



Bismarck, ND

Utility Cost of Service & Rate Design Update

March 13, 2023



1. Financial Plan – Water, Sewer, Stormwater
2. Water and Sewer Cost of Service Update
3. Rate Structure Design
 - Customer Charge and Utility Account Processing (Fixed Charge)
 - Water – Adjusted Residential Tiers (3 and 4 Tiers)
 - Sewer – Winter Average
4. Bill Comparisons



Financial Plan Updates

Water

- No Rate Increase in FY23
- Focus on Rate Structure Changes
- Future increases of 4% annually
 - ✓ Potential Grant Funding for WTP Expansion
- Volatility of Water Sales and Impact of Rainfall

Sewer

- No Rate Increase in FY23
- Focus on Implementation of Winter Average for all Classes
- Future increases of 2.25% annually

Storm

- No Rate Increase in FY23
- No future increases
 - ✓ Adequate Investment



Cost of Service Update

1. Water Update

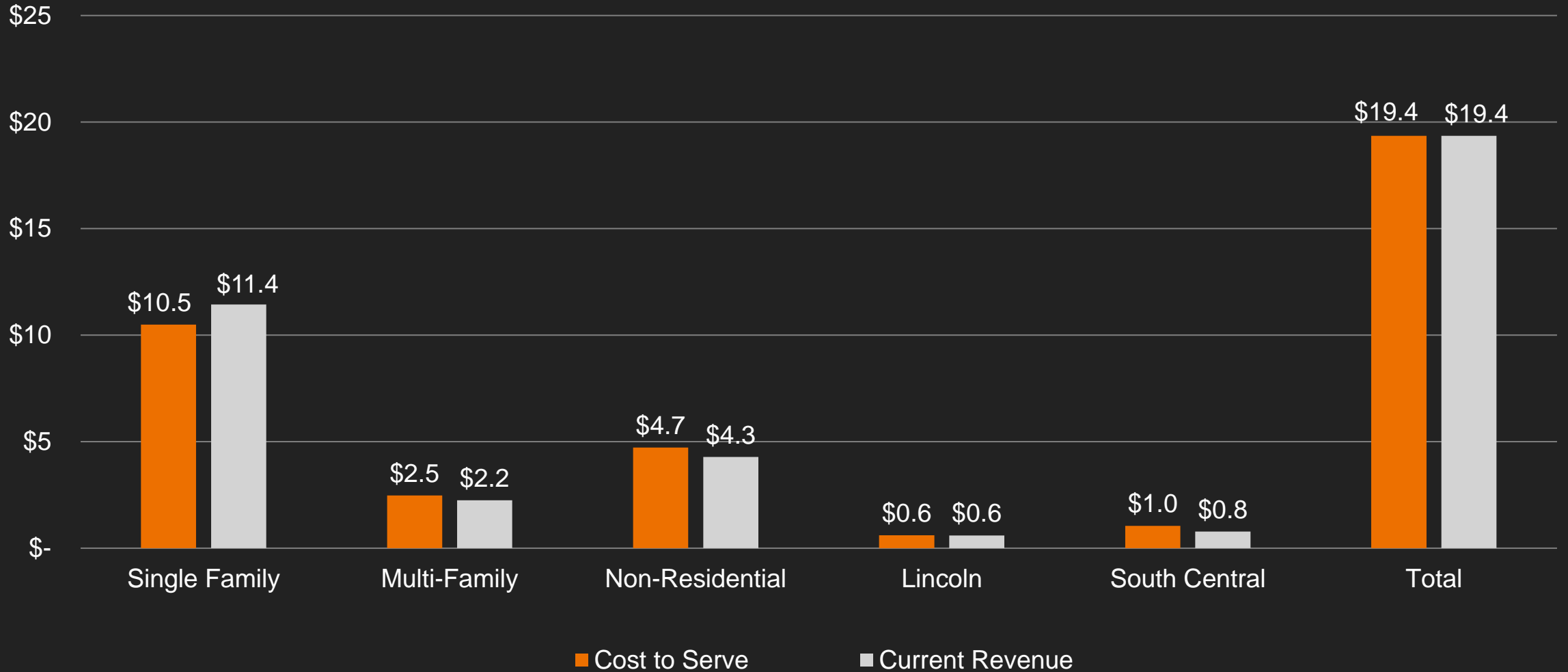
- No Irrigation Class
- Customer Water Use Changes
 - ✓ Reduced Residential Peaking
- South Central has increased water use and peaking

2. Sewer Update

- All customers charged with use of Winter Average
 - ✓ reduces the amount of billable gallons
 - ✓ Changes allocation of costs to customer classes



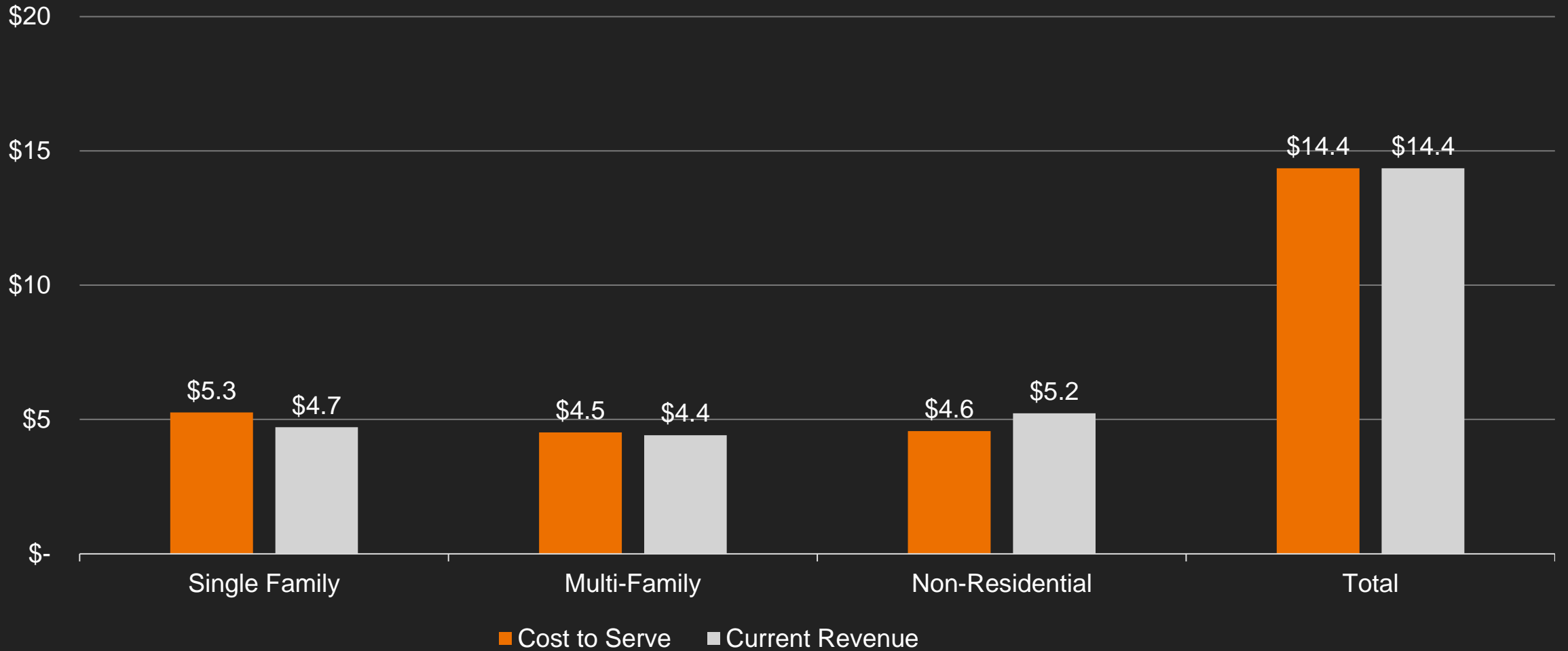
2022 Water Cost to Serve vs. Current Revenue (\$M)





2022 Sewer Cost to Serve vs. Current Revenue (\$M)

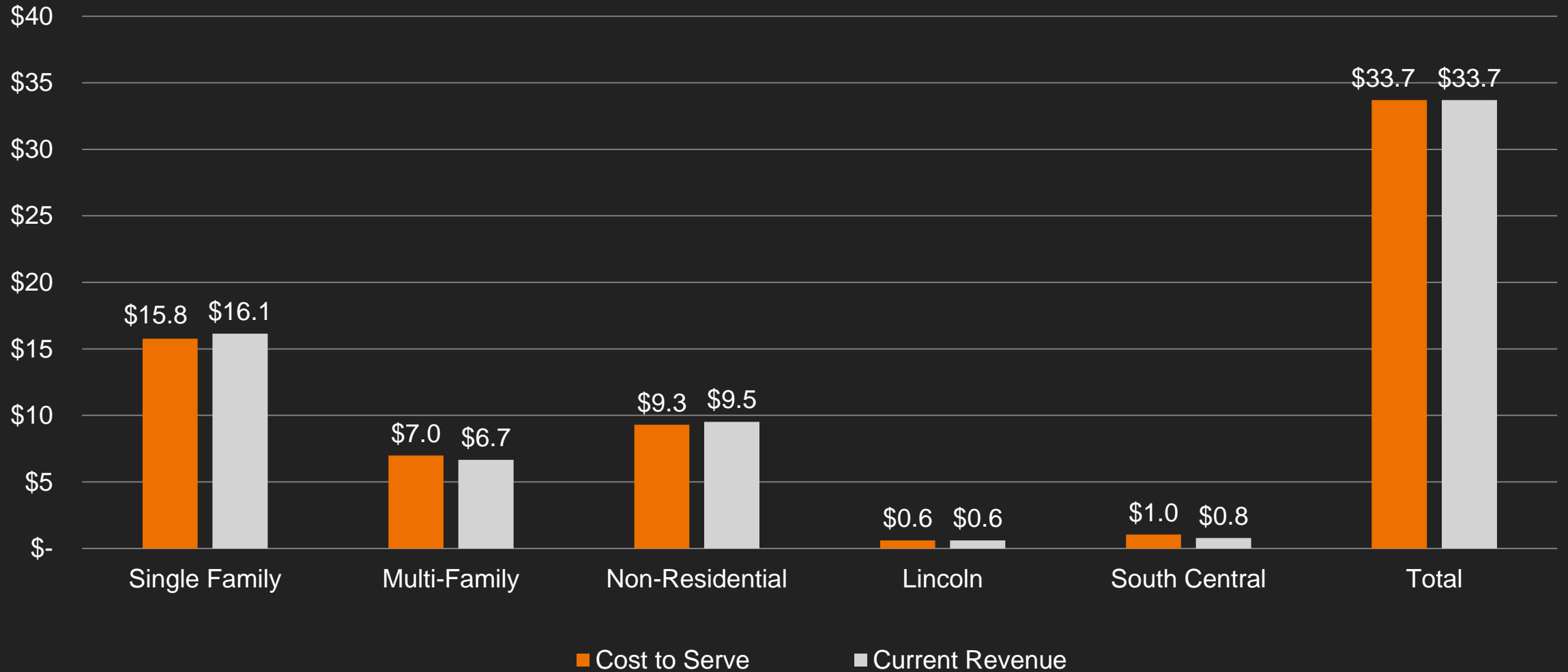
UTILITY COST OF SERVICE & RATE DESIGN UPDATE





2022 Combined Water and Sewer Cost to Serve vs. Current Revenue (\$M)

UTILITY COST OF SERVICE & RATE DESIGN UPDATE





Rate Design



Rate Structure Alternatives

Water and Sewer Minimum Charge

- Option A - Update using 2019 Methodology
 - ✓ WTR Recover Customer Service Costs and 50% Average Day Costs
 - ✓ SWR Recover Collection
- Option B (Water Only)
 - ✓ WTR Recover Customer Service Costs, 50% Max Day, 25% Max Hour Costs
- Option C (Water and Sewer)
 - ✓ WTR Recover Customer Service Costs
 - ✓ WTR & SWR Recover Debt Service - *Infrastructure Fee*

Water Usage Rates

- Single Family Residential - Update Current 5 Tier Structure; All Other Customer Classes - Unit Rate
- Single Family Residential - 4 Tier Structure; All Other Customer Classes - Unit Rate
- Uniform Rate for each Customer Class
- Uniform Rate for all Customers
- Single Family Residential – 3 Tier Structure; All Other Customer Class - Unit Rate

Sewer Usage Rates

- Winter Average Billing, all classes



Water Minimum Charge & Utility Account Processing*

Meter Size	Current	Option A: Updated (Same as 2019 COS)	Option B (Customer Costs + Recover portion of Max Day / Max Hour)	Option C (Customer Costs + Recover Debt Capital)
5/8	\$10.25	\$10.64	\$12.21	\$10.67
3/4	\$13.16	\$13.37	\$15.21	\$12.90
1	\$18.96	\$18.82	\$21.21	\$17.36
1.5	\$33.48	\$32.44	\$36.21	\$28.51
2	\$50.89	\$48.79	\$54.21	\$41.89
3	\$106.03	\$100.57	\$111.21	\$84.26
4	\$178.59	\$168.69	\$186.21	\$140.01
6	\$396.27	\$373.07	\$411.21	\$307.26
8	\$468.84	\$441.19	\$486.21	\$363.01
10	\$1,223.45	\$1,149.69	\$1,266.21	\$942.81
Revenue	\$5,286,617	\$5,244,126	\$5,911,491	\$4,833,544
% of Gross Water Revenue Requirement	27.3%	27.1%	30.5%	24.0%

*Water minimum charge and utility account processing collectively referred to as fixed charge for evaluation



Sewer Minimum Charge

Meter Size	Current	Updated COS	Option C: Infrastructure Fee (Debt Service)
5/8	\$10.77	\$10.77	\$10.07
3/4	\$10.77	\$10.77	\$10.07
1	\$ 10.77	\$10.77	\$10.07
1.5	\$35.89	\$35.89	\$33.58
2	\$57.41	\$57.41	\$53.72
3	\$125.61	\$125.61	\$117.51
4	\$215.32	\$215.32	\$201.45
6	\$484.47	\$484.47	\$453.27
8	\$574.18	\$574.18	\$537.21
10	\$1,507.23	\$1,507.23	\$1,410.18
Revenue		\$4,115,322	\$3,849,474
% of Gross Sewer Revenue Requirement		21.5%	20.0%



Fixed Charge Evaluation

- **Option A** uses update from 2019 methodology to recover customer service costs and 50% of average day costs.
- **Option B** recovers customer service cost 50% of max day and 25% of max hour costs.
- **Option C** recovers customer service cost and includes infrastructure fee for debt service and/or portion of cash capital.

	Option A	Option B	Option C
Customer Affordability	—	✗	✓
Revenue Stability	—	✓	✗
Administrative Ease	✓	✓	✓
Consistency with Industry Practice	✓	✓	—
Transparency	—	—	✓

Key: ✓ Represents Best Alternative — Represents Neutral Alternative ✗ Represents Least Effective Alternative



Single Family Water Usage Tiers & Statistics

SFR	Current	4-Tier Alternative	3-Tier Alternative
Tier 1	0 – 4 Units	0 – 8 Units	0 – 6 Units
Tier 2	5 – 8 Units	9 – 16 Units	7 – 24 Units
Tier 3	9 – 18 Units	17 – 24 Units	Over 24
Tier 4	19 – 24 Units	Over 24	
Tier 5	Over 24		

Units	% of Customer Bills	% of Customer Bills Winter	% of Customer Bills Summer
0 - 4	100%	100%	100%
5 - 6	62%	46%	77%
7 - 8	44%	22%	66%
9 - 16	34%	9%	57%
17 - 18	17%	1%	33%
19 - 24	15%	< 0.1%	29%
Over 24	9%	< 0.1%	18%



Single Family Water Current Usage Tiers & Statistics

SFR	Current	% of Customer Bills	% of Customer Bills Winter	% of Customer Bills Summer
Tier 1	0 – 4 Units	38%	54%	23%
Tier 2	5 – 8 Units	28%	37%	20%
Tier 3	9 – 18 Units	19%	9%	28%
Tier 4	19 – 24 Units	6%	< 0.1%	11%
Tier 5	Over 24	9%	< 0.1%	18%



Single Family Alt 2, 4-Tier Usage & Statistics

SFR	Current	% of Customer Bills	% of Customer Bills Winter	% of Customer Bills Summer
Tier 1	0 – 8 Units	66%	91%	43%
Tier 2	9 -16 Units	17%	8%	24%
Tier 3	17 – 24 Units	8%	1%	15%
Tier 4	Over 24	9%	< 0.1%	18%



Single Family Alt 5, 3-Tier Usage & Statistics

Shown for Option A Fixed Charge Only

SFR	Current	% of Customer Bills	% of Customer Bills Winter	% of Customer Bills Summer
Tier 1	0 – 6 Units	56%	78%	34%
Tier 2	7 - 24 Units	35%	22%	48%
Tier 3	Over 24	9%	<0.1%	18%



Water Usage Rates under Fixed Charge Option A

Single Family Residential	Current	Updated COS	4-Tier	Unit Rate by Class	System-Wide Unit Rate	3-Tier
Tier 1	\$1.51	\$1.21	\$1.75			\$2.75
Tier 2	\$3.05	\$2.65	\$4.79			\$3.25
Tier 3	\$5.62	\$4.88	\$6.16			\$8.10
Tier 4	\$7.09	\$6.24	\$7.86			
Tier 5	\$8.10	\$7.77				
Unit Rate				\$3.59	\$3.21	
Multifamily	Current	Updated COS		Unit Rate by Class	Unit Rate	
	\$1.65	\$2.15		\$2.15	\$3.21	
Non-Residential	Current	Updated COS		Unit Rate by Class	Unit Rate	
	\$1.89	\$2.97		\$2.97	\$3.21	



Water Usage Rates under Fixed Charge Option B

Single Family Residential	Current	Updated COS	4-Tier	Unit Rate by Class	Unit Rate
Tier 1	\$1.51	\$1.80	\$2.15		
Tier 2	\$3.05	\$2.75	\$4.13		
Tier 3	\$5.62	\$4.23	\$5.02		
Tier 4	\$7.09	\$5.13	\$6.13		
Tier 5	\$8.10	\$6.13			
Unit Rate				\$3.34	\$3.06
Multifamily	Current	Updated COS		Unit Rate by Class	Unit Rate
	\$1.65	\$2.07		\$2.07	\$3.06
Non-Residential	Current	Updated COS		Unit Rate by Class	Unit Rate
	\$1.89	\$2.88		\$2.88	\$3.06



Water Usage Rates under Fixed Charge Option C

Single Family Residential	Current	Updated COS	4-Tier	Unit Rate by Class	Unit Rate
Tier 1	\$1.51	\$1.38	\$1.90		
Tier 2	\$3.05	\$2.81	\$4.88		
Tier 3	\$5.62	\$5.02	\$6.22		
Tier 4	\$7.09	\$6.38	\$7.89		
Tier 5	\$8.10	\$7.89			
Unit Rate				\$3.70	\$3.30
Multifamily	Current	Updated COS		Unit Rate by Class	Unit Rate
	\$1.65	\$2.23		\$2.23	\$3.30
Non-Residential	Current	Updated COS		Unit Rate by Class	Unit Rate
	\$1.89	\$3.07		\$3.07	\$3.30



Water Usage Rate Evaluation

- **Alternative 1** same current 5 tier structure for single family residential based on updated COS
- **Alternative 2** new single family residential 4 tier structure
- **Alternative 3** uniform rate for each customer class
- **Alternative 4** uniform rate for all classes
- **Alternative 5** new single family residential 3 tier structure

	Alternative 1 Updated COS	Alternative 2 New SFR - 4 Tiers	Alternative 3 Unit Rate by Class	Alternative 4 System Unit Rate	Alternative 5 New SFR – 3 Tier
Customer Affordability	✓	—	✗	✗	—
Proportional Equity	✓	✓	—	✗	✓
Administrative Ease	—	—	✓	✓	—
Consistency with Industry Practice	✓	✓	✓	✓	✓

Key: ✓ Represents Best Alternative — Represents Neutral Alternative ✗ Represents Least Effective Alternative



Sewer Usage Rates

Customer Class	Current	Option A: Updated COS Winter Average Billing for ALL Customer Classes	Option C Fixed Charge Winter Average Billing for ALL Customer Classes
Single Family Residential	\$2.36	\$2.94	\$3.11
Multifamily	\$3.94	\$4.78	\$4.83
Non-Residential	\$4.17	\$4.77	\$4.86

Current

- SFR billed for sewer using Winter Average (WA) water use.
- MFR and NR billed for sewer using all water use.



Bill Comparisons



Residential Rate Structure Alternatives

Option A:

Fixed Charge Recovery

WTR Customer & 50% Average Day
SWR Collection

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - 5 SFR Tiers, Irrigation by class

Alternative 2 - 4 SFR Tiers, Irrigation by class

Alternative 3 - Unit Rate by class

Alternative 4 – System-Wide Unit Rate

Alternative 5- 3 SFR Tiers, Irrigation by class

Sewer Usage Rates

Sewer usage rates based on winter average

Option B:

Fixed Charge Recovery

WTR Customer, 50% Max Day & 25%
Max hour
SWR Collection

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - 5 SFR Tiers, Irrigation by class

Alternative 2 - 4 SFR Tiers, Irrigation by class

Alternative 3 - Unit Rate by class

Alternative 4 – System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter average

Option C:

Infrastructure Fee

WTR Customer & Debt Service
SWR Debt Service

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - 5 SFR Tiers, Irrigation by class

Alternative 2 - 4 SFR Tiers, Irrigation by class

Alternative 3 - Unit Rate by class

Alternative 4 – System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter average



Residential – Combined Bill Comparison

3/4" Meter

Monthly Use And Annual Percentile	2022 Current Rates	Alt 1: Updated COS, Same Tiers			Alt 2: New SFR 4 Tiers			Alt 3: Unit Rate by Class			Alt 4: Unit Rate			Alt 5: New SFR 3 Tier		
		Option A	Option B	Option C	Option A	Option B	Option C	Option A	Option B	Option C	Option A	Option B	Option C	Option A		
3 CCF (3 CCF WA)	\$35.5	\$36.6	\$40.2	\$36.4	\$38.2	\$41.3	\$38.0	\$43.7	\$44.8	\$43.4	\$42.6	\$44.0	\$42.2	\$41.2		
8 CCF (4 CCF WA)	\$51.6	\$51.3	\$55.9	\$52.2	\$49.9	\$54.9	\$50.6	\$64.6	\$64.5	\$65.0	\$61.6	\$62.2	\$61.8	\$58.9		
15 CCF (7 CCF WA)	\$98.0	\$94.3	\$94.4	\$96.6	\$92.3	\$92.7	\$94.1	\$98.6	\$96.7	\$100.2	\$92.9	\$92.5	\$94.2	\$90.5		
19 CCF (8 CCF WA)	\$124.3	\$118.1	\$115.1	\$121.2	\$118.5	\$114.8	\$120.7	\$115.9	\$113.0	\$118.1	\$108.7	\$107.6	\$110.5	\$106.4		
23 CCF (10 CCF WA)	\$157.4	\$149.0	\$141.5	\$152.9	\$149.0	\$140.8	\$151.8	\$136.1	\$132.2	\$139.1	\$127.4	\$125.8	\$129.9	\$125.3		

- 48% of Residential customers have 3/4" meter
- WA = Winter Average



Residential – Combined Bill Comparison

³/₄" Meter

Monthly Use And Annual Percentile	2022 Current Rates	Alt 1: Updated COS, Same Tiers	Alt 2: New SFR 4 Tiers	Alt 5: New SFR 3 Tier
		Option A	Option A	Option A
3 CCF (3 CCF WA)	\$35.5	\$36.6	\$38.2	\$41.2
8 CCF (4 CCF WA)	\$51.6	\$51.3	\$49.9	\$58.9
15 CCF (7 CCF WA)	\$98.0	\$94.3	\$92.3	\$90.5
19 CCF (8 CCF WA)	\$124.3	\$118.1	\$118.5	\$106.4
23 CCF (10 CCF WA)	\$157.4	\$149.0	\$149.0	\$125.3

- 48% of Residential customers have ³/₄" meter
- WA = Winter Average



Residential – Combined Bill Comparison

1" Meter

UTILITY COST OF SERVICE & RATE DESIGN UPDATE

Monthly Use And Annual Percentile	2022 Current Rates	Alt 1: Updated COS, Same Tiers			Alt 2: New SFR 4 Tiers			Alt 3: Unit Rate by Class			Alt 4: Unit Rate			Alt 5: New SFR 3 Tier		
		Option A	Option B	Option C	Option A	Option B	Option C	Option A	Option B	Option C	Option A	Option B	Option C	Option A		
3 CCF (3 CCF WA)	\$41.3	\$42.0	\$46.2	\$40.9	\$43.7	\$47.3	\$42.5	\$49.2	\$50.8	\$47.9	\$48.0	\$50.0	\$46.7	\$46.7		
8 CCF (4 CCF WA)	\$57.4	\$56.8	\$61.9	\$56.6	\$55.4	\$60.9	\$55.1	\$70.1	\$70.5	\$69.5	\$67.0	\$68.2	\$66.3	\$64.4		
15 CCF (7 CCF WA)	\$103.8	\$99.8	\$100.4	\$101.1	\$97.7	\$98.7	\$98.5	\$104.0	\$102.7	\$104.7	\$98.3	\$98.5	\$98.7	\$95.9		
19 CCF (8 CCF WA)	\$130.1	\$123.6	\$121.1	\$125.6	\$123.9	\$120.8	\$125.2	\$121.3	\$119.0	\$122.6	\$114.1	\$113.6	\$115.0	\$111.9		
23 CCF (10 CCF WA)	\$163.2	\$154.4	\$147.5	\$157.4	\$154.4	\$146.8	\$156.3	\$141.6	\$138.2	\$143.6	\$132.8	\$131.8	\$134.4	\$130.7		

- 48% of Residential customers have 1" meter
- WA = Winter Average



Residential – Combined Bill Comparison

1" Meter

Monthly Use And Annual Percentile	2022 Current Rates	Alt 1: Updated COS, Same Tiers	Alt 2: New SFR 4 Tiers	Alt 5: New SFR 3 Tier
		Option A	Option A	Option A
3 CCF (3 CCF WA)	\$41.3	\$42.0	\$43.7	\$46.7
8 CCF (4 CCF WA)	\$57.4	\$56.8	\$55.4	\$64.4
15 CCF (7 CCF WA)	\$103.8	\$99.8	\$97.7	\$95.9
19 CCF (8 CCF WA)	\$130.1	\$123.6	\$123.9	\$111.9
23 CCF (10 CCF WA)	\$163.2	\$154.4	\$154.4	\$130.7

- 48% of Residential customers have 1" meter
- WA = Winter Average



Multi-Family Rate Structure Alternatives

Option A:

Fixed Charge Recovery

WTR Customer & 50% Average Day
SWR Collection

Water Usage Rates

Current Rates (FY 2022)
Alternative 1 - Unit Rate by Class
Alternative 2 – System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average

Option B:

Fixed Charge Recovery

WTR Customer, 50% Max Day & 25%
Max hour
SWR Collection

Water Usage Rates

Current Rates (FY 2022)
Alternative 1 - Unit Rate by Class
Alternative 2 – System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average

Option C:

Infrastructure Fee

WTR Customer & Debt Service
SWR Debt Service

Water Usage Rates

Current Rates (FY 2022)
Alternative 1 - Unit Rate by Class
Alternative 2 – System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average



Multi-Family – Combined Bill Comparison

1" Meter

	2022 Current Rates	Alt 1: Updated COS, Unit Rate			Alt 2: Unit Rate		
		Option A	Option B	Option C	Option A	Option B	Option C
6 CCF (Year-Round)	\$70.44	\$78.36	\$80.27	\$76.53	\$84.72	\$86.21	\$82.95
6 CCF Summer, 2 CCF Winter	\$70.44	\$59.23	\$61.14	\$57.20	\$65.59	\$67.08	\$63.62
41 CCF (Year-Round)	\$266.09	\$321.04	\$320.15	\$323.79	\$364.50	\$360.74	\$367.66
41 CCF Summer, 11 CCF Winter	\$266.09	\$177.53	\$176.64	\$178.76	\$220.99	217.23	\$222.63
149 CCF (Year-Round)	\$869.81	\$1069.8	\$1060.4	\$1086.7	\$1227.8	\$1207.9	\$1246.2
149 CCF Summer, 51 CCF Winter	\$869.81	\$601.08	\$591.55	\$612.97	\$759.02	\$739.06	\$772.40

- 36% of Multi-Family customers have 1" meter



Non-Residential Rate Structure Alternatives

Option A:

Fixed Charge Recovery

WTR Customer & 50% Average Day
SWR Collection

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - Unit Rate by Class

Alternative 2 - System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average

Option B:

Fixed Charge Recovery

WTR Customer, 50% Max Day & 25%
Max hour

SWR Collection

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - Unit Rate by Class

Alternative 2 - System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average

Option C:

Infrastructure Fee

WTR Customer & Debt Service
SWR Debt Service

Water Usage Rates

Current Rates (FY 2022)

Alternative 1 - Unit Rate by Class

Alternative 2 - System-Wide Unit Rate

Sewer Usage Rates

Sewer usage rates based on winter
average



Non-Residential – Combined Bill Comparison

1" Meter

	2022 Current Rates	Alt 1: Updated COS, Unit Rate			Alt 2: Unit Rate		
	Option A	Option A	Option B	Option C	Option A	Option B	Option C
2 CCF (Year-Round)	\$49.02	\$52.24	\$54.45	\$50.00	\$52.72	\$54.81	\$50.46
2 CCF Summer, 1 CCF Winter	\$49.02	\$47.48	\$49.69	\$45.12	\$47.96	\$50.05	\$45.58
47 CCF (Year-Round)	\$321.72	\$400.43	\$398.59	\$406.68	\$411.71	\$407.05	\$417.49
47 CCF Summer, 24 CCF Winter	\$321.72	\$291.16	\$289.32	\$294.46	\$302.44	\$297.78	\$305.27
191 CCF (Year-Round)	\$1194.4	\$1514.6	\$1499.8	\$1548.0	\$1560.5	\$1534.2	\$1592.0
191 CCF Summer, 132 CCF Winter	\$1194.4	\$1235.5	\$1220.7	\$1258.7	\$1281.3	\$1255.1	\$1302.6

- 34% of Non-Residential customers have 1" meter



Questions?