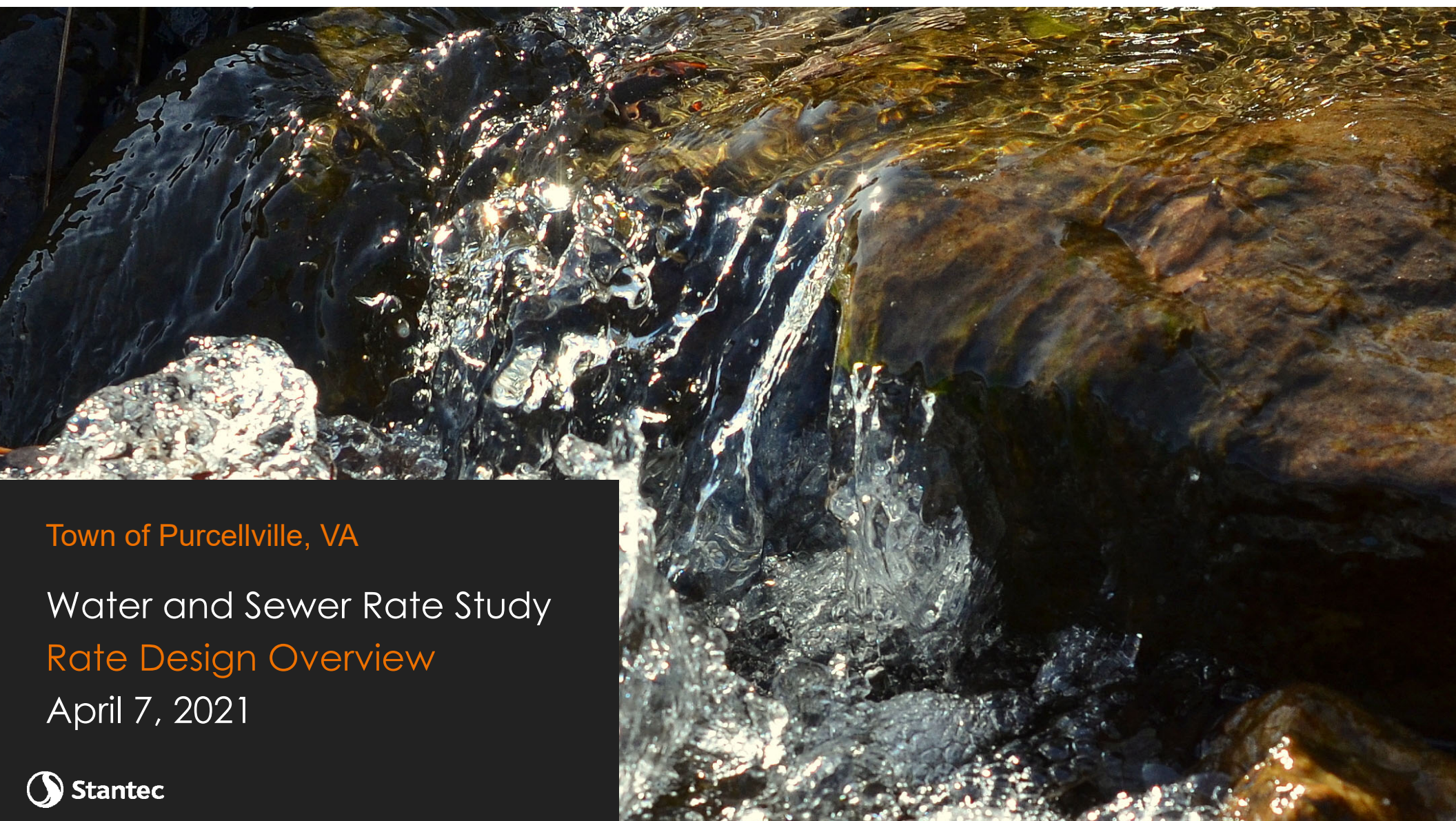




Town of Purcellville, VA

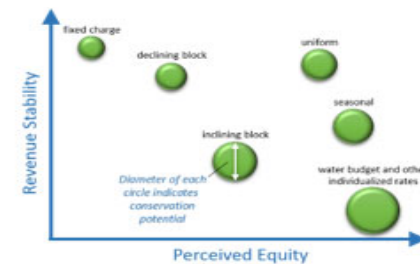
Water and Sewer Rate Study

Rate Design Overview

April 7, 2021



Study Approach



Financial Plan

Defines how much total revenue is needed each year

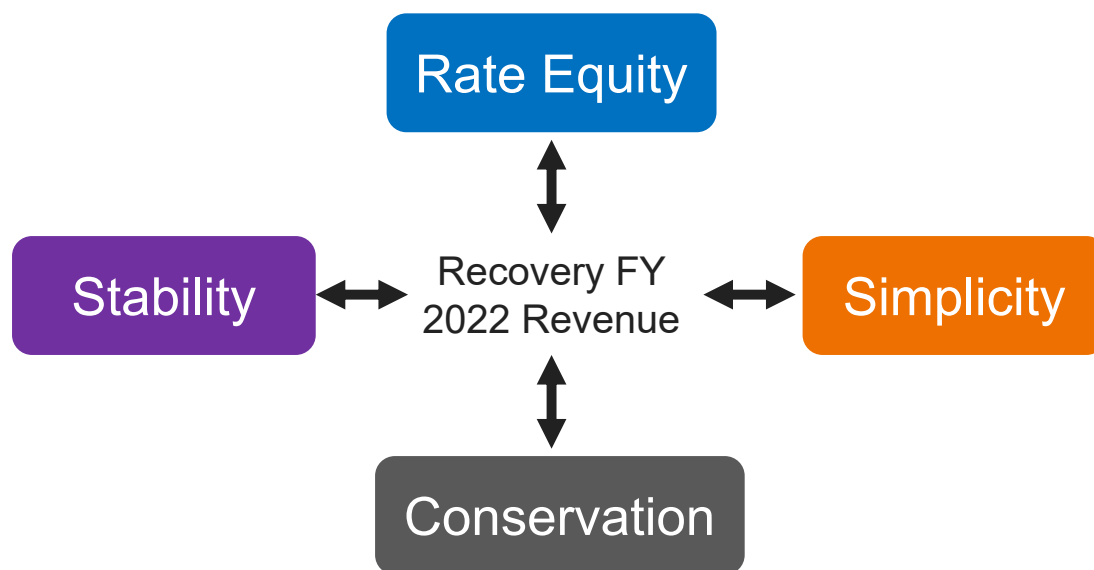
Cost of Service

Defines proportional revenue recovery between customer classes

Rate Design

Structure of how revenues are recovered by class

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.

THE COST TO PROVIDE WATER

*3% Water Revenue Increase
Proposed for FY22*

*Increases to \$0.76M in next few years

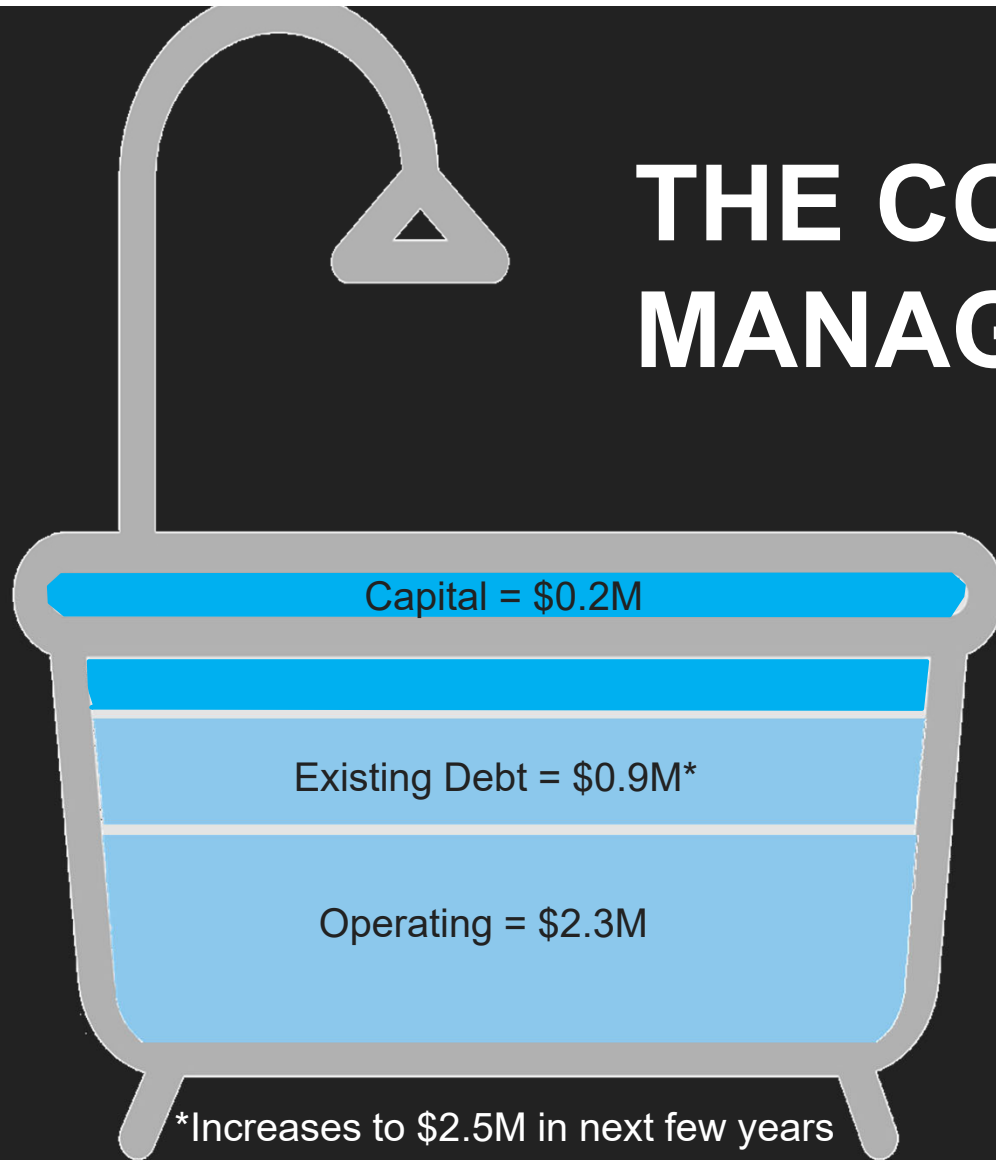


Capital = \$2.3M

Existing Debt =
\$0.3M*

Operating =
\$2.3M

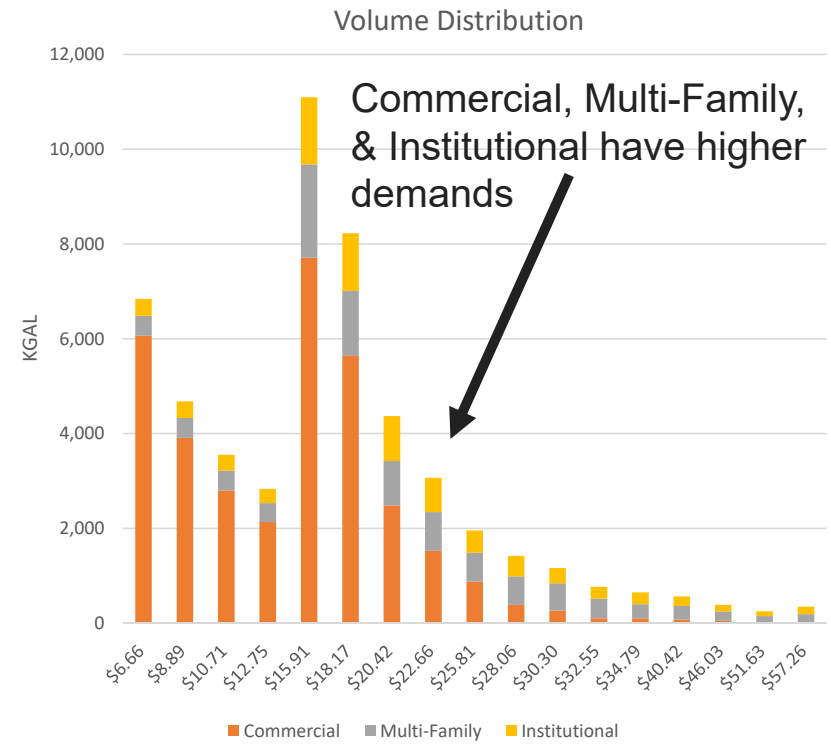
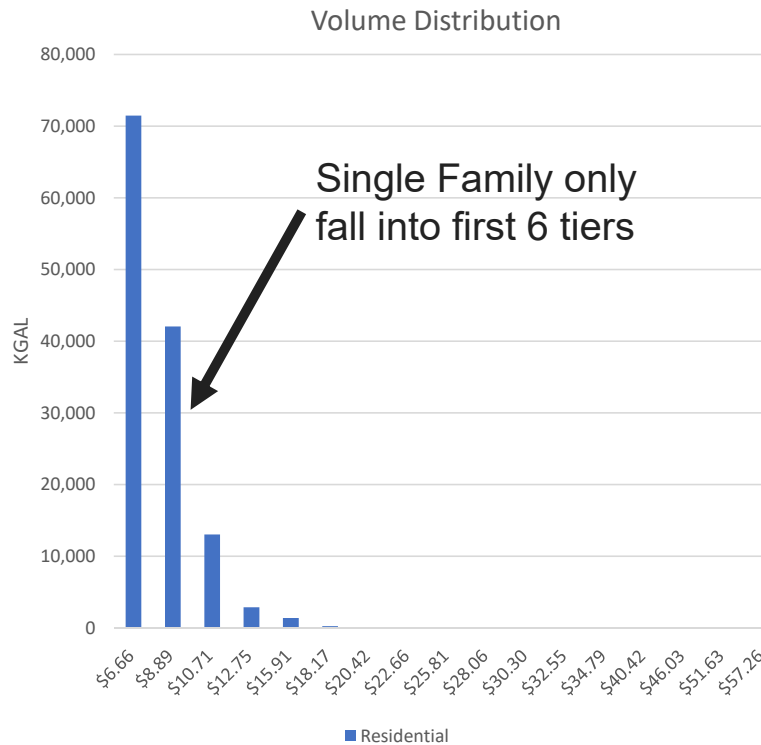
THE COST TO MANAGE SEWER



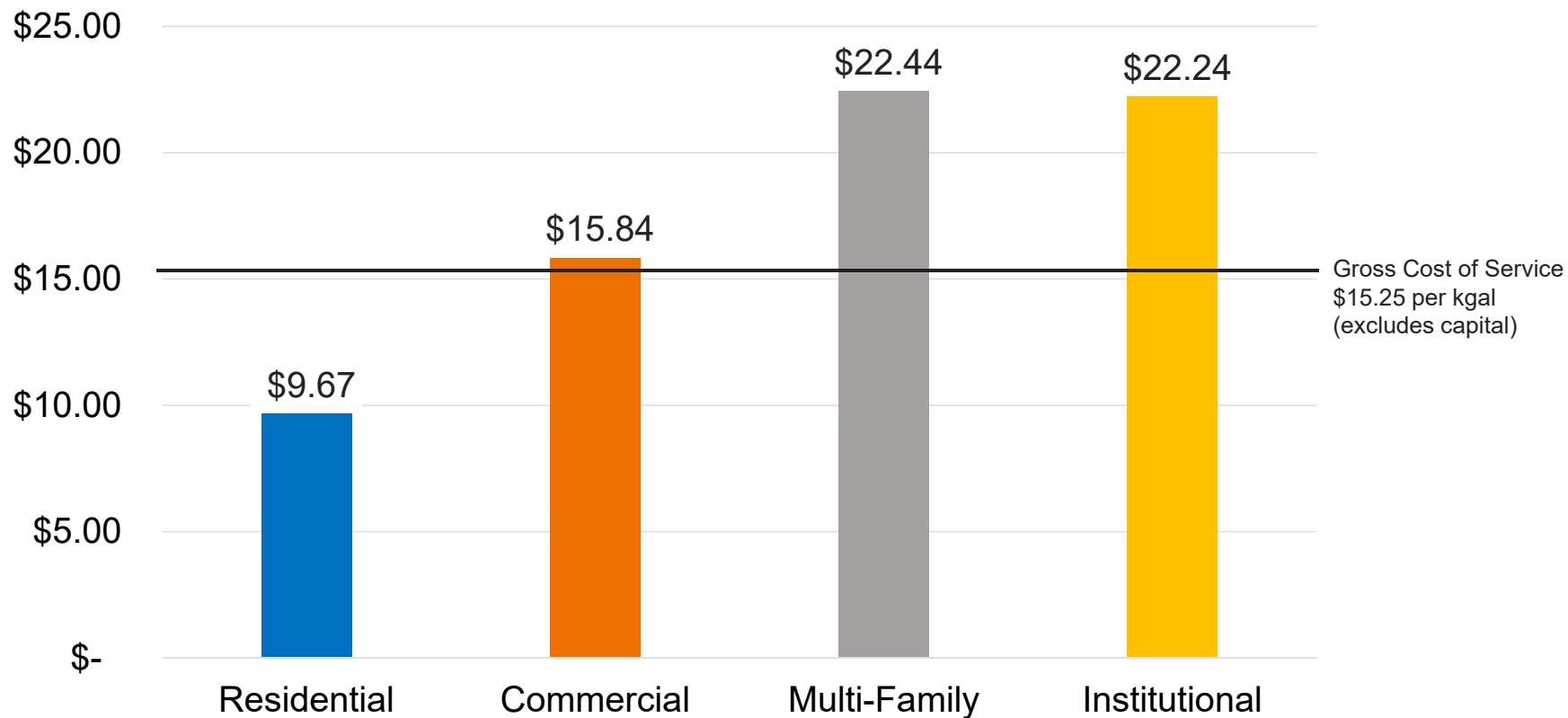
*5% Sewer Revenue
Increase Proposed for
FY22*

Current Water Rate Structure Impacts

Usage Tier (kgal)	Current 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



Water Effective Unit Cost Comparison per 1,000 gallons with Current Water Rate Structure



Current and Proposed Rate Structures

Water Fixed Charge		Water Volumetric Charge	
	Current	Proposed	
Single Family Residential	Scaled based on meter size	Scaled based on meter size (based on average use)	4 inclining tiers (based on data analysis)
Non-Single Family			4 inclining tiers (tiered by meter size)
Sewer Fixed Charge		Sewer Volumetric Charge	
	Current	Proposed	
All Customers	Scaled based on meter size	Scaled based on meter size (based on average use)	Uniform rate
			Uniform rate

Proposed Fixed Charge Summary (Bi-Monthly)

Meter Size	Number of Water Meters*	Meter Equivalencies**	Current Water Fixed Charge	Proposed Water Fixed Charge	Current Sewer Fixed Charge	Proposed Sewer Fixed Charge
5/8"	2,873	1.0	\$15.00	\$15.20	\$15.00	\$16.00
3/4"	25	3.2	\$15.00	\$48.65	\$15.00	\$51.20
1"	47	4.0	\$37.50	\$61.15	\$37.50	\$64.30
1.5"	29	6.7	\$75.00	\$102.35	\$75.00	\$107.65
2"	25	12.0	\$119.99	\$183.15	\$119.99	\$192.65
3"	5	26.3	\$239.48	\$399.60	\$239.48	\$420.35
4"	2	45.3	\$374.97	\$689.00	\$374.97	\$724.70
6"	-	96.7	\$479.93	\$1,469.80	\$479.93	\$1,546.10
8"	-	169.2	\$1,199.88	\$2,572.20	\$1,199.88	\$2,705.30

*Approximately same number of sewer meters by meter size.

**Meter equivalencies calculated based on average billed usage.

Proposed Water Volumetric Rates

Meter Size	Count	Tier 1 (gallons)	Tier 2 (gallons)	Tier 3 (gallons)	Tier 4 (gallons)
Single Family	2,691	0 to 7,000	7,001-14,000	14,001-20,000	20,001 and over
Non-Single Family					
5/8"	182	0 to 7,000	7,001-14,000	14,001-20,000	20,001 and over
3/4"	25	0 to 22,000	22,001-45,000	45,001-64,000	64,001 and over
1"	47	0 to 28,000	28,001-56,000	56,001-80,000	80,001 and over
1.5"	29	0 to 47,000	47,001-94,000	94,001-135,000	135,001 and over
2"	25	0 to 84,000	84,001-169,000	169,001-241,000	241,001 and over
3"	5	0 to 184,000	184,001-368,000	368,001-526,000	526,001 and over
4"	2	0 to 317,000	317,001-635,000	635,001-907,000	907,001 and over
6"	-	0 to 677,000	677,001-1,354,000	1,354,001-1,934,000	1,934,001 and over
8"	-	0 to 1,185,000	1,185,001-2,369,000	2,369,001- 3,385,000	3,385,001 and over
Rate (per kgal)		\$7.88	\$13.80	\$17.74	\$21.68

Current and Proposed Sewer Rates

Current Sewer Rates All Customers

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

Proposed Sewer Rates All Customers

Usage Tier (kgal)	Sewer Rate (per kgal)
All Usage	\$16.07

1,000 gallons or.....



58 showers



40 minutes of
watering with a
hose



285 toilet flushes



33 loads of laundry



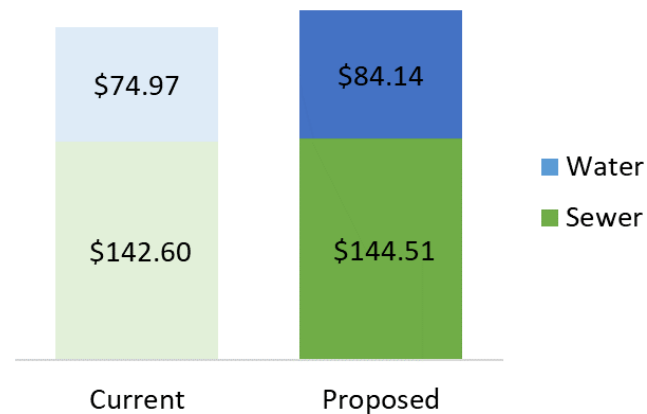
16,000 cups of water

Bill Impacts: Bi-Monthly Single Family Customers

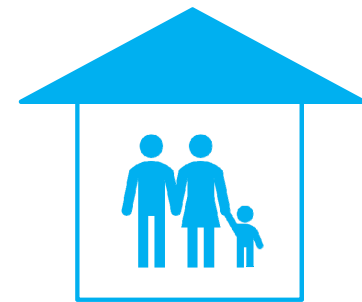
Customer with water and sewer service

Three-person (**average user**) household with some outdoor use

8,000 gallons bi-monthly (56th percentile)

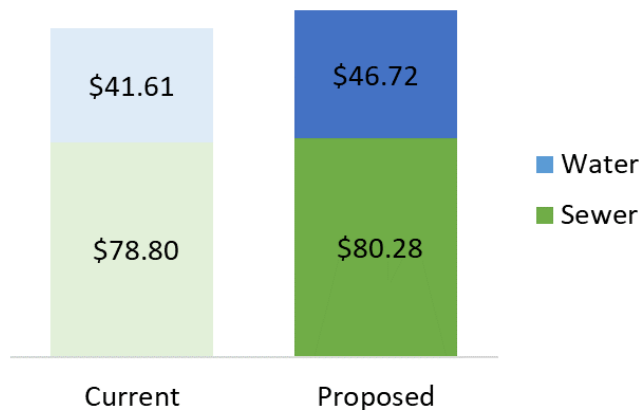


\$ Change: \$11.08
% Change: 5.1%

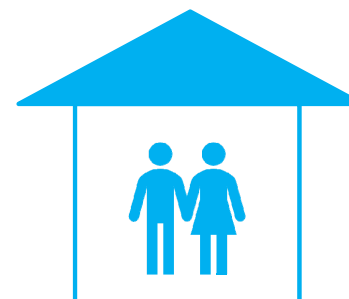


Bill Impacts: Bi-Monthly Single Family Customers

Customer with water and sewer service
 Two-person household (**Small User**)
 4,000 gallon bi-monthly (19th percentile)

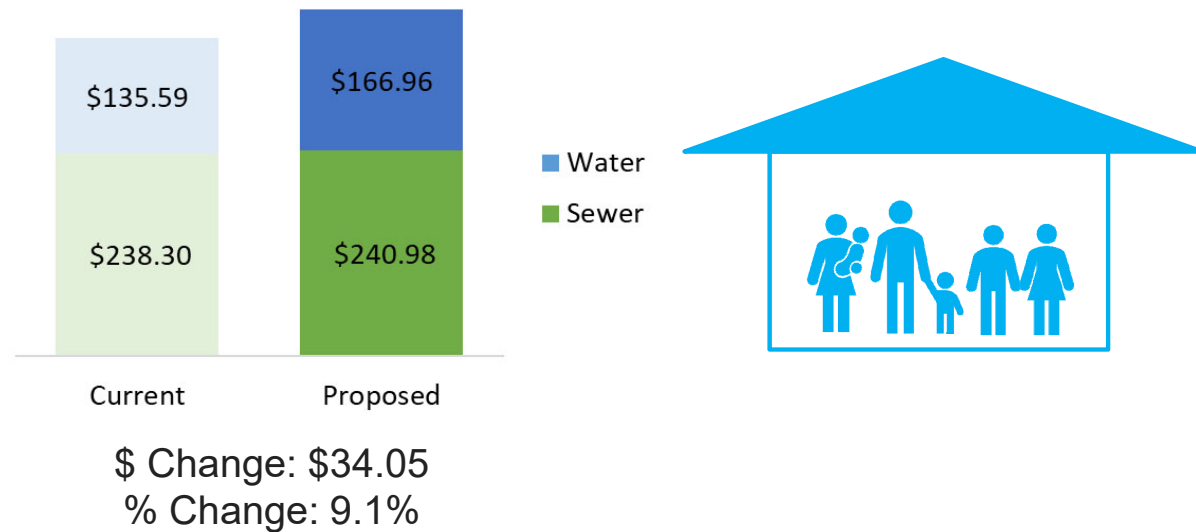


\$ Change: \$6.59
 % Change: 5.5%



Bill Impacts: Bi-Monthly Single Family Customers

Customer with water and sewer service
Large household with indoor only use
 14,000 gallon bi-monthly (92nd percentile)



Bill Impacts: Bi-Monthly Single Family Customers

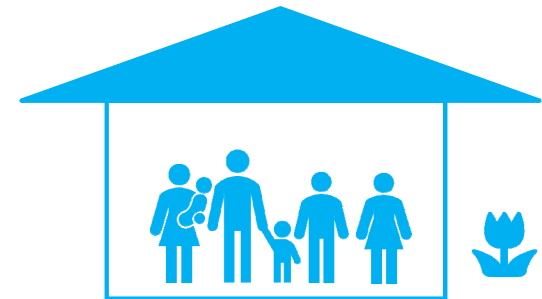
Customer with water and sewer service

Large household with indoor and outdoor water use

20,000 gallon bi-monthly (99th percentile)



\$ Change: \$66.75
% Change: 12.3%



Representative Non-Single Family Customers

Meter Size	Average Bi-Monthly Usage (kgal)	Current Bi-Monthly Bill	Proposed Bi-Monthly Bill	\$ Change in Bi-Monthly Bill	% Change in Bi-Monthly Bill
5/8"	26	\$744	\$848	\$104	14.0%
5/8"	29	\$847	\$969	\$122	14.4%
3/4"	24	\$682	\$696	\$14	2.1%
1"	190	\$6,559	\$6,587	\$28	0.4%
1.5"	451	\$18,587	\$16,063	(\$2,524)	-13.6%
2"	587	\$27,146	\$19,647	(\$6,724)	-24.8%
3"	228	\$8,145	\$6,555	(\$1,590)	-19.5%
4"	277	\$10,951	\$7,718	(\$2,903)	-26.5%

Long-Term Rate Forecast (Decoupled from Capital)*

	2022	2023	2024	2025	2026
Water User Rate Increase	3%	3%	3%	3%	3%
Bi-Monthly Average Bill**	\$84.14	\$86.66	\$89.26	\$91.94	\$94.70
Sewer User Rate Increase	5%	5%	7%	7%	7%
Bi-Monthly Average Bill**	\$144.51	\$151.74	\$162.36	\$173.72	\$185.88
Total	\$228.65	\$238.40	\$251.62	\$265.67	\$280.59

*Rate forecast assumes funding of operating and existing debt only (excludes future capital)

**Average single family residential 5/8" meter, 8,000 gallon per bi-monthly period

Questions?

Additional Resource Slides

Bi-Monthly Single Family Tier Sizing: Tier 1



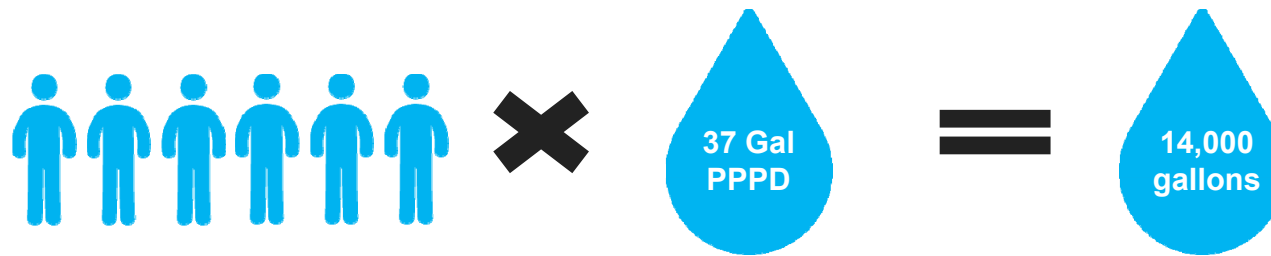
Tier 1 = 7,000 gallons

Bi-Monthly Tiers

Tier 1

0-7

Bi-Monthly Single Family Tier Sizing: Tier 2



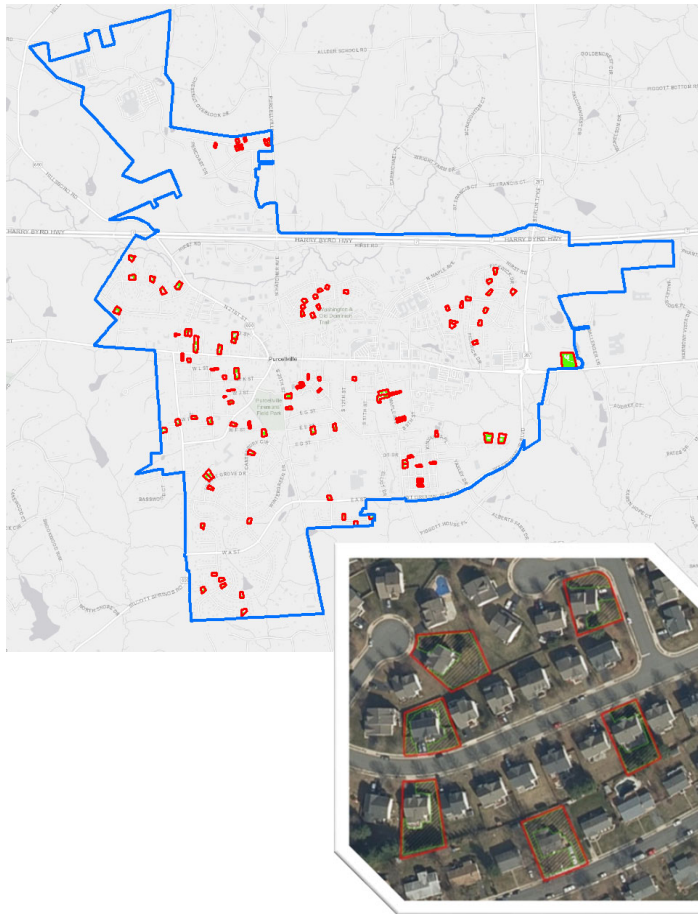
Tier 2 = Additional 7,000 gallons

Bi-Monthly Tiers

Tier 2

8-14

Distribution of Single Family Lot Sizes



101 Properties
Sampled

Average Size:
13,988 Sq. Ft.

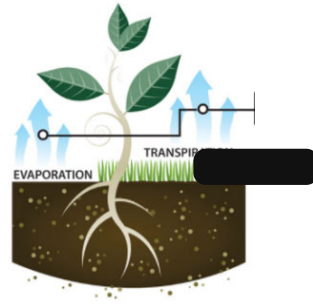
Average Irrigation:
6,495 Sq. Ft.

Parcel Irrigated: 46%

Outdoor Use: Calculating Irrigation Requirements for the Average Parcel



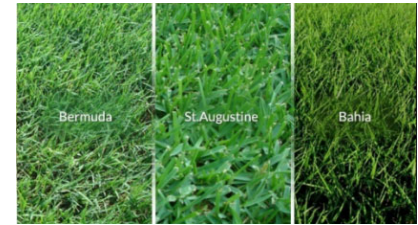
Parcel Size: 14,000
Landscape Area: 6,500



Evapotranspiration:
23.4 Inches



Beneficial Rainfall:
14 Inches



Irrigation System
Efficiency: 70%

Irrigation Requirement = 6,000 gallons

Bi-Monthly Single Family Tier Sizing: Tier 3



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

=

Bi-Monthly Tiers

Tier 3
15-20

Tier 3 = Additional 6,000 gallons