MINUTES
PURCELLVILLE TOWN COUNCIL SPECIAL MEETING
TUESDAY, SEPTEMBER 28, 2020 2:00 PM
TOWN HALL COUNCIL CHAMBERS

The special meeting of the Purcellville Town Council convened at 2:00 PM in Council Chambers and virtually by GoTo Meeting.

PRESENT: Mary Jane Williams, Vice Mayor
Chris Bertaut, Council member
Stan Milan, Council member

ABSENT: Mayor Kwasi Fraser
Ted Greenly, Council member
Joel Grewe, Council member
Tip Stinnette, Council member

STAFF PRESENT:
David A. Mekarski, Town Manager
Elizabeth Krens, Director of Finance
Connie LeMarr, Assistant Director of Finance
Jason Didawick, Director of Public Works
Diana Hays, Town Clerk/Executive Assistant

STAFF PRESENT VIA REMOTE PARTICIPATION:
Sally Hankins, Town Attorney (left early 3:50PM)
Dale Lehnig, Director of Engineering, Planning and Development
Paula Hicks, Accounting Manager
Linda Jackson, Financial Analyst
Kimberly Bandy, Deputy, Town Clerk

DISCUSSION/INFORMATIONAL ITEMS:

David A. Mekarski, Town Manager, introduced all those present in the meeting and the reason for the special meeting.

a. **Review of Utility Rate Models for Enterprise Funds (Water and Wastewater) (Town Staff, and Consultants from Stantec)** *(Presentation on file at the Clerk's office)*

David Hyder, Stantec, presented at the special meeting.

b. Approach to Develop a Long-Range Fiscal Strategy for the General Fund (Davenport/Financial Advisors: David Rose and Kyle Laux)

Davenport was in attendance virtually to answer questions to follow up from the Stantec presentation.

ADJOURNMENT

With no further business, Vice Mayor Williams made a motion to adjourn the meeting at 4:40 PM .

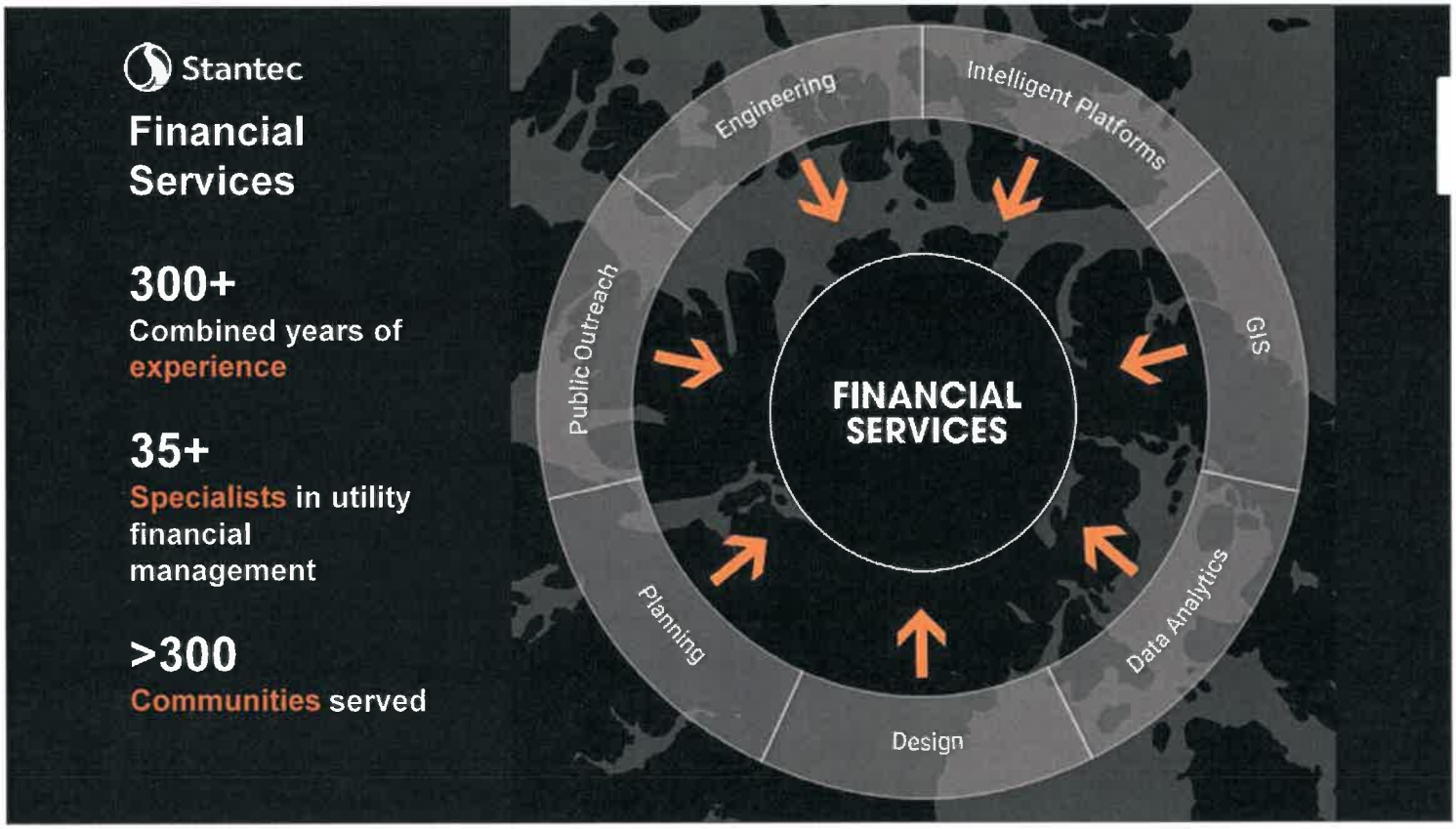
Mary Jane Williams, Vice Mayor

Kimberly Bandy, Deputy Town Clerk

Overview

Agenda

- Study Overview
- Financial Planning
  - Revenue Requirements
  - Revenues
  - Financial Plan Scenarios
  - Bill Impacts
- Key Findings

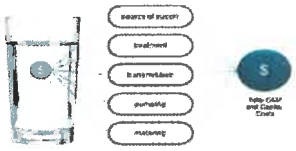


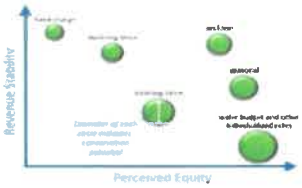
Overview

Background

- The Town engaged Stantec as part of a competitive procurement in January 2019 to assist with development of long-term financial plan for water and sewer
- During 2019 and early 2020, Stantec conducted a comprehensive rate study:
  - Development of 10-year financial models for each utility
  - Evaluation of the cost of providing water and sewer service
  - Development of alternative water and sewer rate structures
  - Conducted 6 public workshops with Town Council during course of study
  - **Council approved recommended rate structure change (Alternative C) in Dec 2019**
- Due to COVID-19, water and sewer rates were not modified in for FY21 as recommended in the study

Approach





Financial Plan	Cost of Service	Rate Design
Defines how much total revenue is needed each year	Defines proportional revenue recovery between customer classes	Structure of how revenues are recovered by class
2019/20 Findings	Identified additional revenue needs for water and sewer utilities	Lack of alignment between water cost of service and revenue recovery by class	Alternative C rate structure developed to provide sustainable rate structure

Financial Plan

Financial Plan

Financial Planning

Financial plan is designed to ensure **recurring** revenues **equal revenue requirements** over-time in order to provide **structural balance** (a self-supporting utility)

Revenue requirements of the water and sewer system consist of:

- Operating and maintenance expenses
- General fund support services
- Existing debt service
- Capital improvement plan (cash funded or borrowing)

Revenues of the system are generated from:

- User rates (metered water use)
- Availability fees (one-time/non-recurring)
- Miscellaneous other income (rentals, interest income)

Water CIP

Water Capital Improvement Program ($M) – Updated September 2020

Project	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30
12th Street Water Main Replacement			0.23	0.23						
Intake Structure for Hirst Reservoir	0.10	0.40	0.99							
F Street Water Main Replacement		0.14								
Additional Water Supply					0.65	0.65	0.65			
WTP to Town Water Main Replacement			0.40	1.60						
Holly Lane Water Main Replacement						0.15	0.15			
Capital Replacement	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Cooper Springs Raw Water Main		0. 24	0.88							
Reservoir to WTP Raw Water Main				0.32	0.16	1.76				
Consolidated Ground Water Treatment Plant		0.30	0.30		0.65	0.65	0.65			
Total CIP	**$0.25**	**$1.23**	**$2.94**	**$2.30**	**$1.61**	**$3.36**	**$1.60**	**$0.15**	**$0.15**	**$0.15**

The models included in this presentation are based on revised Capital Improvement Plan costs and schedule detailed in the Director of Engineering, Planning & Development memo dated 9/15/20.

Sewer CIP

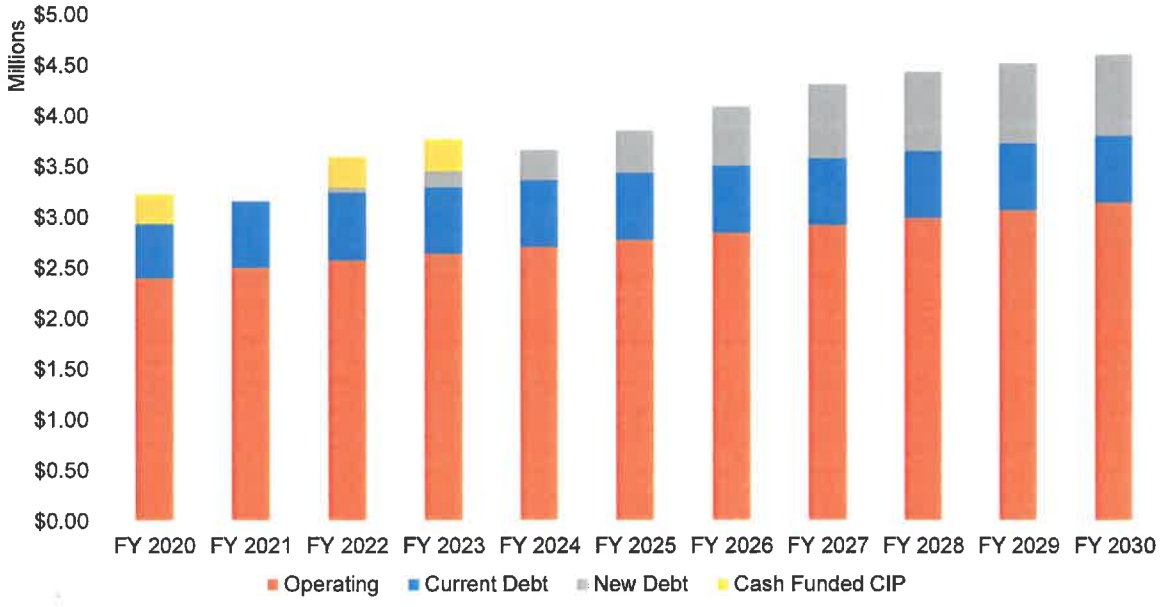
Sewer Capital Improvement Program ($M) – Updated September 2020

Project	FY 21	FY 22	FY 23	FY 24	FY 25	FY 26	FY 27	FY 28	FY 29	FY 30
Membrane Replacement	0.27									
East End Pump Station								0.13	0.13	1.04
LEAP Aeration Upgrade	0.16									
Sludge Storage Facility					0.37					
Valley Industrial Park Pump Station Upgrades					0.28					
12th Street Sewer Line		0.15								
Capital Replacement	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Total CIP	**$0.63**	**$0.35**	**$0.20**	**$0.20**	**$0.85**	**$0.20**	**$0.20**	**$0.33**	**$0.33**	**$1.24**

The models included in this presentation are based on revised Capital Improvement Plan costs and schedule detailed in the Director of Engineering, Planning & Development memo dated 9/15/20.

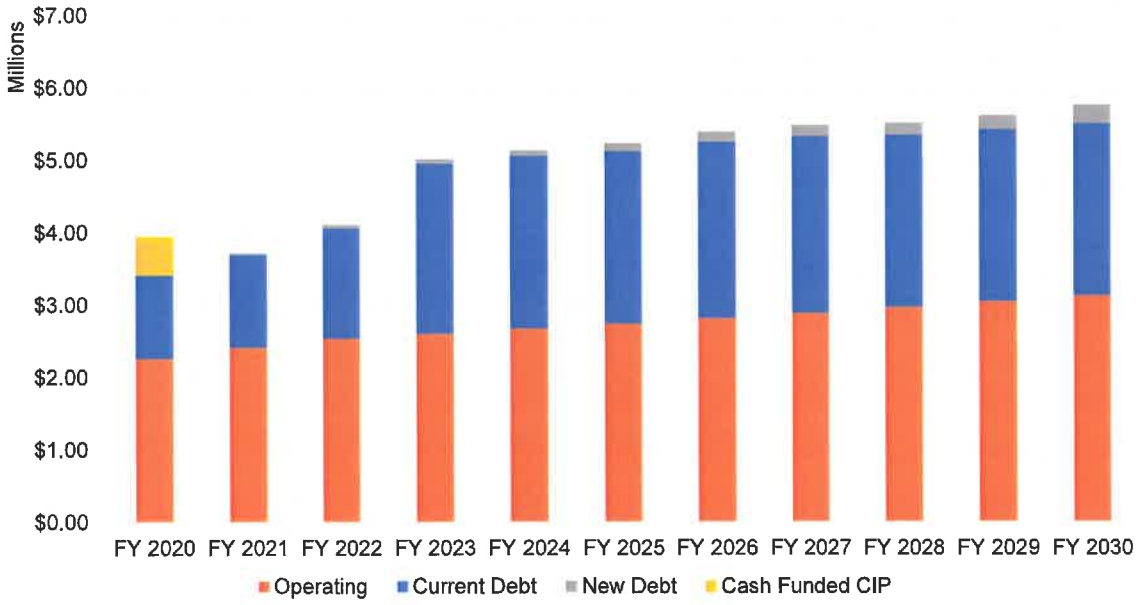
Revenue Requirement Components

Water Revenue Requirement by Type of Expense



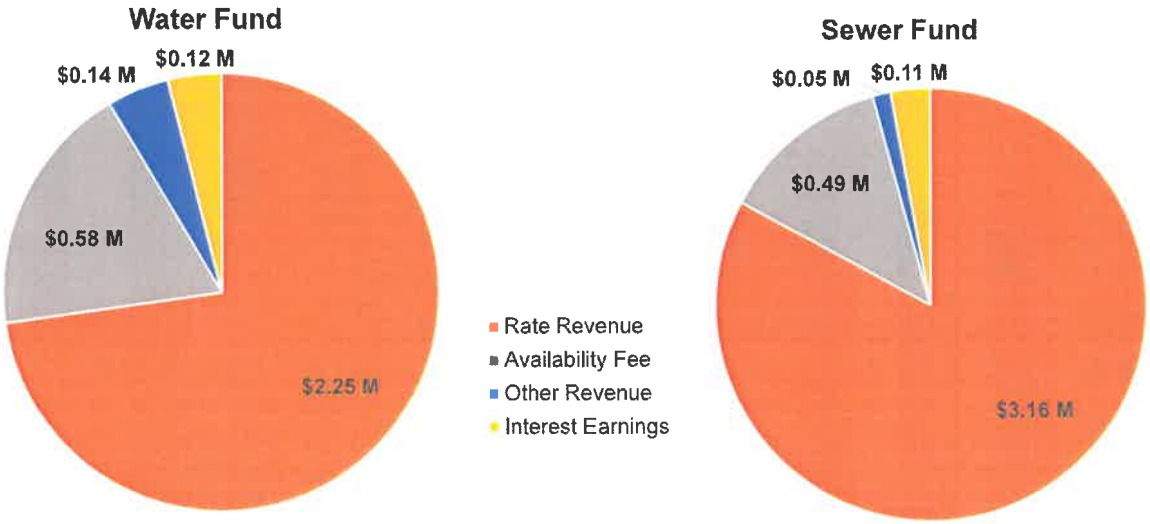
Revenue Requirement Components

Sewer Revenue Requirement by Type of Expense



Financial Plan - Revenues

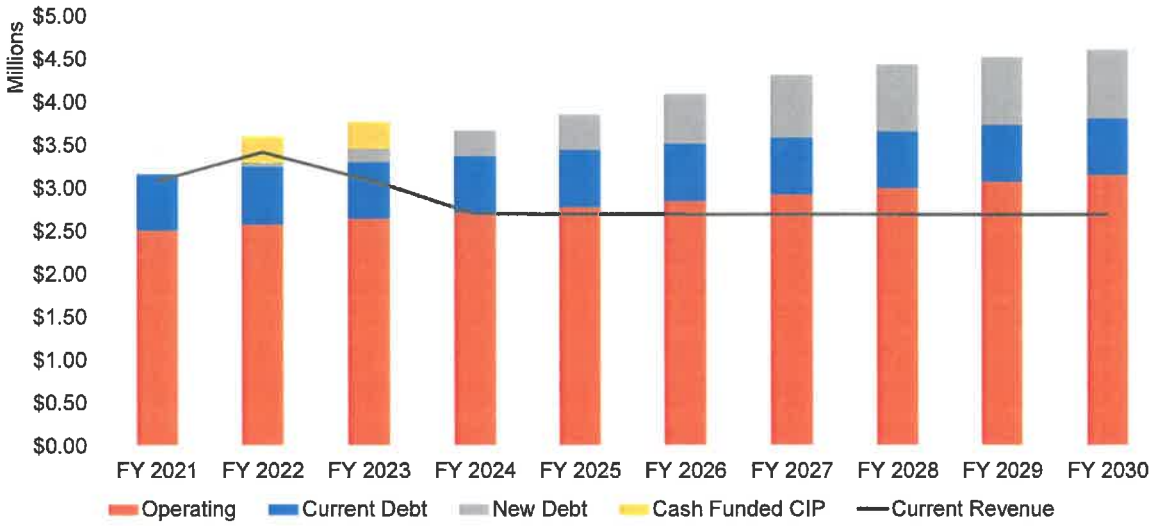
FY 2021 Revenues by Type



- Other revenue includes cellular lease, penalties, etc.
- Rate revenue and other revenue **are only recurring** sources of income for utilities

Revenue Requirement vs. Current Revenues

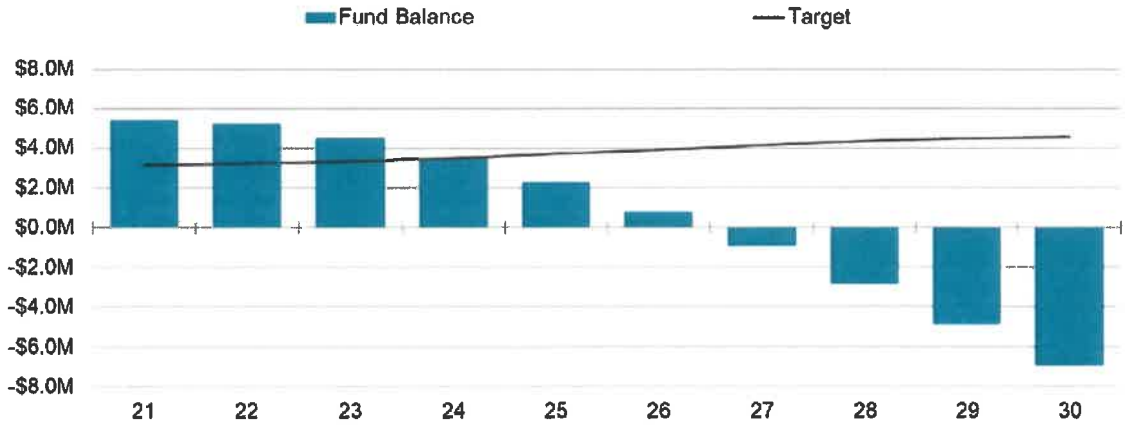
Water Revenue Requirement and Total Revenues at **Current Rates**



Annual Shortfall $ Millions	(0.09)	(0.19)	(0.69)	(0.98)	(1.17)	(1.41)	(1.63)	(1.75)	(1.84)	(1.93)
Cumulative Shortfall $ Millions	(0.09)	(0.28)	(0.97)	(1.95)	(3.11)	(4.52)	(6.15)	(7.90)	(9.74)	(11.67)

Fund Balance vs. Target

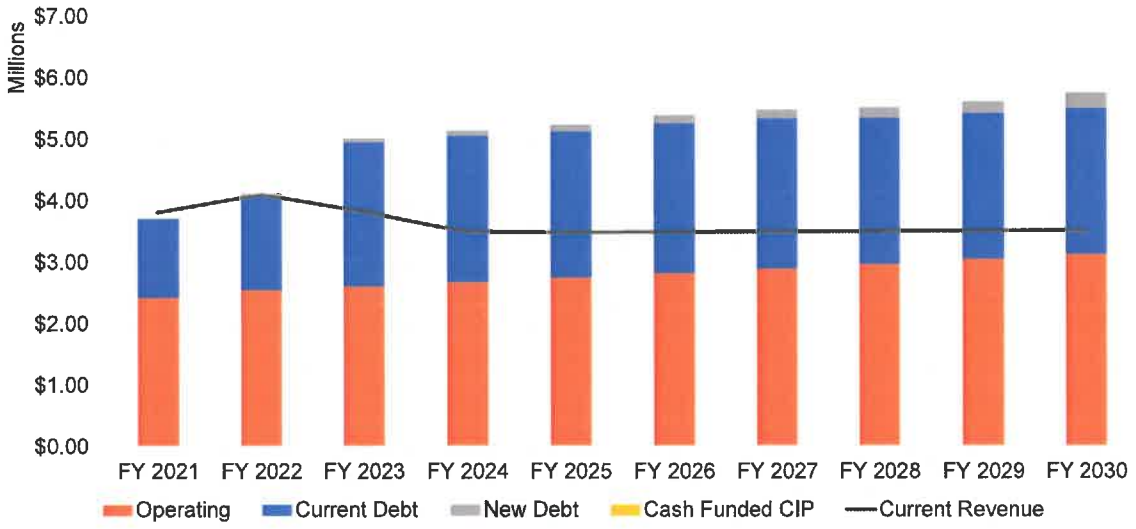
Water Fund Balance vs. Target at **Current Rates**



Annual Overage / Shortfall $ Millions	2.30	2.02	1.23	0.04	(1.41)	(3.10)	(5.12)	(7.25)	(9.38)	(11.57)

Revenue Requirement vs. Current Revenues

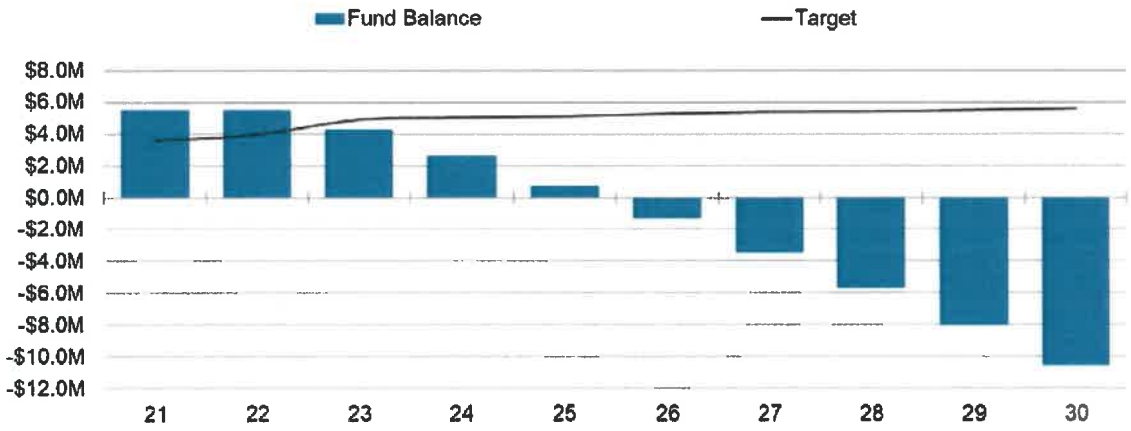
Sewer Revenue Requirement and Total Revenues at **Current Rates**



Annual Shortfall $ Millions	0.09	(0.02)	(1.19)	(1.65)	(1.75)	(1.91)	(1.99)	(2.02)	(2.11)	(2.25)
Cumulative Shortfall $ Millions	0.09	0.07	(1.12)	(2.77)	(4.52)	(6.43)	(8.42)	(10.44)	(12.55)	(14.80)

Fund Balance vs. Target

Sewer Fund Balance vs. Target at **Current Rates**



Annual Overage / Shortfall $ Millions	1.94	1.54	(0.58)	(2.40)	(4.34)	(6.56)	(8.84)	(11.10)	(13.53)	(16.15)

Combined Utility

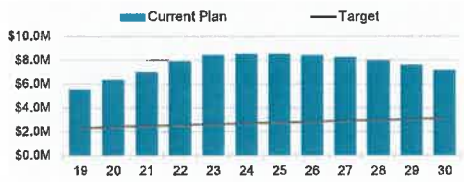
Combined Utility (Water and Sewer) Rate Increases

Funding Scenario Rate Increases	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030
1 – O&M Only	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
2 – O&M and Debt Only	7.63%	7.67%	7.70%	7.77%	7.84%	3.10%	3.11%	3.12%	3.12%
3 – O&M, Debt and CIP	11.41%	11.37%	11.31%	11.32%	11.32%	3.48%	3.50%	3.51%	3.52%

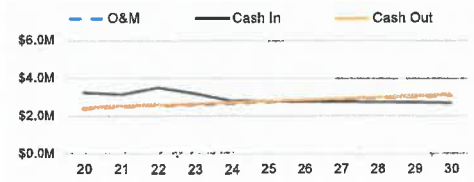
(1) **Water Fund** – Rate Increases Required to **Only Fund O&M - No Debt or Capital**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Water Fixed Rate Plan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Water Usage Rate Plan	3.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Debt Coverage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Debt	No
CIP Execution %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	CIP	No
Single Family Bi-Monthly Water Bill	$74.97	$74.97	$81.69	$81.69	$81.69	$81.69	$81.69	$81.69	$81.69	$81.69	$81.69		
Change in Bi-Monthly Bill		$0.00	$6.72	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
Cost per Day	$1.25	$1.25	$1.36	$1.36	$1.36	$1.36	$1.36	$1.36	$1.36	$1.36	$1.36		
Change in Cost per Day		$0.00	$0.11	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		

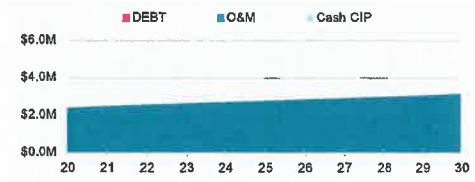
Operating Fund (Cash)



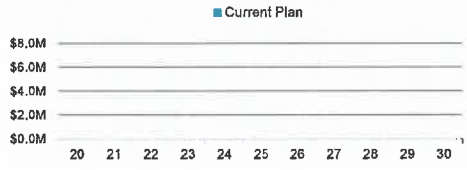
Revenues vs. Expenses



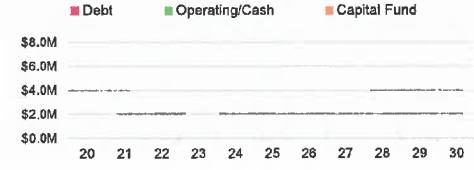
Expenses by Type



CIP Spending



CIP Funding



Borrowing

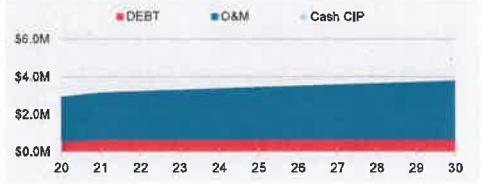
(2) **Water Fund** – Rate Increases Required to **Only Fund O&M and Debt - No Capital**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Water Fixed Rate Plan	0.00%	0.00%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	18.07%	45.33%
Water Usage Rate Plan	3.00%	0.00%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	4.25%	18.02%	45.20%
Debt Coverage	1.61	0.98	1.50	1.08	0.52	0.54	0.56	0.58	0.61	0.64	0.67	Debt	Yes
CIP Execution %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	CIP	No
Single Family Bi-Monthly Water Bill	$74.97	$74.97	$85.16	$88.78	$92.55	$96.49	$100.59	$104.86	$109.32	$113.97	$118.81		
Change in Bi-Monthly Bill		$0.00	$10.19	$3.62	$3.77	$3.93	$4.10	$4.28	$4.46	$4.65	$4.84		
Cost per Day	$1.25	$1.25	$1.42	$1.48	$1.54	$1.61	$1.68	$1.75	$1.82	$1.90	$1.98		
Change in Cost per Day		$0.00	$0.17	$0.06	$0.06	$0.07	$0.07	$0.07	$0.07	$0.08	$0.08		

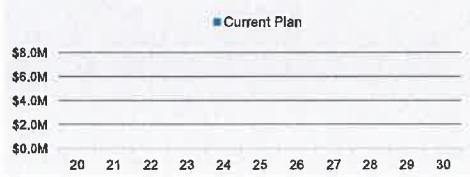
Operating Fund (Cash)

Revenues vs. Expenses

Expenses by Type



CIP Spending



CIP Funding

Borrowing

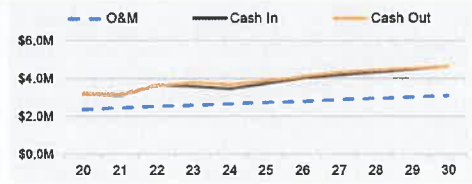
Annual 4.25% water rate increases required to just meet O&M and existing debt

(3) **Water Fund** – Rate Increases Required to **Fund O&M, Debt, and Capital**

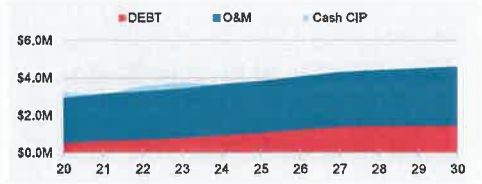
	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Water Fixed Rate Plan	0.00%	0.00%	10.50%	10.50%	10.50%	10.50%	10.50%	5.00%	5.00%	5.00%	5.00%	49.13%	100.33%
Water Usage Rate Plan	3.00%	0.00%	10.50%	10.50%	10.50%	10.50%	10.50%	5.00%	5.00%	5.00%	5.00%	48.95%	100.00%
Debt Coverage	1.57	0.91	1.53	1.17	0.79	0.89	0.96	0.91	0.94	0.99	1.05	Debt	Yes
CIP Execution %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	CIP	Yes
Single Family Bi-Monthly Water Bill	$74.97	$74.97	$90.27	$99.75	$110.22	$121.79	$134.58	$141.31	$148.37	$155.79	$163.58		
Change in Bi-Monthly Bill		$0.00	$15.30	$9.48	$10.47	$11.57	$12.79	$6.73	$7.07	$7.42	$7.79		
Cost per Day	$1.25	$1.25	$1.50	$1.66	$1.84	$2.03	$2.24	$2.35	$2.47	$2.60	$2.73		
Change in Cost per Day		$0.00	$0.25	$0.16	$0.17	$0.19	$0.21	$0.11	$0.12	$0.12	$0.13		

Operating Fund (Cash)

Revenues vs. Expenses



Expenses by Type



CIP Spending

CIP Funding

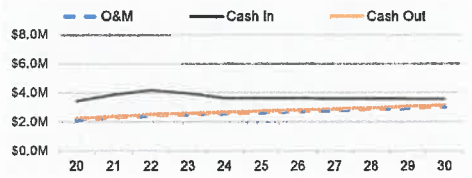
Borrowing

(1) Sewer Fund – Rate Increases Required to **Only Fund O&M - No Debt or Capital**

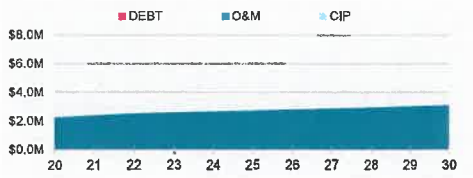
	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Sewer Fixed Rate Plan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Sewer Usage Rate Plan	3.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Debt Coverage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Debt	No
CIP Execution %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	CIP	No
Single Family Bi-Monthly Sewer Bill	$142.60	$142.60	$137.63	$137.63	$137.63	$137.63	$137.63	$137.63	$137.63	$137.63	$137.63		
Change in Bi-Monthly Bill		$0.00	($4.97)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		
Cost per Day	$2.38	$2.38	$2.29	$2.29	$2.29	$2.29	$2.29	$2.29	$2.29	$2.29	$2.29		
Change in Cost per Day		$0.00	($0.08)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		

Operating Fund (Cash)

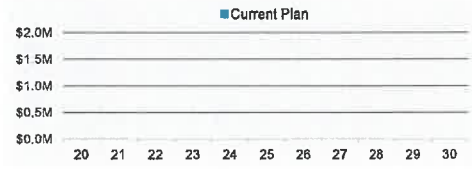
Revenues vs. Expenses



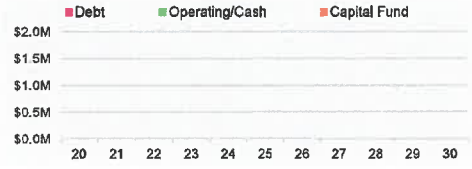
Expenses by Type



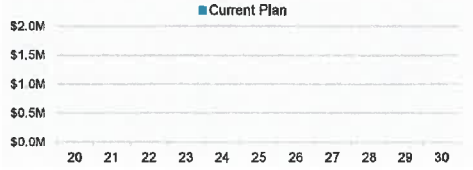
CIP Spending



CIP Funding



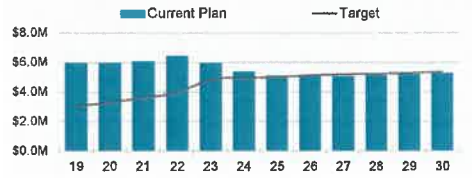
Borrowing



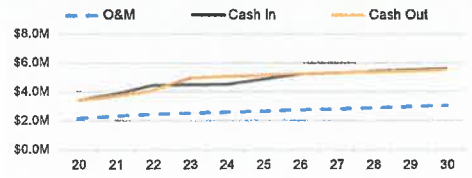
(2) Sewer Fund – Rate Increases Required to **Only Fund O&M and Debt - No Capital**

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Sewer Fixed Rate Plan	0.00%	0.00%	10.00%	10.00%	10.00%	10.00%	10.00%	2.50%	2.50%	2.50%	2.50%	46.46%	77.86%
Sewer Usage Rate Plan	3.00%	0.00%	10.00%	10.00%	10.00%	10.00%	10.00%	2.50%	2.50%	2.50%	2.50%	46.46%	77.87%
Debt Coverage	1.09	1.19	1.31	0.85	0.81	0.93	1.04	1.05	1.08	1.09	1.09	Debt	Yes
CIP Execution %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	CIP	No
Single Family Bi-Monthly Sewer Bill	$142.60	$142.60	$151.39	$166.53	$183.19	$201.50	$221.65	$227.20	$232.88	$238.70	$244.67		
Change in Bi-Monthly Bill		$0.00	$8.79	$15.14	$16.65	$18.32	$20.15	$5.54	$5.68	$5.82	$5.97		
Cost per Day	$2.38	$2.38	$2.52	$2.78	$3.05	$3.36	$3.69	$3.79	$3.88	$3.98	$4.08		
Change in Cost per Day		$0.00	$0.15	$0.25	$0.28	$0.31	$0.34	$0.09	$0.09	$0.10	$0.10		

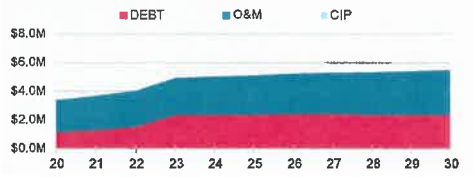
Operating Fund (Cash)



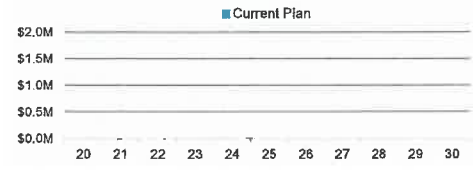
Revenues vs. Expenses



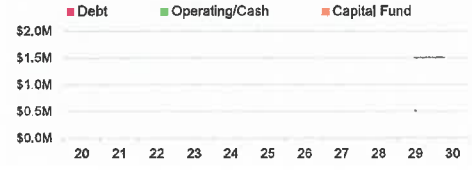
Expenses by Type



CIP Spending



CIP Funding

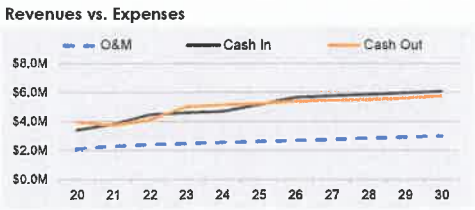


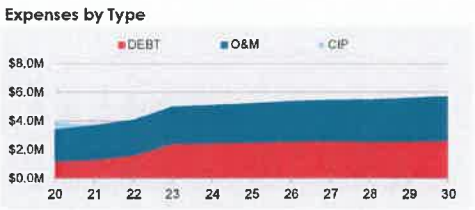
Borrowing

Annual 10% near-term sewer rate increases required to for O&M and existing debt only

(3) Sewer Fund – Rate Increases Required to Fund O&M, Debt, and Capital

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2025	FY 2030
Sewer Fixed Rate Plan	0.00%	0.00%	12.00%	12.00%	12.00%	12.00%	12.00%	2.50%	2.50%	2.50%	2.50%	57.31%	94.49%
Sewer Usage Rate Plan	3.00%	0.00%	12.00%	12.00%	12.00%	12.00%	12.00%	2.50%	2.50%	2.50%	2.50%	57.30%	94.48%
Debt Coverage	1.08	1.15	1.29	0.87	0.86	1.01	1.15	1.16	1.19	1.19	1.17	Debt	Yes
CIP Execution %	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	CIP	Yes
Single Family Bi-Monthly Sewer Bill	$142.60	$142.60	$154.15	$172.64	$193.36	$216.56	$242.55	$248.61	$254.83	$261.20	$267.73		
Change in Bi-Monthly Bill		$0.00	$11.55	$18.50	$20.72	$23.20	$25.99	$6.06	$6.22	$6.37	$6.53		
Cost per Day	$2.38	$2.38	$2.57	$2.88	$3.22	$3.61	$4.04	$4.14	$4.25	$4.35	$4.46		
Change in Cost per Day		$0.00	$0.19	$0.31	$0.35	$0.39	$0.43	$0.10	$0.10	$0.11	$0.11		





Average Single Family Bills

Summary of Bill Impacts (Funding O&M, Debt and Capital)

5/8" Meter, 8 kgal of water and sewer use bi-monthly

	Current	FY 22	FY 23	FY 24	FY 25
Water	$74.97	$90.27	$99.75	$110.22	$121.79
Sewer	$142.60	$154.15	$172.64	$193.36	$216.56
Total	$217.57	$244.42	$272.39	$303.58	$338.35
Change $		$26.85	$27.97	$31.19	$34.77
Change %		12.3%	11.4%	11.5%	11.5%

Alternative C Rate structure change in FY22

Financial Plan Key Findings

- Current water and sewer rates are not sufficient to fund the current or long-term revenue requirements of each respective system
- Water system requires funds to complete essential water capital projects
- Sewer system will experience significant increase in existing debt service payments in FY23
- Without additional revenues, the water and sewer systems will exhaust all available cash balances in the next several years
- Anticipated results will likely impact Town's ability to borrow for the water and sewer systems

Questions?

Additional Resource Slides

Cost of Service

Cost of Service

Objectives of Cost of Service Analysis

- The total cost of service is the annual revenue requirement of the utility, which is recovered from the utility's customers.
- The utility system is made up of different functions, which drive costs.
- Different customer types use the system functions differently and, as a result, the cost to serve these customer types vary.

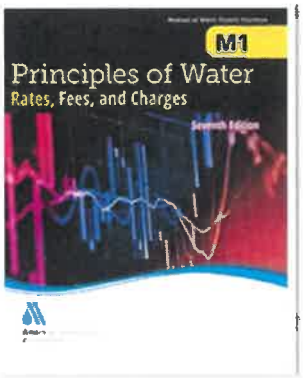
Goal: Use customer and system data to determine the **cost to serve** each class and collect revenue from each class according to the resulting cost allocation.

Method

Application based on Industry Guidance

American Water Works Association (AWWA) Manual M-1

- Costs allocated to functions and then to users in proportion to contributions to system components

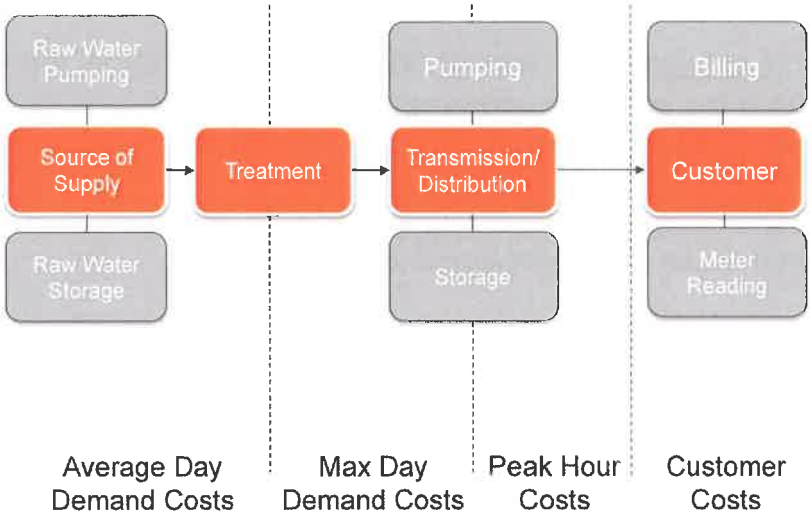


Process used:

1) Functionalize system costs
2) Allocate functional costs to cost components (base vs. extra capacity, customer-related costs)
3) Develop unit costs for each cost component of the system
4) Determine customer classes; develop units of service based on customer data
5) Distribute costs to customer classes based on unit costs and units of service

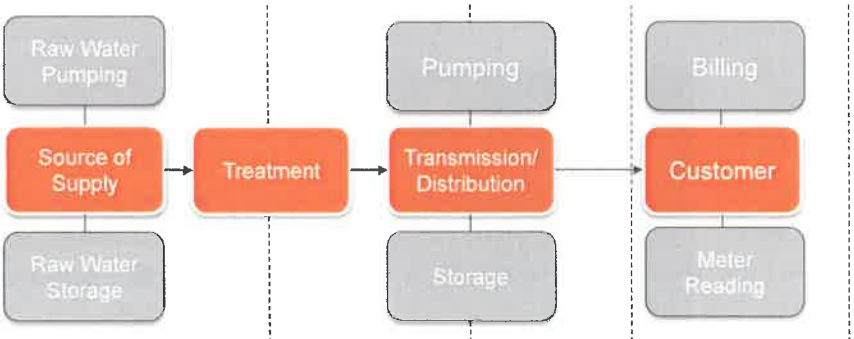
Method

Functionalizing System Costs



Method

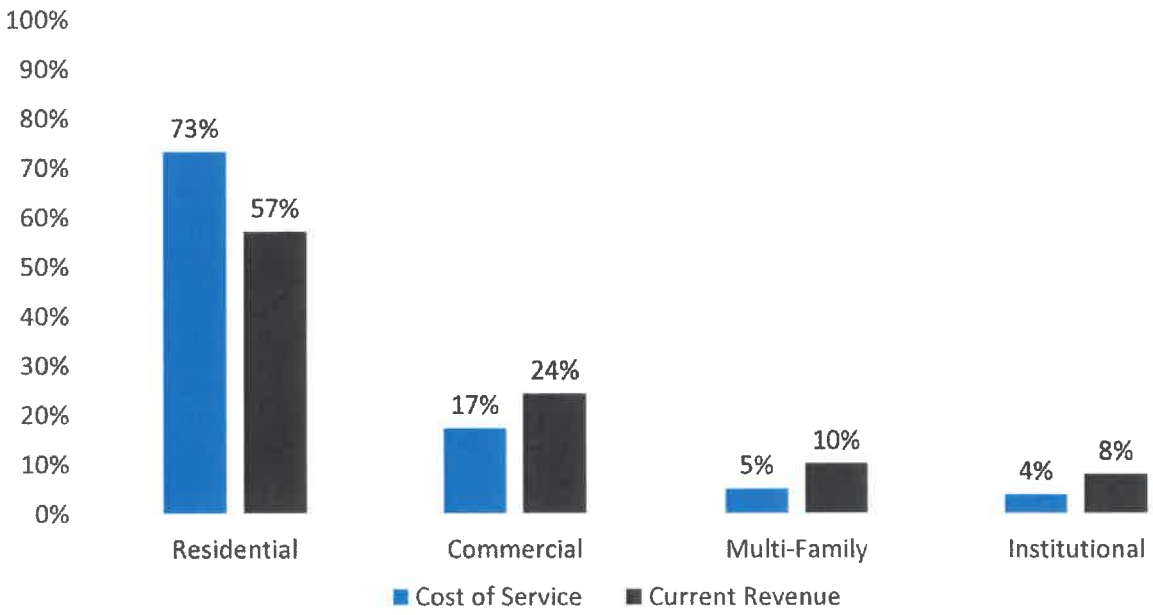
Functionalizing System Costs/ Unit Costs



	Average Day Demand Costs	Max Day Demand Costs	Peak Hour Costs	Customer Costs	Total
Test Year Costs	$2.2M	$0.4M	$0.2M	$0.4M	$3.2M
Unit Costs	$13.24/kgal	$16.00/kgal	$16.78/kgal	$76.16/account	$17.99/kgal

Cost of Service

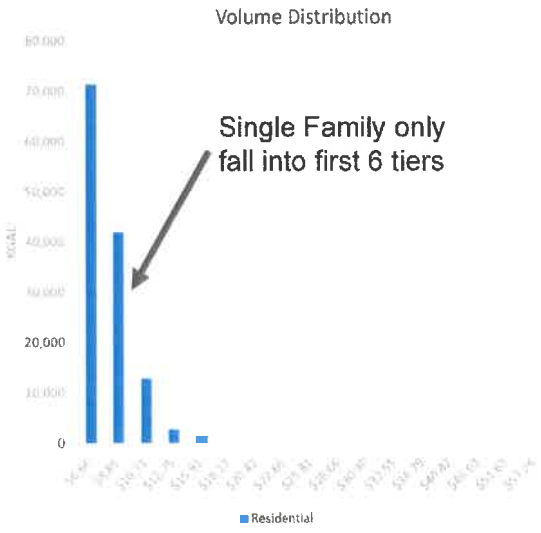
Cost of Service To Current Revenue (FY 2020)

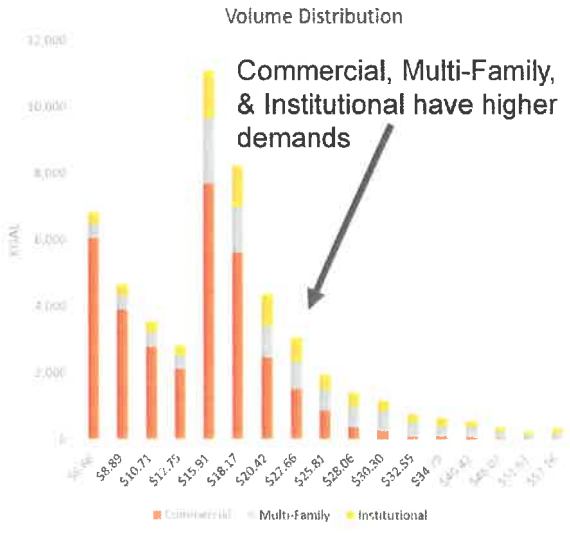


Cost of Service

Water Rate Structure Impacts

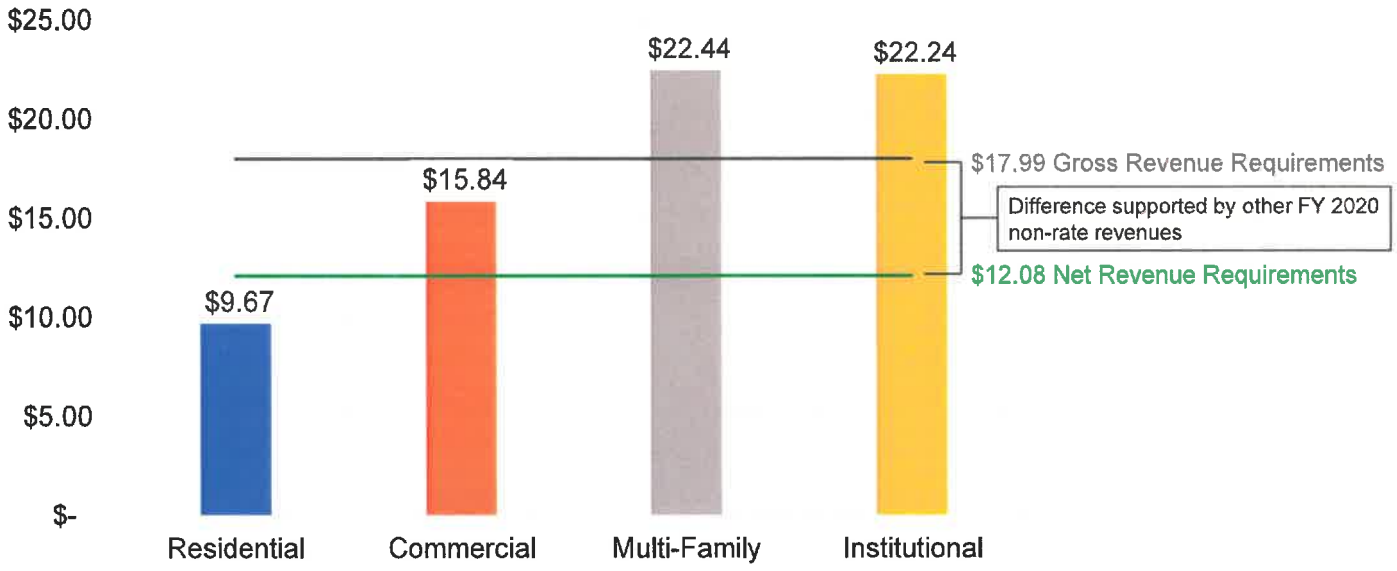
Usage Tier (kgal)	Water Rate (per kgal)
0 to 5	$6.66
5 – 10	$8.89
10 – 15	$10.71
15 – 20	$12.75
20 – 50	$15.91
50 – 100	$18.17
100 – 150	$20.42
150 – 200	$22.66
200 – 250	$25.81
250 – 300	$28.06
300 – 350	$30.30
350 – 400	$32.55
400 – 450	$34.79
450 – 500	$40.42
500 – 550	$46.03
550 – 600	$51.63
Over 600	$57.26





Cost of Service

Water Unit Cost Comparison per 1,000 gallons



Cost of Service

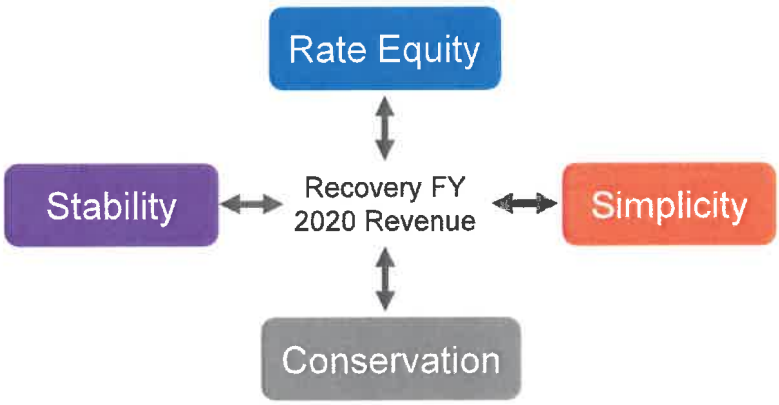
Cost of Service Key Findings

- Cost of providing water service and current cost recovery are not aligned
- Current inequity is potentially unsustainable as Town increases water system revenues to meet future expenditures
  - Potential for existing and future large volume customers to seek alternatives
  - Further impacting revenues
  - Rate structure needs to be fair and reasonable
- Current one size fits all water rate structure needs to be examined and likely modified

Rate Design / Customer Impacts

Rate Design

Objectives of Rate Design



Key Objective: **A sustainable rate structure**

Goal: Design rates that fairly recover revenue across and within customer classes, increase fixed cost recovery, and promote conservation.

Rate Design

Current and Alternative Rate Structures Considered

Water Fixed Charge

	Current	Alternative A, B, & C
Single Family Residential	Scaled based on meter size	Scaled based on meter size (based on average use)
Non-Single Family		

Water Volumetric Charge

	Current	Alternative A*	Alternative B & C**
Single Family Residential	17 inclining tiers	4 inclining tiers (based on data analysis)	4 inclining tiers (based on data analysis)
Non-Single Family		Uniform rate	4 inclining tiers (tiered by meter size)

Sewer Fixed Charge

	Current	Alternative
All Customers	Scaled based on meter size	Scaled based on meter size (based on average use)

Sewer Volumetric Charge

	Current	Alternative
All Customers	Uniform rate	Uniform rate

*Full cost of service based rates
**Transition towards cost of service

Water and Sewer Fixed Charges

Fixed Charges

Level of Fixed Revenue

	Water	Sewer
Bi-Monthly Fixed Fees	13.5%	11.0%
First 1,000 Gallons	5.2%	9.0%
Total	18.7%	20.0%

Recommendation: 20%

Meter Size	Current Scaling	Current Fixed Fee	Calculated Average Use*	Calculated Scaling
5/8"	1.0	$15.00	8,000	1.0
3/4"	1.0	$15.00	25,000	3.2
1"	2.5	$37.50	32,000	4.0
1.5"	5.0	$75.00	52,000	6.7
2"	8.0	$119.99	95,000	12.0
3"	16.0	$239.48	206,000	26.3
4"	25.0	$374.97	356,000	43.3

*Average bi-monthly use

Fixed Charge

Bi-Monthly Fixed Charge Summary

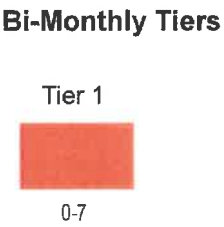
Meter Size	Number of Water Meters*	Meter Equivalencies**	Current Water Fixed Charge	Alternative A&B Water Fixed Charge	Alternative C Water Fixed Charge	Current Sewer Fixed Charge	Proposed Sewer Fixed Charge
5/8"	2,777	1.0	$15.00	$13.33	$14.75	$15.00	$15.23
3/4"	20	3.2	15.00	42.66	44.81	15.00	48.73
1"	44	4.0	37.50	53.62	59.80	37.50	61.25
1.5"	28	6.7	75.00	89.75	99.27	75.00	102.52
2"	26	12.0	119.99	160.62	177.66	119.99	183.47
3"	5	26.3	239.48	350.47	387.63	239.48	400.32
4"	2	45.3	374.97	604.26	668.33	374.97	690.20

*Approximately same number of sewer meters by meter size.
**Meter equivalencies calculated based on average billed usage.

Single Family Rate Design

Bi-Monthly Single Family Tier Sizing: Tier 1

Tier 1 = 7,000 gallons

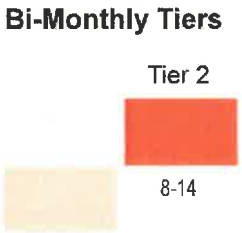


Source: Census Bureau, Residential End Use of Water Survey v2

Single Family Rate Design

Bi-Monthly Single Family Tier Sizing: Tier 2

Tier 2 = Additional 7,000 gallons



Source: Census Bureau, Residential End Use of Water Survey v2

Single Family Rate Design

Distribution of Single Family Lot Sizes

Single Family Rate Design

Outdoor Use: Calculating Irrigation Requirements for the Average Parcel

Parcel Size: 14,000
Landscape Area: 6,500

×

Evapotranspiration:
23.4 Inches

−

Beneficial Rainfall:
14 Inches

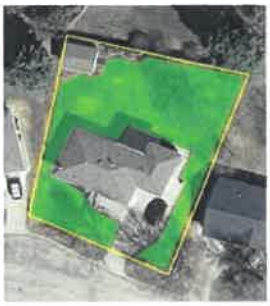
×

Irrigation System
Efficiency: 70%

Irrigation Requirement = 6,000 gallons

Single Family Rate Design

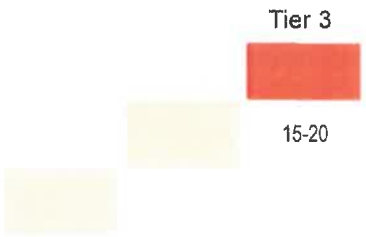
Bi-Monthly Single Family Tier Sizing: Tier 3



Parcel Size: 14,000
Landscape Area: 6,500

=

Bi-Monthly Tiers



Tier 3 = Additional 6,000 gallons

Water Volumetric Rates

Alternative A, B & C Volumetric Rates

Alt. A Water Rates Single Family

Usage Tier (kgal)	Water Rate (per kgal)
0 – 7	$9.20
8 – 14	$13.81
15 – 20	$18.41
Over 20	$23.01

Alt. A Water Rates Non-Single Family

Usage Tier (kgal)	Water Rate (per kgal)
All Usage	$9.47

Meter Size	Count	Tier 1 (kgal)	Tier 2 (kgal)	Tier 3 (kgal)	Tier 4 (kgal)
Single Family	2,585	0 – 7	8 – 14	15 – 20	Over 20
Non-Single Family					
5/8"	195	0 – 7	8 – 14	15 – 20	Over 20
3/4"	19	0 – 21	22 – 43	44 – 61	Over 61
1"	41	0 – 28	29 – 57	58 – 81	Over 81
1.5"	28	0 – 47	48 – 94	95 – 135	Over 135
2"	26	0 – 84	85 – 169	170 – 241	Over 241
3"	5	0 – 184	185 – 368	369 – 526	Over 526
4"	2	0 – 317	318 – 635	636 – 906	Over 906
6"	0	0 – 713	714 – 1,429	1,430 – 2,039	Over 2,039
Alternative B Rate (per kgal)		$8.32	$12.47	$16.63	$20.79
Alternative C Rate (per kgal)		$7.65	$13.39	$17.22	$21.04

Volumetric Sewer Rates

Current and Alternative Volumetric Rates

Current Sewer Rates All Customers

Usage Tier (kgal)	Sewer Rate (per kgal)
All Usage	$15.95

Calculated Sewer Rates All Customers

Usage Tier (kgal)	Sewer Rate (per kgal)
All Usage	$15.30

Combined Bill Impacts

Bill Impacts: Single Family Customers

Customer with water and sewer service
Three-person (**average user**) household with some outdoor use
8,000 gallons bi-monthly (56th percentile)

$ Change: $11.60
% Change: 5.33%

$ Change: $4.10
% Change: 1.88%

$ Change: $1.75
% Change: 0.80%

Combined Bill Impacts

Summary Single Family Customers Bill Impacts

Alternative	Meter Size	Average Bi-Monthly Usage (1,000 gallons)	Current Bi-Monthly Bill	Alternative Bi-Monthly Bill	$ Change in Bi-Monthly Bill	% Change in Bi-Monthly Bill	Count of Bills
A	5/8"	4	$120.44	$126.56	$6.12	5.08%	1,076
	5/8"	**8**	**$217.57**	**$229.17**	**$11.60**	**5.33%**	**1,527**
	5/8"	14	$373.89	$403.83	$29.94	8.01%	463
	5/8"	20	$544.05	$606.09	$62.04	11.40%	69
B	5/8"	4	$120.44	$123.04	$2.60	2.16%	1,076
	5/8"	**8**	**$217.57**	**$221.67**	**$4.10**	**1.88%**	**1,527**
	5/8"	14	$373.89	$388.29	$14.40	3.85%	463
	5/8"	20	$544.05	$579.87	$35.82	6.58%	69
C	5/8"	4	$120.44	$121.78	$1.34	1.11%	1,076
	5/8"	**8**	**$217.57**	**$219.32**	**$1.75**	**0.80%**	**1,527**
	5/8"	14	$373.89	$391.46	$17.57	4.70%	463
	5/8"	20	$544.05	$586.67	$42.62	7.83%	69

Rate Design

Rate Design Key Findings

- The Town's current water rate structure is overly complicated and should be modified to best serve the community
- An alternative water rate design would:
  - Correct an unsustainable rate structure
  - Balance customer impacts with cost of service findings and rate equity
  - Enhance the transparency and understandability of rates
  - Promote conservation for all customers

Financial Plan

Financial Modeling Assumptions

Current Chargeback per Fund: $493k

Rate Adjustments:

- 1% Increase in Water Rates = $21,000 of additional revenue
- 1% Increase in Sewer Rates = $32,000 of additional revenue

If Any Support from General Fund:

- 1% Increase in Meals Tax = $430k
- 1 Cent Increase in Property Tax = $141k

Water CIP was reduced per risk analysis presented by Public Works on 10/9/19

Method

Allocation Process

- FY 2020 budget was used as the test year for analysis
- Each line item was reviewed with relevant staff and allocated to system functions

Allocation Factors

	Source of Supply	Treatment	Transmission	Distribution	Customer
Source of Supply	100.0%	0.0%	0.0%	0.0%	0.0%
Treatment					
Transmission					
Distribution					
Customer					
Weighted FTEs					
Current Debt					
System Operators					
Transmission / Dist					
11-Year CIP					
Weighted Expense					

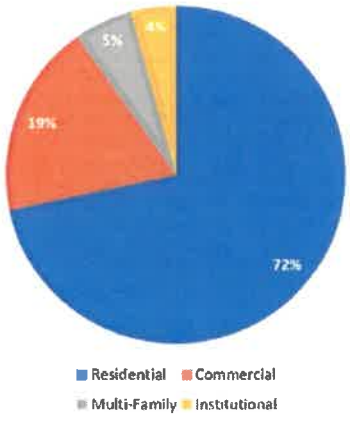
Expense Line Item	FY 2020 Water Expenses	Allocation Factor	Source of Supply Allocation	Treatment Allocation	Transmission Allocation	Distribution Allocation	Customer Allocation
Operations and Maintenance							
Water Staff Salary	$625,392	System Operators	30.0%	60.0%	5.0%	2.5%	2.5%
Overtime	$31,000	System Operators	30.0%	60.0%	5.0%	2.5%	2.5%
Chargeback to GF	$493,226	Weighted FTEs	23.6%	6.3%	16.0%	31.8%	22.4%
Social Security Tax							
Retirement							
Health Insurance							
Life Insurance							
Long Term Disability							
Hybrid Disability							
Workers Comp Ins							
Deferred Comp Match							
GASB PENSION ADJUS							

Function	Base Capacity Avg Day	Extra Capacity Max Day	Extra Capacity Peak Hour	Customers
Source of Supply	100%			
Treatment	74%	26%		
Transmission	74%	26%		
Distribution	37%	13%	50%	
Customer				100%

Customer Classes

Customer Class Units of Service

VOLUME DISTRIBUTION

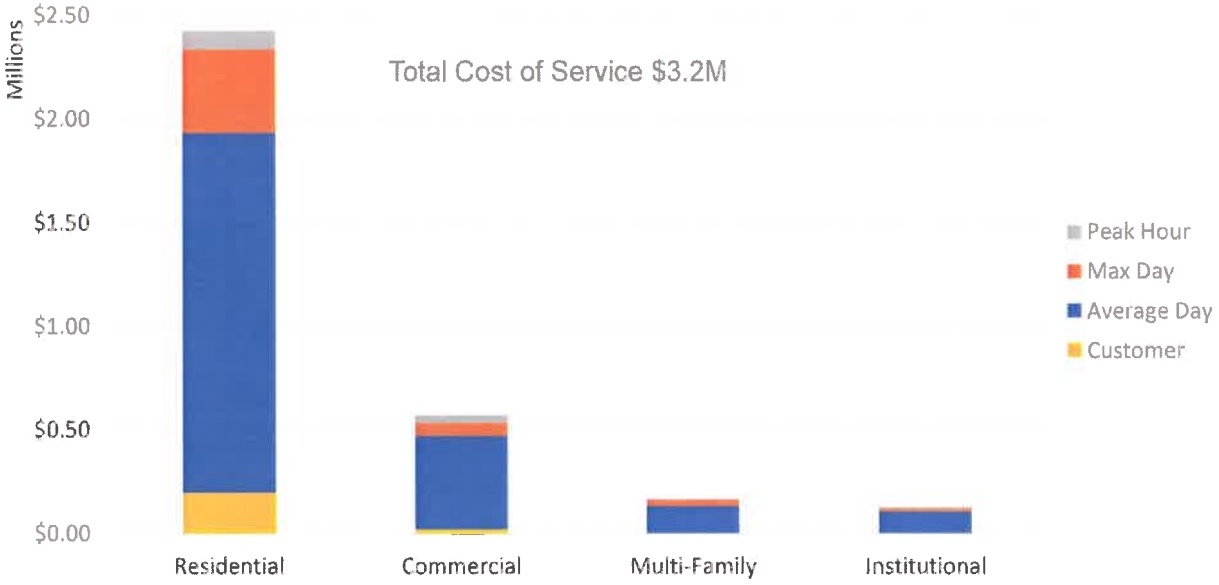


Customer Class	# of Accounts	Annual Average Day Demand (kgal)	Annual Max Day Demand (kgal)	Annual Peak Hour Demand (kgal)
Single Family	2,588	131,048	13,466	80,140
Commercial	273	34,114	2,130	31,984
Multi-Family	14	10,087	1,036	2,326
Institutional	12	7,696	498	7,471

Observation: Overall peaking on water system is limited

Cost of Service

Cost of Service by Customer Class



Customer Classes

Developing Customer Classes

Things to consider when developing customer classes:

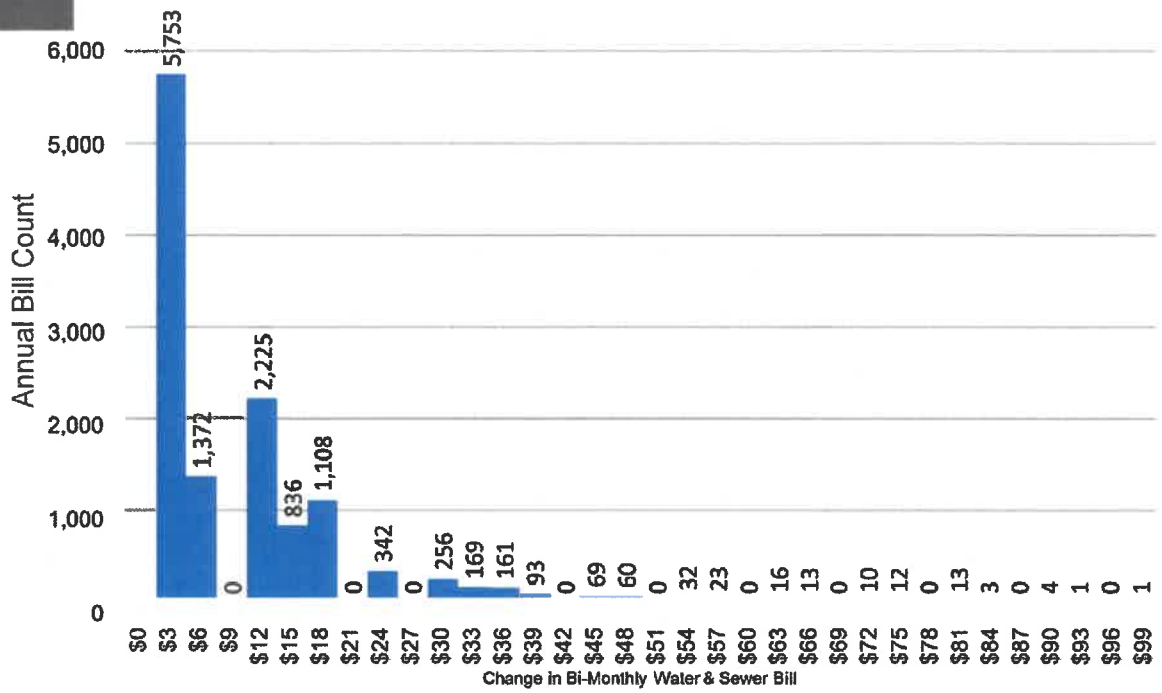
- Service characteristics
- Demand patterns
  - Average day, maximum day, peak hour, monthly distribution
- Number of customers by type

Categories of Customers Served by Purcellville Water System

Single Family Residential	Multi-Family Residential	Commercial	Institutional
Individually Metered Single Family	Apartment Complexes	Businesses, Town Properties	Educational

Bill Impacts

Distribution of Bill Change: Single-Family Customers Alternative C



Combined Bill Impacts

Representative Non-Single Family Customers

Alternative	Meter Size	Average Bi-Monthly Usage (kgal)	Current Bi-Monthly Bill	Alternative Bi-Monthly Bill	$ Change in Bi-Monthly Bill	% Change in Bi-Monthly Bill
A	5/8"	11	$294	$301	$7	2.4%
	1.5"	91	$3,019	$2,446	($616)	-21.3%
	2"	587	$27,146	$14,884	($12,367)	-45.9%
	3"	531	$23,707	$13,904	($10,076)	-43.3%
	4"	277	$10,951	$8,155	($2,796)	-25.5%
B	5/8"	11	$294	$305	$11	3.8%
	1.5"	91	$3,019	$2,524	($495)	-16.4%
	2"	587	$27,146	$19,125	($8,021)	-29.5%
	3"	531	$23,707	$15,411	($8,296)	-35.0%
	4"	277	$10,951	$7,837	($3,114)	-28.4%
C	5/8"	11	$294	$305	$12	3.9%
	1.5"	91	$3,019	$2,543	($475)	-15.7%
	2"	587	$27,146	$19,647	($7,498)	-27.6%
	3"	531	$23,707	$15,613	($8,094)	-34.1%
	4"	277	$10,951	$7,718	($3,233)	-29.5%

Bill Impacts

Distribution of Bill Change: Non-Single Family Customers Alternative C