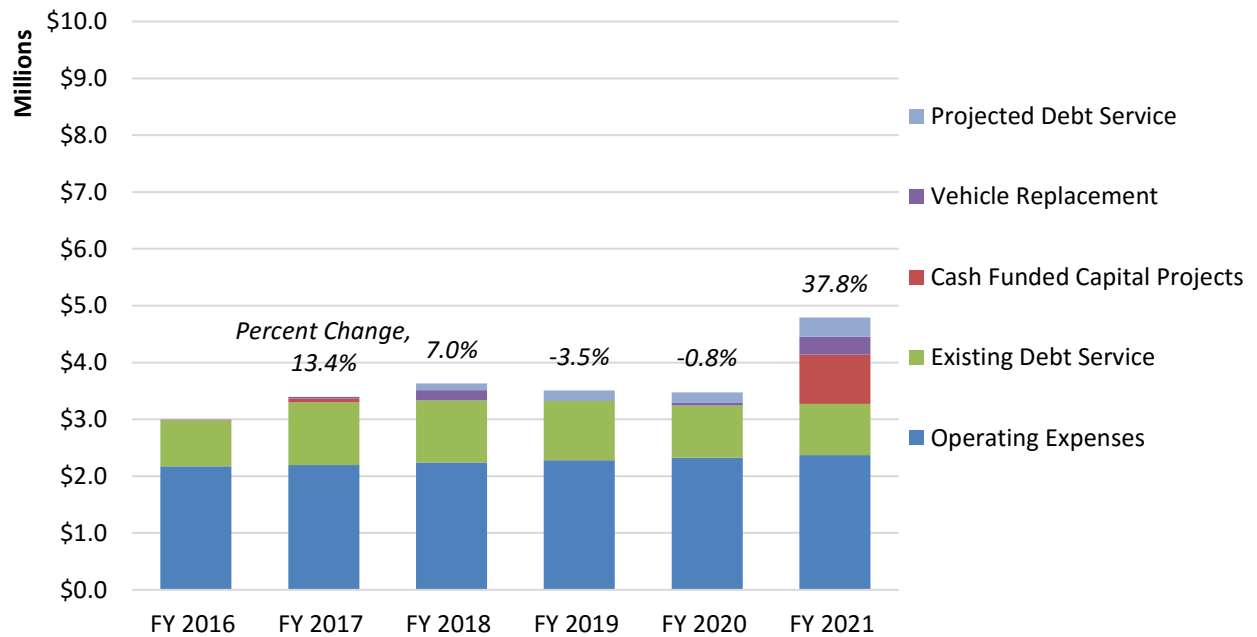


### 2.3 Revenue Requirements

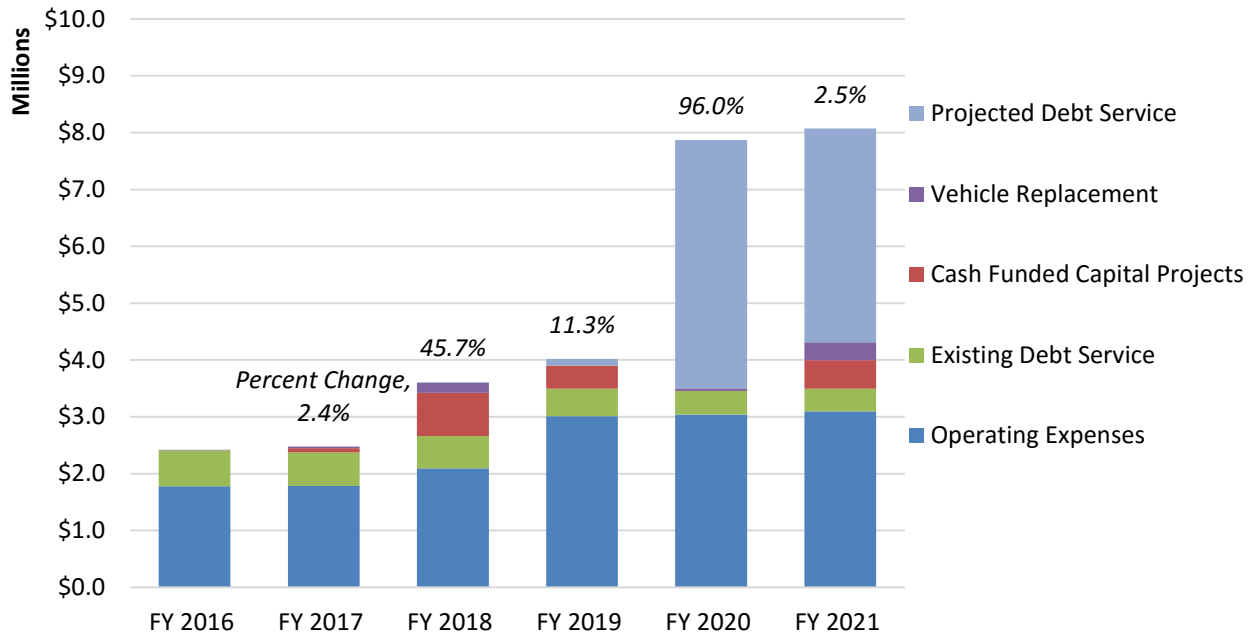
The total annual cost of operating the Town’s water and sewer systems (the gross revenue requirements) includes operating and maintenance expenses and current and future capital costs. The sum of these costs, less any miscellaneous revenues (assessment fees, backflow fees, hydrant maintenance fees, interest charges, grants and other “non-rate” revenues), is the amount that needs to be recovered from user rates (referred to as the net revenue requirement).

Exhibit 2.3.1 and Exhibit 2.3.2 show the revenue requirements (with percent change from the previous year) for the base year and the first five years of the planning period for water and sewer, respectively.

**Exhibit 2.3.1 Water Revenue Requirements**



**Exhibit 2.3.2 Sewer Revenue Requirements**





### 3. CUSTOMERS AND USAGE

This section provides a summary of water and sewer customer accounts and water usage/sewage generation.

#### 3.1 Customer Account Summary

The Town currently provides water service to just under 3,600 customers and sewer service to just under 3,400 customers. Exhibit 3.1.1 provides a breakdown of current (FY 2016) quarterly water and sewer customers by meter size.

*Exhibit 3.1.1 FY 2016 Customers by Meter Size*

Meter Size (inches)	Water	% of Total	Sewer	% of Total
5/8	3,268	91.4%	3,113	91.7%
1	125	3.5%	105	3.1%
1 1/2	78	2.2%	74	2.2%
2	92	2.6%	91	2.7%
3	11	0.3%	11	0.3%
4	2	0.1%	2	0.1%
<b>Total</b>	<b>3,576</b>	<b>100.0%</b>	<b>3,396</b>	<b>100.0%</b>
Flat Rate			60	

As Exeter’s service area is fairly built out, no growth in customers is anticipated over the planning period.

#### 3.2 Usage Summary

Customers are currently charged water and sewer rates based on their metered water usage (billed quarterly in 1,000 gallon units) as they move through three usage tiers. Exhibit 3.2.1 provides a breakdown of current (FY 2016) annual billed water usage/sewage generation (in 1,000 gallons) by usage tier.

*Exhibit 3.2.1 FY 2016 Water Usage/Sewage Generation by Tier*

Tier	Quarterly Usage (Gallons)	Water	% of Total	Sewer	% of Total
Tier 1	0 - 29,999	176,036	54.7%	171,063	50.9%
Tier 2	30,000 - 194,999	89,885	27.9%	88,026	26.2%
Tier 3	Over 194,999	55,912	17.4%	76,659	22.8%
<b>Total</b>		<b>321,832</b>	<b>100.0%</b>	<b>335,747</b>	<b>100.0%</b>

Like customer accounts, current water and sewer usage has been constant over the planning period.

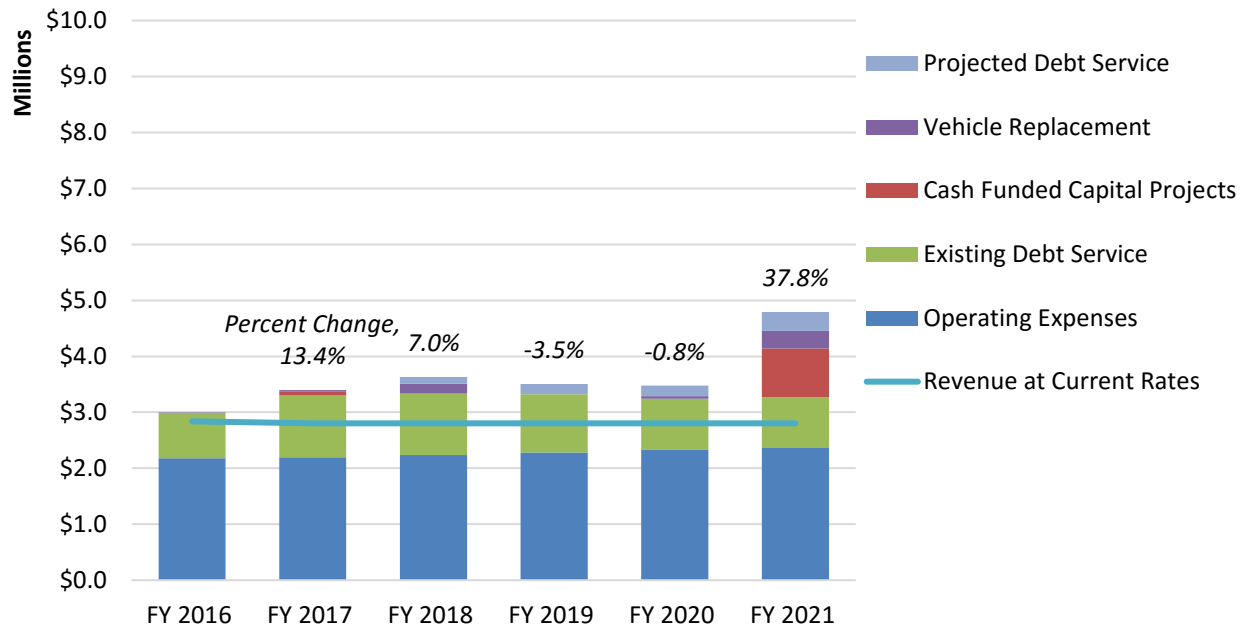
## 4. FINANCIAL PLAN AND PROPOSED RATES

### 4.1 Total Revenue Projections at Current Rates

In Section 2, the projected costs (revenue requirements) of the system were presented and, in Section 3, projected customers and water usage/sewage generation were presented. In this section, we use those projections to determine an appropriate financial plan and set water and sewer rates for the next five years.

The adequacy of revenues from current rates was evaluated in order to determine if existing rates are sufficient to recover the revenue requirements. Exhibit 4.1.1 and Exhibit 4.1.2 compare the revenue requirements (with percent change from the previous year) with total revenue projections at current rates for the base year and the first five years of the planning period for water and sewer, respectively.

**Exhibit 4.1.1 Water Revenue Requirements and Revenue at Current Rates**



**Exhibit 4.1.2 Sewer Revenue Requirements and Revenue at Current Rates**

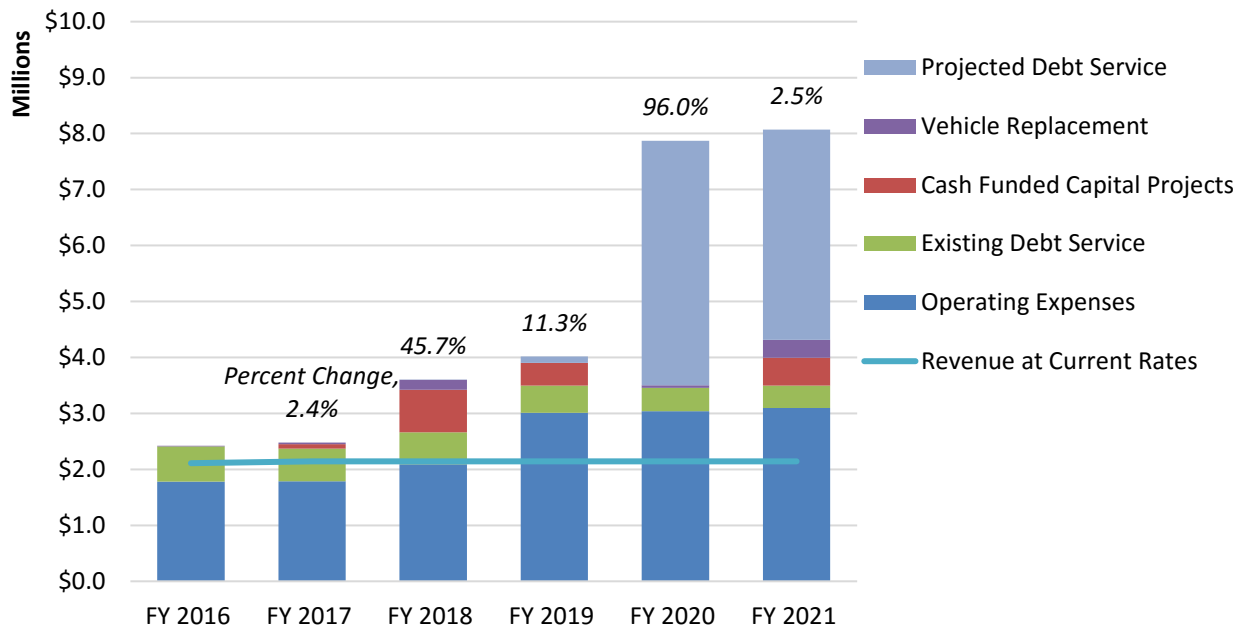


Exhibit 4.1.1 and Exhibit 4.1.2 demonstrates that revenue collected at current rates is insufficient to cover the revenue requirements for FY 2016 through FY 2021. Current water and sewer rates, do not and would continue not to generate sufficient revenue to fund the revenue requirements over the planning period.

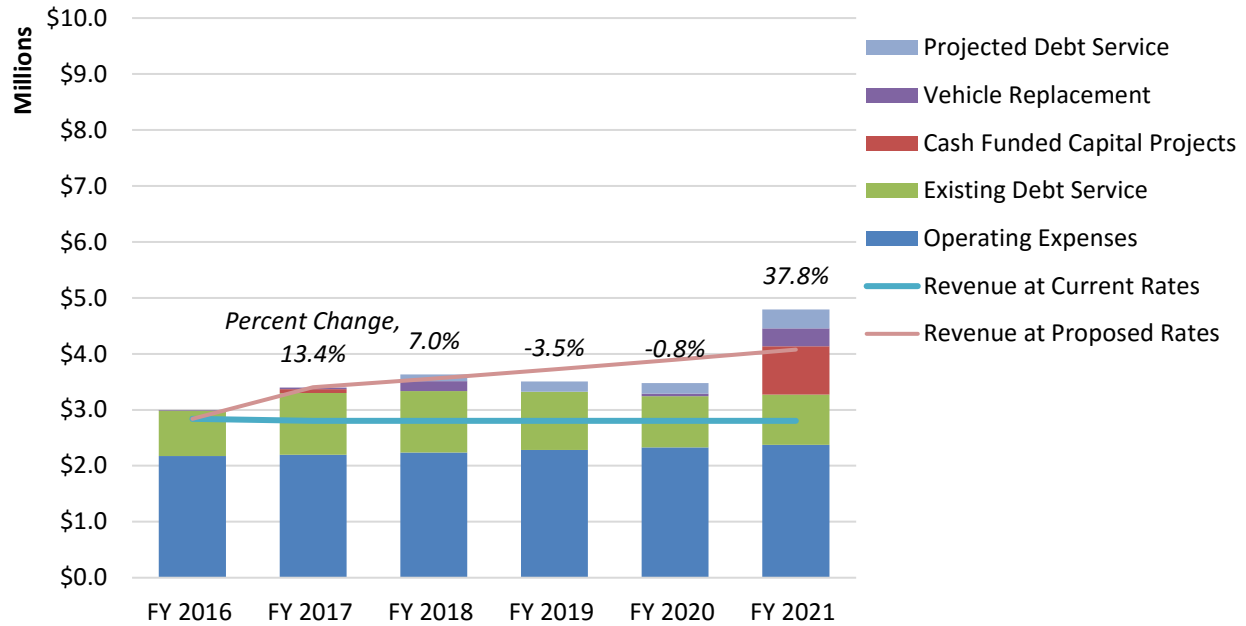
#### 4.2 Total Revenue Projections at Proposed Rates

In order to maintain the financial health of the Town’s water and sewer operations over the first five years of the planning period, revenue needs to be increased. In addition to covering the revenue requirements, revenue must also be sufficient to satisfy the minimum cash balance of 90 days operating expenses outlined in Section 1.4. Current water and sewer rates, if left in place, are projected to generate insufficient revenue to fund the revenue requirements for FY 2017 through FY 2021 as well as meet the minimum cash balance requirement of 90 days operating expenses.

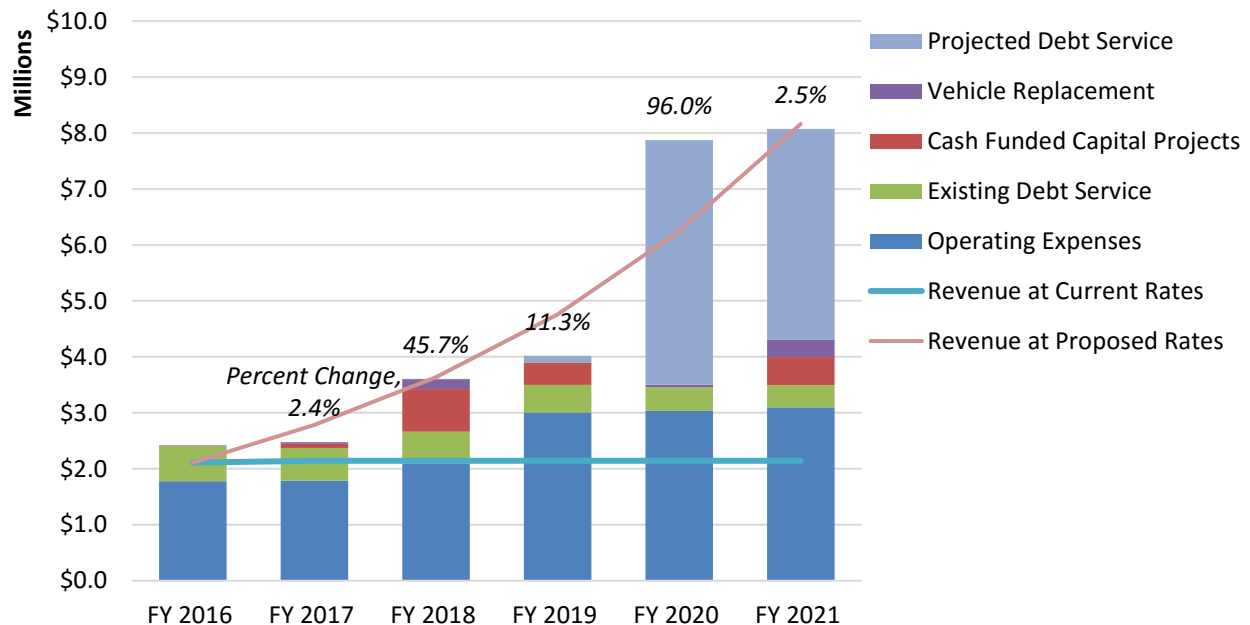
To address these shortfalls, we propose the use of the current cash balance as well as adjusting rates on a multi-year basis. Use of cash and a multi-year approach will help mitigate rate increases over the planning period as well as result in smaller rate increases being implemented in the first years of the planning period, helping to alleviate some of the financial burden for the Town’s customers. Additionally, this approach will allow for proper planning and adjustment by customers and the Town.

Exhibit 4.2.1 and Exhibit 4.2.2 compare the revenue requirements (with percent change from the previous year) with total revenue projections at current rates as well as total revenue projections at proposed rates for the base year and the first five years of the planning period for water and sewer, respectively.

**Exhibit 4.2.1 Water Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



**Exhibit 4.2.2 Sewer Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



The line in Exhibit 4.2.1 and Exhibit 4.2.2 representing the revenue at proposed rates demonstrates the amount of revenue needed to cover the revenue requirements as well as meet the minimum cash balance requirement of 90 days operating expenses by the end of FY 2021 for each the water and sewer funds.

### 4.3 Current Rate Design

The Town’s current water and sewer rate designs consist of a quarterly service charge per bill and three inclining usage tier rates charged per 1,000 gallons. Exhibit 4.3.1 shows the current water and sewer rates. Flat fee sewer customers are charged the service charge plus 10,800 gallons of usage per quarter (120 gallons per day x 90 days).

**Exhibit 4.3.1 Current Water and Sewer Rates**

	Water	Sewer
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$28.00
<b>Usage Rates (per 1,000 gallons)</b>		
Tier 1 (0 - 29,999 gallons)	\$6.86	\$4.44
Tier 2 (30,000 - 194,999 gallons)	\$7.45	\$5.23
Tier 3 (Over 194,999 gallons)	\$8.00	\$5.62
<b>Flat Fee Sewer Customers (per bill)</b>		\$75.95

### 4.4 Pricing Goals and Objectives

To recommend an alternative rate design, it is necessary to determine the principal pricing goals and objectives of the design. Based on our experience, there are several common goals and objectives related to the pricing of water service. The most common considerations are shown in Exhibit 4.4.1.

**Exhibit 4.4.1 Rate Design Pricing Objectives and Modification Considerations**

Objective	Rate Design Modification Considerations
<b>Cost of Service Recovery</b> - Ensure that the cost of providing the service is recovered	<ul style="list-style-type: none"> <li>Setting rates and fees to fully recover cost of providing service</li> <li>Setting rates to ensure financial metrics are met</li> </ul>
<b>Minimizing Customer Impact</b> - Limit bill increases	<ul style="list-style-type: none"> <li>Limiting the one-time changes to the rate design</li> <li>Phasing in increases</li> </ul>
<b>Equity</b> - Costs are allocated to customers based on cost causation	<ul style="list-style-type: none"> <li>Adjusting rates to match cost of service</li> </ul>
<b>Revenue Stability</b> - Limit changes in annual revenues from rates and fees	<ul style="list-style-type: none"> <li>Increase the fixed portion of revenues</li> <li>Limit revenues that are dependent on increasing customer consumption</li> </ul>
<b>Affordability</b> - Customer bills are affordable to low income households	<ul style="list-style-type: none"> <li>Providing a rate design that provides a discount for those who present a financial need</li> </ul>
<b>Rate Stability</b> - Limit the annual changes in rates and resulting customer bills	<ul style="list-style-type: none"> <li>Limit or phase in changes to rate design</li> <li>Conservatively set rates</li> </ul>
<b>Ease of Understanding</b> - Rate design is understandable and not overly complex	<ul style="list-style-type: none"> <li>Limit changes to rate design</li> <li>Use of effective nomenclature for rates and fees</li> </ul>
<b>Economic Development</b> - Foster and maintain economic development	<ul style="list-style-type: none"> <li>Minimize bill impacts to commercial and industrial customers</li> </ul>

Objective	Rate Design Modification Considerations
<b>Ease of Implementation</b> - Minimize administrative burden of implementing rate design	<ul style="list-style-type: none"> <li>Limit changes to rate design</li> </ul>

Each of the pricing goals and objectives were viewed in light of the Town’s overall strategies. While all of the objectives mentioned above are important, there were several objectives that were identified as being priorities for the study:

- *Cost of Service Recovery* – The rate design must provide the revenues needed to operate the system, provide for capital needs and meet the financial targets for long-term financial health and stability.
- *Minimizing Customer Impact* – The direct impact to Town customers should be minimized, realizing that customer retention (both residential and non-residential) and continued usage is critical for the continued health and stability of the water and sewer system.
- *Ease of Understanding and Ease of Implementation* – The rate design should be easily understood by all customers as well as easy to implement and administer for administration and staff.

#### 4.5 Projected Rates

In addition to projecting rates under the current design (see Section 4.3), an alternative rate design was developed for each water and sewer to the meet pricing goals and objectives of the Town. Both the current and alternative rate designs collect the same amount of revenue (i.e., revenue neutral) as discussed in Section 4.2 so that rates can be compared on an apples-to-apples basis. The following two rate designs were developed (changes from the current design to the alternative design are highlighted in green):

- Current Rate Design
  - Quarterly water and sewer service charges per bill
  - Three inclining usage tier rates for water and sewer:
    - 0 – 29,999 gallons
    - 30,000 – 194,999 gallons
    - Over 194,999 gallons
  - Quarterly flat fee sewer customers charged the service charge plus 10,800 gallons of usage per quarter (120 gallons per day x 90 days)
- Alternative Rate Design
  - Quarterly water and sewer service charges per bill
  - Three inclining usage tier rates for water and sewer:
    - 0 – 21,000 gallons
    - 21,0001 – 105,000 gallons
    - Over 105,000 gallons
  - Quarterly flat fee sewer customers charged the service charge plus 10,800 gallons of usage per quarter (120 gallons per day x 90 days)

Each rate design is described in further detail below.

#### 4.5.1 Current Rate Design

As mentioned in Section 4.3, the Town’s current water and sewer rate designs consist of a quarterly service charge per bill and three inclining usage tier rates charged per 1,000 gallons. The projected water rates are shown in Exhibit 4.5.1, and the projected sewer rates are shown in Exhibit 4.5.2 for the first five years of the planning period.

**Exhibit 4.5.1 Projected Water Rates – Current Design**

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$34.00	\$36.00	\$37.50	\$39.00	\$41.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 29,999 gallons)	\$6.86	\$8.37	\$8.76	\$9.17	\$9.61	\$10.06
Tier 2 (30,000 - 194,999 gallons)	\$7.45	\$9.09	\$9.51	\$9.96	\$10.44	\$10.93
Tier 3 (Over 194,999 gallons)	\$8.00	\$9.76	\$10.22	\$10.69	\$11.21	\$11.73

**Exhibit 4.5.2 Projected Sewer Rates – Current Design**

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$36.00	\$47.50	\$62.50	\$82.50	\$108.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 29,999 gallons)	\$4.44	\$5.86	\$7.71	\$10.14	\$13.33	\$17.53
Tier 2 (30,000 - 194,999 gallons)	\$5.23	\$6.90	\$9.08	\$11.94	\$15.70	\$20.65
Tier 3 (Over 194,999 gallons)	\$5.62	\$7.42	\$9.76	\$12.83	\$16.87	\$22.19
<b>Flat Fee Sewer Customers (per bill)</b>	\$75.95	\$99.29	\$130.77	\$172.01	\$226.46	\$297.32

#### 4.5.2 Alternative Rate Design

The alternative rate design maintains the design of the current rate design but calculates the water and sewer service charges so they recover their individual Administration and Billing operating expense categories and slightly changes the cumulative quarterly usage included within each tier so that a conservation pricing signal is better communicated to customers (which is typically the goal of an inclining block design). The water usage tiers for the alternative are as follows:

- Tier 1 – 0 to 21,000 gallons
- Tier 2 – 21,001 to 105,000 gallons
- Tier 3 – Over 105,000 gallons

Tier 1 includes the lowest 50% of cumulative quarterly usage and includes captures the median quarterly usage (10,600 gallons) in the tier. Tier 2 includes the next 25% of cumulative usage. This allows typical customers (most residential and small to mid-size non-residential customers) plenty of leeway to stay in the first two tiers as they capture 75% of all usage. Tier 3 includes the highest 25% of usage (representing large residential and non-residential customers).

The second and third tier rates have been set to be multiples of the first tier rate as follows:

- Tier 2 Rate = 1.25 times the Tier 1 rate
- Tier 3 Rate = 1.50 times the Tier 1 rate

The usage tiers also have been revised so that the tier limits include usage up to the next 1,000 gallons as opposed to the next 1,000 gallons being included in the next tier. For example, Tier 1 of the alternative design goes to 21,000 gallons as opposed to 20,999 as it would if following the current design. This method is more common and allows customers who use exactly 21,000 gallons to not have to pay the Tier 2 rate for 1 gallon of water usage.

The quarterly flat fee that sewer customers are charged remains the same as the current design as the 10,800 gallons of usage per quarter (120 gallons per day x 90 days) that is currently charged is reasonable as it is just above the calculated quarterly median usage for a 5/8 inch customer (10,600 gallons).

The projected water rates are shown in Exhibit 4.5.3, and the projected sewer rates are shown in Exhibit 4.5.4 for the first five years of the planning period.

**Exhibit 4.5.3 Projected Quarterly Water Rates – Alternative Design**

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.50	\$40.50	\$41.50	\$42.00	\$43.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$6.86	\$7.19	\$7.57	\$7.96	\$8.38	\$8.82
Tier 2 (21,001 - 105,000 gallons)	\$6.86/\$7.45	\$8.99	\$9.46	\$9.95	\$10.48	\$11.03
Tier 3 (Over 105,000 gallons)	\$7.45/\$8.00	\$10.79	\$11.36	\$11.94	\$12.57	\$13.23

**Exhibit 4.5.4 Projected Quarterly Sewer Rates – Alternative Design**

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.00	\$40.00	\$41.00	\$41.00	\$41.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$4.44	\$5.25	\$7.30	\$10.00	\$13.63	\$18.31
Tier 2 (21,001 - 105,000 gallons)	\$4.44/\$5.23	\$6.56	\$9.13	\$12.50	\$17.04	\$22.89
Tier 3 (Over 105,000 gallons)	\$5.23/\$5.62	\$7.88	\$10.95	\$15.00	\$20.45	\$27.46
<b>Flat Fee Sewer Customers (per bill)</b>	\$75.95	\$95.70	\$118.84	\$149.00	\$188.20	\$238.75

#### 4.6 Recommended Water and Sewer Rates

Based on discussion with Town staff and the Water & Sewer Advisory Committee about their rate setting goals and objectives and the information provided in Section 4.5, MFSG recommends that the Town adopt the alternative rate design for water and sewer for several reasons:

- The water and sewer service charges are calculated so they recover their individual Administration and Billing operating expense categories
- The usage tiers more evenly allocate usage and mitigate the bill impact on smaller customers
- The usage tiers better communicate to customers the conservation pricing signal
- The 10,800 gallons of usage per quarter (120 gallons per day x 90 days) that is currently charged to flat fee sewer customers is reasonable as it is just above the calculated quarterly median usage for a 5/8 inch customer (10,600 gallons)



Exhibit 4.6.1 and Exhibit 4.6.2 show the recommended rates for the first five years of the planning period for water and sewer, respectively.

***Exhibit 4.6.1 Recommended Quarterly Water Rates***

	<b>Current</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.50	\$40.50	\$41.50	\$42.00	\$43.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$6.86	\$7.19	\$7.57	\$7.96	\$8.38	\$8.82
Tier 2 (21,001 - 105,000 gallons)	\$6.86/\$7.45	\$8.99	\$9.46	\$9.95	\$10.48	\$11.03
Tier 3 (Over 105,000 gallons)	\$7.45/\$8.00	\$10.79	\$11.36	\$11.94	\$12.57	\$13.23

***Exhibit 4.6.2 Recommended Quarterly Sewer Rates***

	<b>Current</b>	<b>FY 2017</b>	<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.00	\$40.00	\$41.00	\$41.00	\$41.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$4.44	\$5.25	\$7.30	\$10.00	\$13.63	\$18.31
Tier 2 (21,001 - 105,000 gallons)	\$4.44/\$5.23	\$6.56	\$9.13	\$12.50	\$17.04	\$22.89
Tier 3 (Over 105,000 gallons)	\$5.23/\$5.62	\$7.88	\$10.95	\$15.00	\$20.45	\$27.46
<b>Flat Fee Sewer Customers (per bill)</b>	\$75.95	\$95.70	\$118.84	\$149.00	\$188.20	\$238.75

## 5. CUSTOMER BILL IMPACTS

### 5.1 Sample Bills

Exhibit 5.1.1 provides a comparison of combined water and sewer sample quarterly bills with current and alternative/recommended rates for the typical customer of each meter size. The exhibit compares bills calculated with current rates (current bills), with projected rates under the current rate design and with projected rates under the alternative/recommended rate design. The exhibit also shows the number of customers by meter size.

*Exhibit 5.1.1 Quarterly Sample Bills (Median Usage by Meter Size)*

Meter Size (inches)	Number of Customers	Median Quarterly Usage (gallons)	Current Rates FY 2016	Current Rate Design FY 2017	Alternative Rate Design FY 2017
5/8	3,268	10,600	\$175.78	\$220.84	\$210.36
1	125	35,300	\$462.21	\$581.65	\$562.11
1 1/2	78	86,100	\$1,106.35	\$1,393.94	\$1,352.05
2	92	147,000	\$1,878.56	\$2,367.73	\$2,430.08
3	11	512,900	\$6,817.00	\$8,596.77	\$9,261.43
4	2	693,800	\$9,280.86	\$11,704.64	\$12,638.84

Exhibit 5.1.2 provides a comparison of combined water and sewer sample quarterly bills with current and recommended rates for various 5/8 inch meter size customers. The exhibit compares bills calculated with current rates (current bills), with projected rates under the current rate design and with projected rates under the alternative/recommended rate design. The exhibit also shows the number of customers between percentiles. For example, for the small user, the number of customers shown is those who use above 3,600 gallons up to 6,600 gallons per quarter (for this reason, the number of customers who use more than 24,100 gallons is not shown).

*Exhibit 5.1.2 Quarterly Sample Bills (5/8 Inch Meter Size)*

User (Percentile)	Number of Customers between Percentiles	Median Quarterly Usage (gallons)	Current Rates FY 2016	Current Rate Design FY 2017	Alternative Rate Design FY 2017
Minimal User (10th)	337	3,600	\$96.68	\$121.23	\$123.28
Small User (25th)	490	6,600	\$130.58	\$163.92	\$160.60
Median (50th)	814	10,600	\$175.78	\$220.84	\$210.36
Large User (75th)	813	15,900	\$235.67	\$296.26	\$276.30
Excessive User (90th)	488	24,100	\$328.33	\$412.94	\$387.95

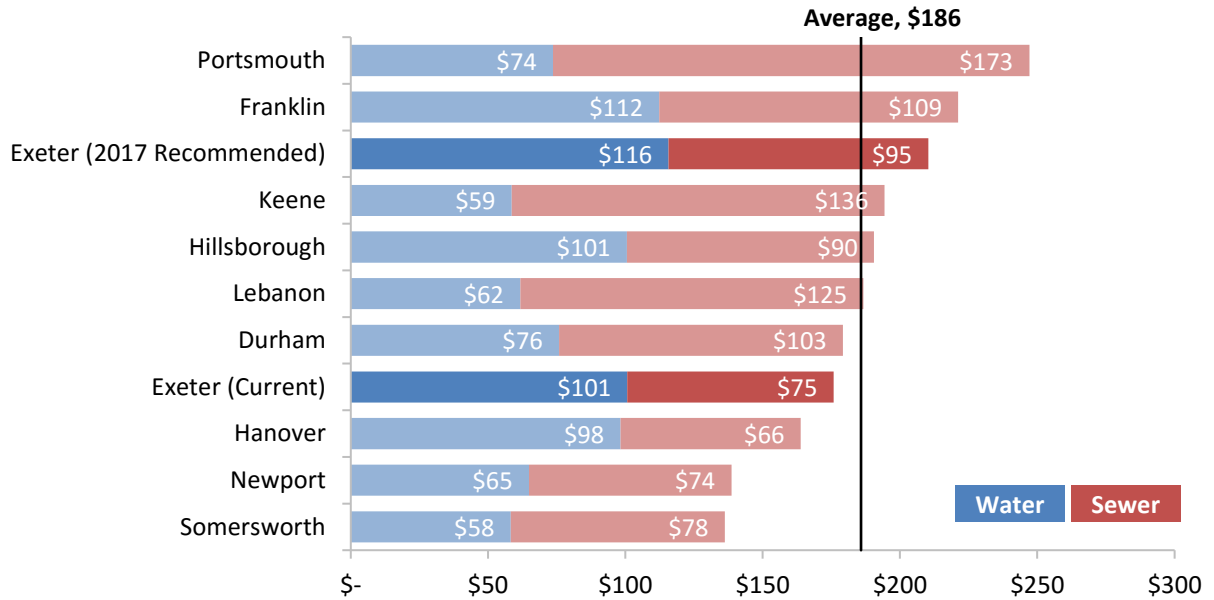
### 5.2 Quarterly Bill Comparison

It can be useful for the Town to compare sample bills of various utilities to a bill calculated using the Town's current and recommended rates. A comparison has been made between the Town and nine other communities in New Hampshire (which were selected after discussion with the Town).

Exhibit 5.2.1 provides a comparison of a total water and sewer quarterly bill for a customer with less than a 1 inch meter and consumption of 10,600 gallons (Exeter average). It is important to note that the sample

bills for the other municipalities are calculated using current rates (FY 2016) and do not reflect potential increases in rates in FY 2017 as this information is not available at this time. As a result, the comparisons show proposed FY 2017 sample bills for the Town compared with FY 2016 bills for the comparison municipalities.

**Exhibit 5.2.1 Example Quarterly Water & Sewer Bill – Median Customer (5/8” Meter; 10,600 gallons)**



## 6. FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

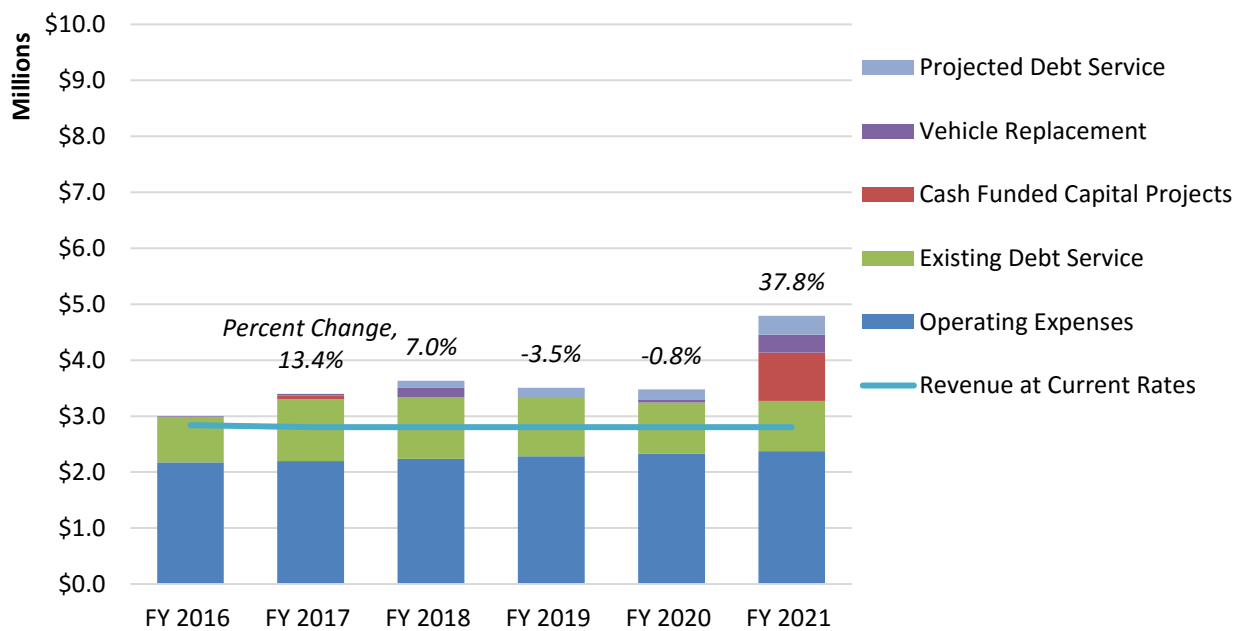
The following findings, conclusions and recommendations were developed during the course of the study.

### 6.1 Findings

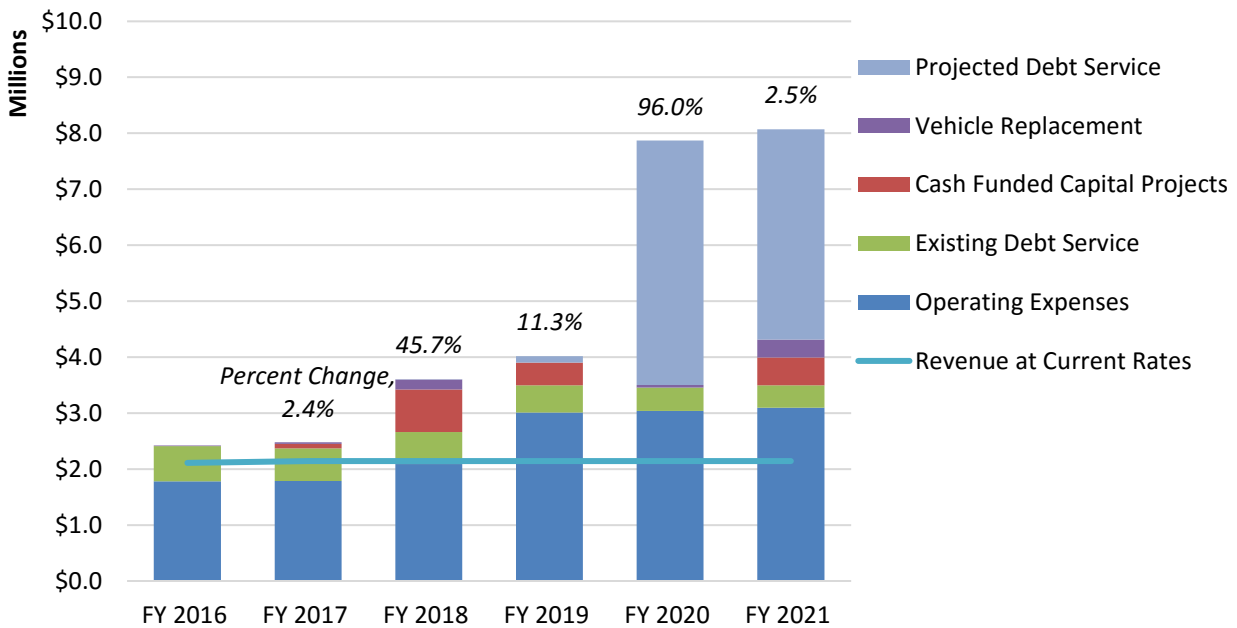
The following findings were developed during the course of the study:

- Revenues collected at current rates are insufficient to cover the water and sewer revenue requirements for FY 2017 through FY 2021. As shown in the exhibits below, current water and sewer rates, if left in place, would not generate sufficient revenue to fund the revenue requirements.

**Exhibit 6.1.1 Water Revenue Requirements and Revenue at Current Rates**



**Exhibit 6.1.2 Sewer Revenue Requirements and Revenue at Current Rates**

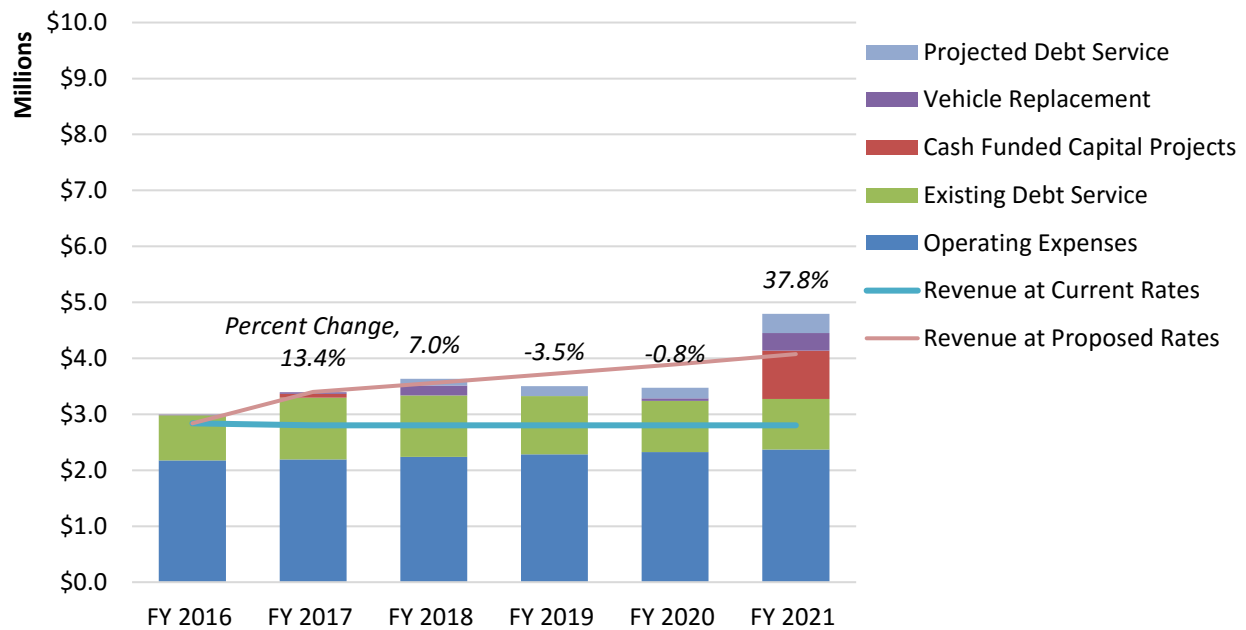


## 6.2 Conclusions

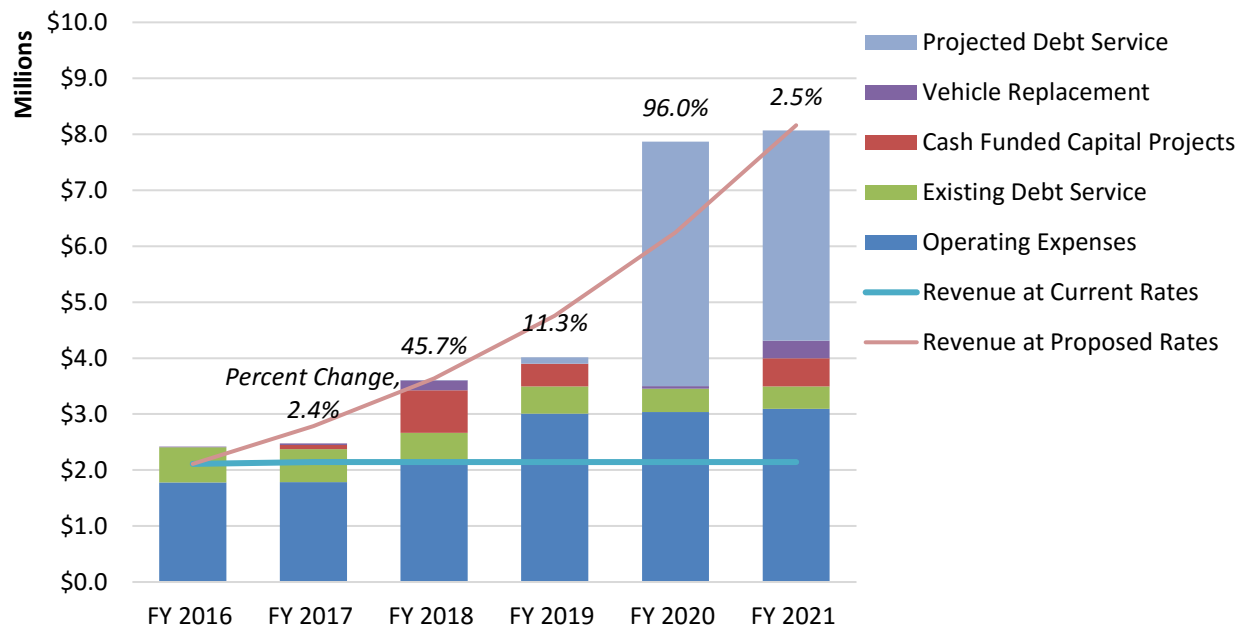
Based on our findings, the following conclusions were drawn:

- The Town needs to increase water and sewer rates over the first five years of the planning period to keep revenues in line with expenses, to fund the required operating and capital costs identified and to meet the minimum cash balance requirement.
- The Town should implement required rate increases through a multi-year financial plan. This will allow the Town to smooth rate increases over the planning period (as shown by the revenue at proposed rates in the exhibit below) and mitigate customer rate shock while meeting its cash requirements.

**Exhibit 6.2.1 Water Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



**Exhibit 6.2.2 Sewer Revenue Requirements, Revenue at Current Rates and Revenue at Proposed Rates**



### 6.3 Recommendations

Based on our conclusions, the following recommendations were made:

- Adopt the following recommended quarterly water and sewer rates for the next five years.

***Exhibit 6.3.1 Recommended Quarterly Water Rates***

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.50	\$40.50	\$41.50	\$42.00	\$43.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$6.86	\$7.19	\$7.57	\$7.96	\$8.38	\$8.82
Tier 2 (21,001 - 105,000 gallons)	\$6.86/\$7.45	\$8.99	\$9.46	\$9.95	\$10.48	\$11.03
Tier 3 (Over 105,000 gallons)	\$7.45/\$8.00	\$10.79	\$11.36	\$11.94	\$12.57	\$13.23

***Exhibit 6.3.2 Recommended Quarterly Sewer Rates***

	Current	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
<b>Quarterly Service Charge (per bill)</b>	\$28.00	\$39.00	\$40.00	\$41.00	\$41.00	\$41.00
<b>Usage Rates (per 1,000 gallons)</b>						
Tier 1 (0 - 21,000 gallons)	\$4.44	\$5.25	\$7.30	\$10.00	\$13.63	\$18.31
Tier 2 (21,001 - 105,000 gallons)	\$4.44/\$5.23	\$6.56	\$9.13	\$12.50	\$17.04	\$22.89
Tier 3 (Over 105,000 gallons)	\$5.23/\$5.62	\$7.88	\$10.95	\$15.00	\$20.45	\$27.46
<b>Flat Fee Sewer Customers (per bill)</b>	\$75.95	\$95.70	\$118.84	\$149.00	\$188.20	\$238.75

- Review rates and charges on an annual basis and revise as needed. Consider a full cost of service study for all rates and charges every five years. While it is recommended to adopt rates and charges for five years so they do not have to be revisited and voted on every year by the Board, it is financially prudent to review expenses and revenues annually to ensure actual values are relatively in line with those projected.



Municipal & Financial Services Group

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