



Crescenta Valley Water District

Water and Wastewater Rate Study

Board Workshop / July 20, 2021

Agenda

- Introduction
- Water Cost-of-Service
- Proposed Water Rates
- Wastewater Cost-of-Service and Proposed Rates



Introduction



Study Objectives

- Raftelis confirmation of financial planning assumptions made by the Board
- Water and wastewater cost-of-service analysis
 - › FY 2021 cost-of-service rates compliant with Proposition 218
 - › Proposed rates for FY 2022 – FY 2026
 - No change in existing rate structures

Proposition 218

1. An agency cannot collect revenue beyond what is necessary to provide service
2. Revenues derived by the charge shall not be used for any other purpose other than that for which the charge was imposed
3. **The amount of the fee may not exceed the proportional cost of service for the parcel**
4. No charge may be imposed for a service unless that service is actually used or immediately available to the owner of property
5. A written notice of the proposed charge shall be mailed to the record owner of each parcel at least 45 days prior to the public hearing

Water Cost-of-Service

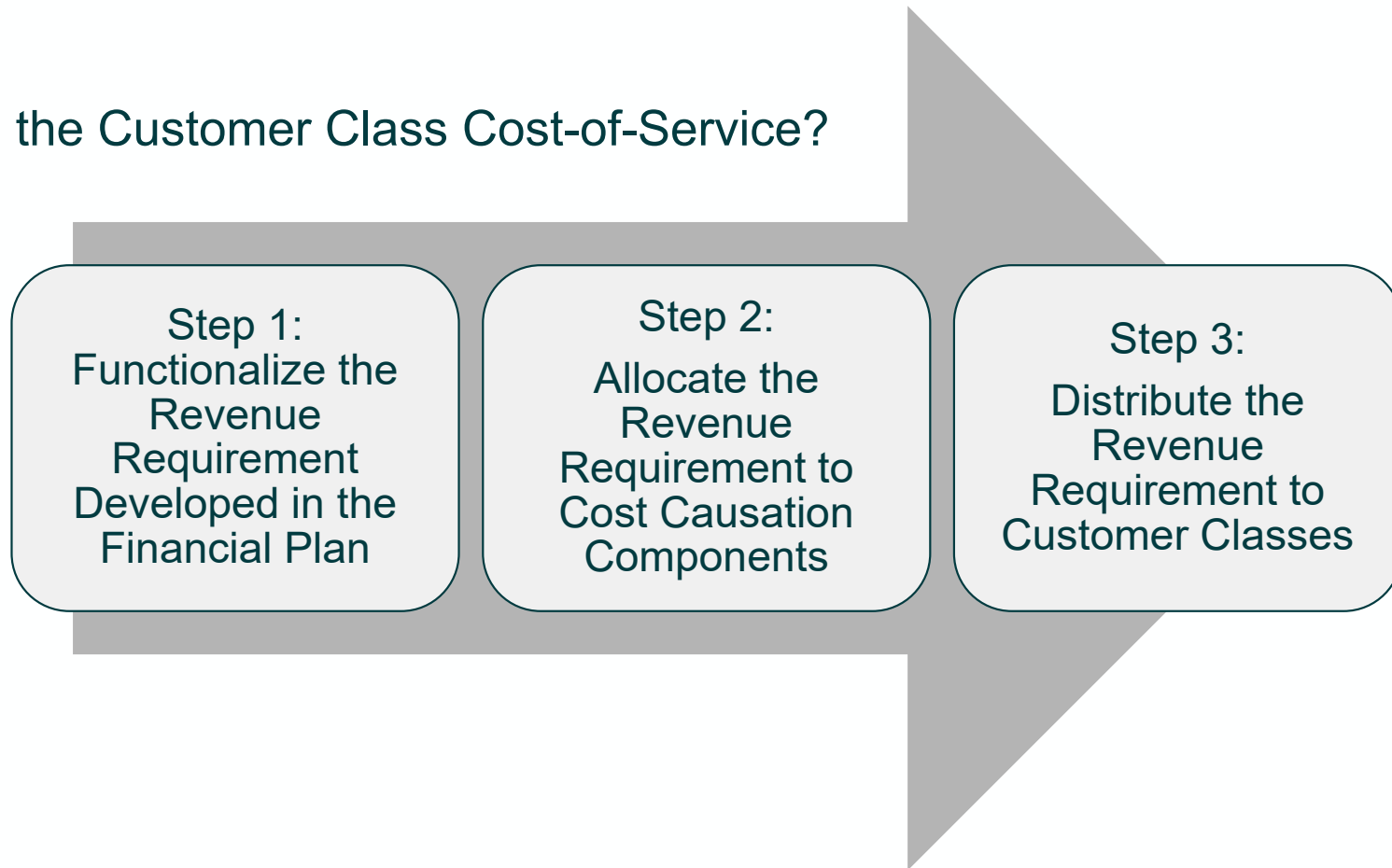


Cost-of-Service Conceptual Basis

- Customers Have Different Demand Characteristics
 - Customer classes impose costs on the water utility system in direct proportion to their unique demand characteristics
- Customers Should Pay Rates that Reflect the Costs they Impose
 - The cost-of-service process determines how much each customer class should pay based on the unique demands they impose
- Customers Can Be Grouped into Specific Classes
 - Customer classes allow individual customers to be grouped together based on their common demand characteristics

The Water Cost-of-Service Process

What is the Customer Class Cost-of-Service?



Proposed Water Rate Revenue Increases

METRIC	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026
Effective Month	October	July	July	July	July
% Adjustment	8.0%	8.0%	8.0%	7.0%	7.0%

- Key Drivers:
 - › \$28.5 million of rate funded capital improvements
 - › \$5.5 million of cash reserves

FY 2021 Water Revenue Requirement (from Financial Plan)

Revenue Requirements	Operating	Capital	Total
Water Supply	\$3,361,620		\$3,361,620
Compensation	\$1,893,113		\$1,893,113
Benefits	\$1,242,742		\$1,242,742
Plant - Water Operation	\$533,010		\$533,010
Distribution System	\$851,178		\$851,178
General and Administrative	\$889,548		\$889,548
Fire and Debris Recovery	\$12,000		\$12,000
Purchased Power	\$322,291		\$322,291
Cash Funded CIP		\$2,304,826	\$2,304,826
Debt Service		\$565,274	\$565,274
Other Operating Revenues	-\$135,000		-\$135,000
Sub-total Revenue Requirement:	\$8,970,502	\$2,870,100	\$11,840,602
Revenue Offsets			
Rental Property Income	\$25,000		\$25,000
Non-Operating Revenues	\$238,000		\$238,000
CIP Source Revenues		\$277,500	\$277,500
Total Revenue Offsets	\$263,000	\$277,500	\$540,500
Adjustments			
Transfer to (from) Reserves	\$0	-\$427,725	-\$427,725
Annualized Rate Increase	\$0	\$0	\$0
Total Adjustments	\$0	-\$427,725	-\$427,725
COS to be Recovered from Water	\$8,707,502	\$3,020,325	\$11,727,828

Water Utility Functions

Operating Cost
Revenue
Requirement



Capital Cost
Revenue
Requirement



Functions that Must Be Performed to Serve Demand:

- Water Supply
- Pumping
- Storage
- Treatment
- Transmission
- Distribution
- Hydrants / Fire Protection
- Meters
- Customer Billing & Customer Service
- Conservation
- General & Administration

Water Utility Cost Causation Components

Operating Cost
Revenue
Requirement



Capital Cost
Revenue
Requirement



Different Types of Demands Imposed by Customers:

Variable

- Base Demand
- Max Day Extra Capacity Demand
- Max Hour Extra Capacity Demands

Fixed

- Equivalent Meter Count
- Equivalent Private Fire Line Count
- Number of Accounts/Bills

FY 2021 Allocation to Water Cost Causation Components

Cost Components	Revenue Requirement	Commodity Rate Components (74%)						Service Charge Components (26%)		
		Supply	Base	Max Day	Max Hour	Conservation	Revenue Offsets	Fire Protection	Meters	Customer
Supply	\$4,935,350	\$4,935,350								
Base	\$2,089,617		\$2,089,617							
Max Day	\$1,044,808			\$574,645					\$470,164	
Max Hour	\$2,288,384				\$1,258,611				\$1,029,773	
Fire Protection	\$68,276							\$68,276		
Meters	\$752,411								\$752,411	
Customer	\$747,728									\$747,728
Conservation	\$64,253					\$64,253	\$0			
Revenue Offsets	(\$263,000)						(\$263,000)			
Total	\$11,727,828	\$4,935,350	\$2,089,617	\$574,645	\$1,258,611	\$64,253	(\$263,000)	\$68,276	\$2,252,348	\$747,728

Importance of Peaking Factors for Water Customer Units of Service

- Water utility systems must be designed, constructed, and operated to meet customer peak demands
- Customer classes that have higher maximum day and maximum hour peak demands are allocated more costs and pay higher rates

Customer Class	Base	Max Day	Max Hour
SFR			
Tier 1	1.00	1.04	2.34
Tier 2	1.00	1.38	3.11
Tier 3	1.00	1.98	4.45
MFR/Commercial	1.00	1.18	2.66
Irrigation			
Tier 1	1.00	1.14	2.57
Tier 2	1.00	1.47	3.30

FY 2021 Water Units of Service

Customer Class	Annual Usage (kgal)	Daily Usage (kgal)	Max Day Peak	Max Day Demand	Max Day Extra Capacity	Max Hour Peak	Max Hour Demand	Max Hour Extra Capacity	Equivalent Meters	Equivalent Fire Lines	No. of Bills
SFR											
Tier 1	373,083	1,022	1.04	1,064	42	2.34	2,394	1,330			
Tier 2	278,482	763	1.38	1,056	293	3.11	2,376	1,320			
Tier 3	122,533	336	1.98	664	328	4.45	1,494	830			
MFR/Commercial	340,851	934	1.18	1,105	171	2.66	2,486	1,381			
Irrigation											
Tier 1	16,336	45	1.14	51	6	2.57	115	64			
Tier 2	31,888	87	1.47	128	41	3.30	289	160			
Meters									9,659	7,081	49,225
Total	1,163,172	3,187		4,068	882		9,154	5,086	9,659	7,081	49,225

FY 2021 Water Unit Cost-of-Service

Cost of Service (A)	Supply (B)	Base (C)	Max Day (D)	Max Hour (E)	Fire Protection (F)	Meters (G)	Customer (H)	Conservation (I)	Revenue Offsets (J)	Total (L)
Allocated Cost of Service	\$4,935,350	\$2,089,617	\$1,044,808	\$2,288,384	\$68,276	\$752,411	\$747,728	\$64,253	(\$263,000)	\$11,727,828
Unit of Measure	kgal	kgal	kgal/day	kgal/day	Equivalent Fire Lines	Equivalent Meters	Number of Bills	kgal	Revenue Offsets	
Unit of Service	1,163,172	1,163,172	882	5,086	7,081	9,659	49,225	1,163,172	1,163,172	
Unit Cost	\$4.24	\$1.80	\$651.75	\$247.49	\$1.61	\$38.86	\$15.19	\$0.06	(\$0.23)	

FY 2021 Water Customer Class Cost-of-Service

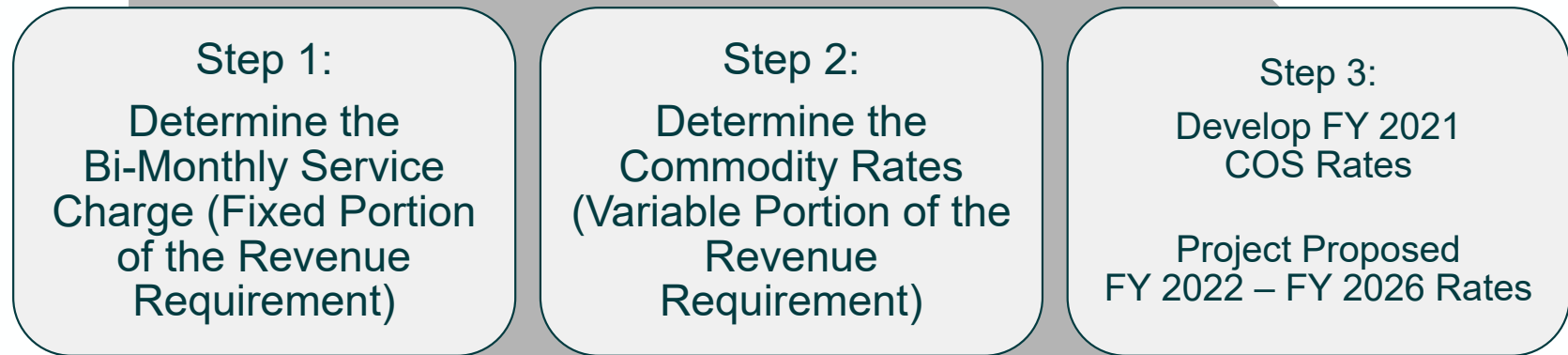
Customer Class	Supply	Base	Max Day	Max Hour	Conservation	Revenue Offsets	Fire Protection	Meters	Customer	Total Class Cost-of-Service
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
SFR										
Tier 1	\$1,582,993	\$670,236	\$27,294	\$329,163	\$20,609	(\$84,356)				\$2,545,939
Tier 2	\$1,181,602	\$500,288	\$190,971	\$326,675	\$15,383	(\$62,966)				\$2,151,952
Tier 3	\$519,909	\$220,128	\$214,051	\$205,454	\$6,769	(\$27,705)				\$1,138,606
MFR/Commercial	\$1,446,234	\$612,332	\$111,464	\$341,797	\$18,828	(\$77,068)				\$2,453,587
Irrigation										
Tier 1	\$69,313	\$29,347	\$4,213	\$15,845	\$902	(\$3,694)				\$115,926
Tier 2	\$135,300	\$57,286	\$26,652	\$39,677	\$1,761	(\$7,210)				\$253,466
Meters								\$2,252,348	\$747,728	\$3,000,076
Private Fire Lines							\$68,276			\$68,276
Total	\$4,935,350	\$2,089,617	\$574,645	\$1,258,611	\$64,253	(\$263,000)	\$68,276	\$2,252,348	\$747,728	\$11,727,828

Proposed Water Rates



The Water Rate Design Process

How Do We Recover the Customer Class
Cost-of-Service?



FY 21 Bi-Monthly Service Charge Cost Inputs

Calculation of Equivalent Meters

Meter Size (Inches)	Meter Count	Capacity Ratio (3/4" Base)	Equivalent Meters
3/4"	6,974	1.00	6,974
1"	877	1.67	1,461
1 1/2"	150	3.33	502
2"	66	5.33	350
3"	28	11.67	330
4"	2	21.00	42
Total	8,097		9,659

Calculation of Meter Service Component

Meter Service Component	FYE 2021
Meter Service Costs	\$2,252,348
Equivalent Meters	9,659
Bi-monthly Cost per Equivalent Meter	\$38.86

Calculation of Billing Component

Customer Service Component	FYE 2021
Customer Costs	\$747,728
Annual Bills	49,225
Bi-monthly Customer Component	\$15.19

FY 21 Cost-of-Service Water Bi-Monthly Meter Charges

Meter Size (Inches)	Meter Service Component	Customer Service Component	Current Charge	FYE 2021 COS
3/4"	\$38.86	\$15.19	\$54.10	\$54.06
1"	\$64.77	\$15.19	\$80.69	\$79.97
1 1/2"	\$129.54	\$15.19	\$147.19	\$144.74
2"	\$207.27	\$15.19	\$227.01	\$222.47
3"	\$453.40	\$15.19	\$479.72	\$468.60
4"	\$816.13	\$15.19	\$852.17	\$831.32

FY 21 Water Commodity Rates: Importance of Water Supply Costs

- Along with peaking factors, water supply costs are a key driver of customer class rates
- Lower cost of native groundwater is allocated to SFR Tier 1 and Tier 2
- Higher cost imported water is allocated to SFR Tier 3

Water Supply Costs	Verdugo Basin	GWP	FMWD Tier 1
Supply to Meet Demand (kgal)	625,634	78,204	538,866
Cost (\$/AF)	\$598	\$992	\$2,147
Unit Cost (\$/kgal)	\$1.83	\$3.04	\$6.59
Unit Cost (\$/kgal) after loss	\$1.96	\$3.25	\$7.04

Customer Class	Annual Usage	Verdugo Basin	GWP	FMWD Tier 1	Unit Cost (\$/kgal)
Unit Cost of Supply		\$1.96	\$3.25	\$7.04	
SFR					
Tier 1	373,083	373,083	0	0	\$1.96
Tier 2	278,482	16,633	48,714	213,134	\$6.07
Tier 3	122,533	0	0	122,533	\$7.04
Total	774,097	389,716	48,714	335,667	\$4.24
MFR/Commercial	340,851	171,600	21,450	147,801	\$4.24
Irrigation					
Tier 1	16,336	16,336	0	0	\$1.96
Tier 2	31,888	7,942	3,035	20,911	\$5.41
Total	48,223	24,278	3,035	20,911	\$4.24

FY 2021 Water Commodity Rates: Importance of Peaking Costs

Customer Class	Annual Usage	Peaking Costs	Peaking Unit Cost (\$/kgal)
SFR			
Tier 1	373,083	\$356,457	\$0.96
Tier 2	278,482	\$517,646	\$1.86
Tier 3	122,533	\$419,505	\$3.42
MFR/Commercial	340,851	\$453,261	\$1.33
Irrigation			
Tier 1	16,336	\$20,058	\$1.23
Tier 2	31,888	\$66,329	\$2.08

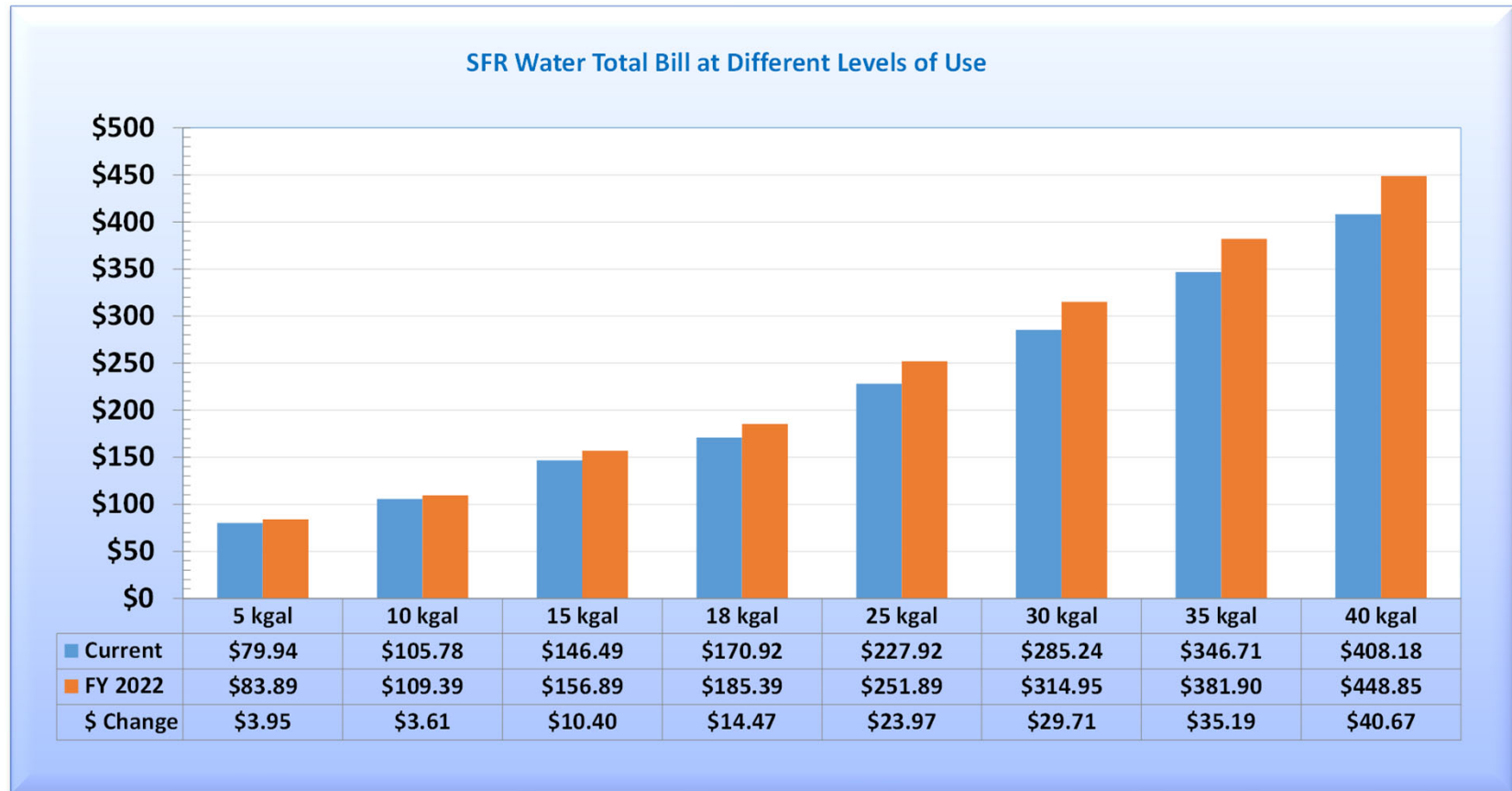
FY 2021 Water Cost-of-Service Commodity Rates

Customer Class	Tier Definition	Supply	Delivery	Peaking	Conservation	Revenue Offsets	FYE 2021 COS	Current Charge
SFR								
Tier 1	0-10	\$1.96	\$1.80	\$0.96	\$0.00	\$0.00	\$4.72	\$5.17
Tier 2	11-26	\$6.07	\$1.80	\$1.86	\$0.00	(\$0.94)	\$8.79	\$8.14
Tier 3	27+	\$7.04	\$1.80	\$3.42	\$0.13	\$0.00	\$12.39	\$12.29
MFR/Commercial	Uniform	\$4.24	\$1.80	\$1.33	\$0.13	\$0.00	\$7.50	\$7.33
Irrigation								
Tier 1	0-80	\$1.96	\$1.80	\$1.23	\$0.00	\$0.00	\$4.99	\$5.66
Tier 2	81+	\$5.41	\$1.80	\$2.08	\$0.13	\$0.00	\$9.42	\$10.89

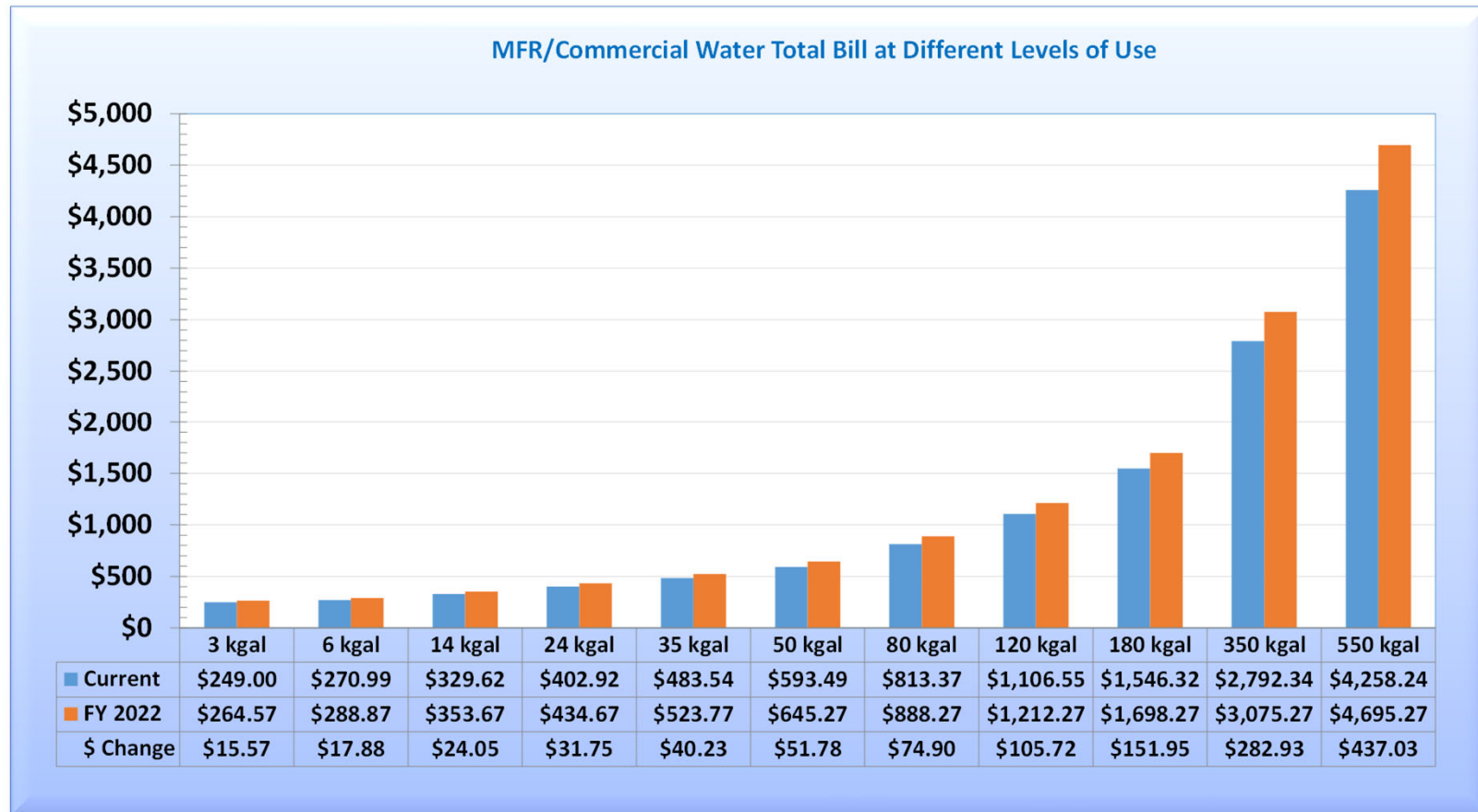
Proposed FY 2022 - FY 2026 Water Rates

Charge / Rate	Current Rates	FY 2021	FY 2022	% Change FY 2022 vs. Current	% Change FY 2022 vs. FY 2021 COS	FY 2023	FY 2024	FY 2025	FY 2026
Fixed/Meter Charge		COS Rates	8.0%			8.0%	8.0%	7.0%	7.0%
Meter Size									
3/4"	\$54.10	\$54.06	\$58.39	7.9%	8.0%	\$63.07	\$68.12	\$72.89	\$78.00
1"	\$80.69	\$79.97	\$86.37	7.0%	8.0%	\$93.28	\$100.75	\$107.81	\$115.36
1 1/2"	\$147.19	\$144.74	\$156.32	6.2%	8.0%	\$168.83	\$182.34	\$195.11	\$208.77
2"	\$227.01	\$222.47	\$240.27	5.8%	8.0%	\$259.50	\$280.26	\$299.88	\$320.88
3"	\$479.72	\$468.60	\$506.09	5.5%	8.0%	\$546.58	\$590.31	\$631.64	\$675.86
4"	\$852.17	\$831.32	\$897.83	5.4%	8.0%	\$969.66	\$1,047.24	\$1,120.55	\$1,198.99
Fire Line Charges									
1"	\$15.85	\$16.80	\$18.15	14.5%	8.0%	\$19.61	\$21.18	\$22.67	\$24.26
2"	\$24.46	\$25.14	\$27.16	11.0%	8.0%	\$29.34	\$31.69	\$33.91	\$36.29
3"	\$44.05	\$44.09	\$47.62	8.1%	8.0%	\$51.43	\$55.55	\$59.44	\$63.61
4"	\$77.83	\$76.78	\$82.93	6.6%	8.0%	\$89.57	\$96.74	\$103.52	\$110.77
6"	\$199.05	\$194.08	\$209.61	5.3%	8.0%	\$226.38	\$244.50	\$261.62	\$279.94
8"	\$408.15	\$396.41	\$428.13	4.9%	8.0%	\$462.39	\$499.39	\$534.35	\$571.76
10"	\$722.67	\$700.76	\$756.83	4.7%	8.0%	\$817.38	\$882.78	\$944.58	\$1,010.71
Commodity Rates									
SFR									
Tier 1	\$5.17	\$4.72	\$5.10	-1.3%	8.1%	\$5.51	\$5.96	\$6.38	\$6.83
Tier 2	\$8.14	\$8.79	\$9.50	16.7%	8.1%	\$10.26	\$11.09	\$11.87	\$12.71
Tier 3	\$12.29	\$12.39	\$13.39	8.9%	8.1%	\$14.47	\$15.63	\$16.73	\$17.91
Multi-Family/Commercial	\$7.33	\$7.50	\$8.10	10.5%	8.0%	\$8.75	\$9.45	\$10.12	\$10.83
Irrigation									
Tier 1	\$5.66	\$4.99	\$5.39	-4.8%	8.0%	\$5.83	\$6.30	\$6.75	\$7.23
Tier 2	\$10.89	\$9.42	\$10.18	-6.5%	8.1%	\$11.00	\$11.88	\$12.72	\$13.62

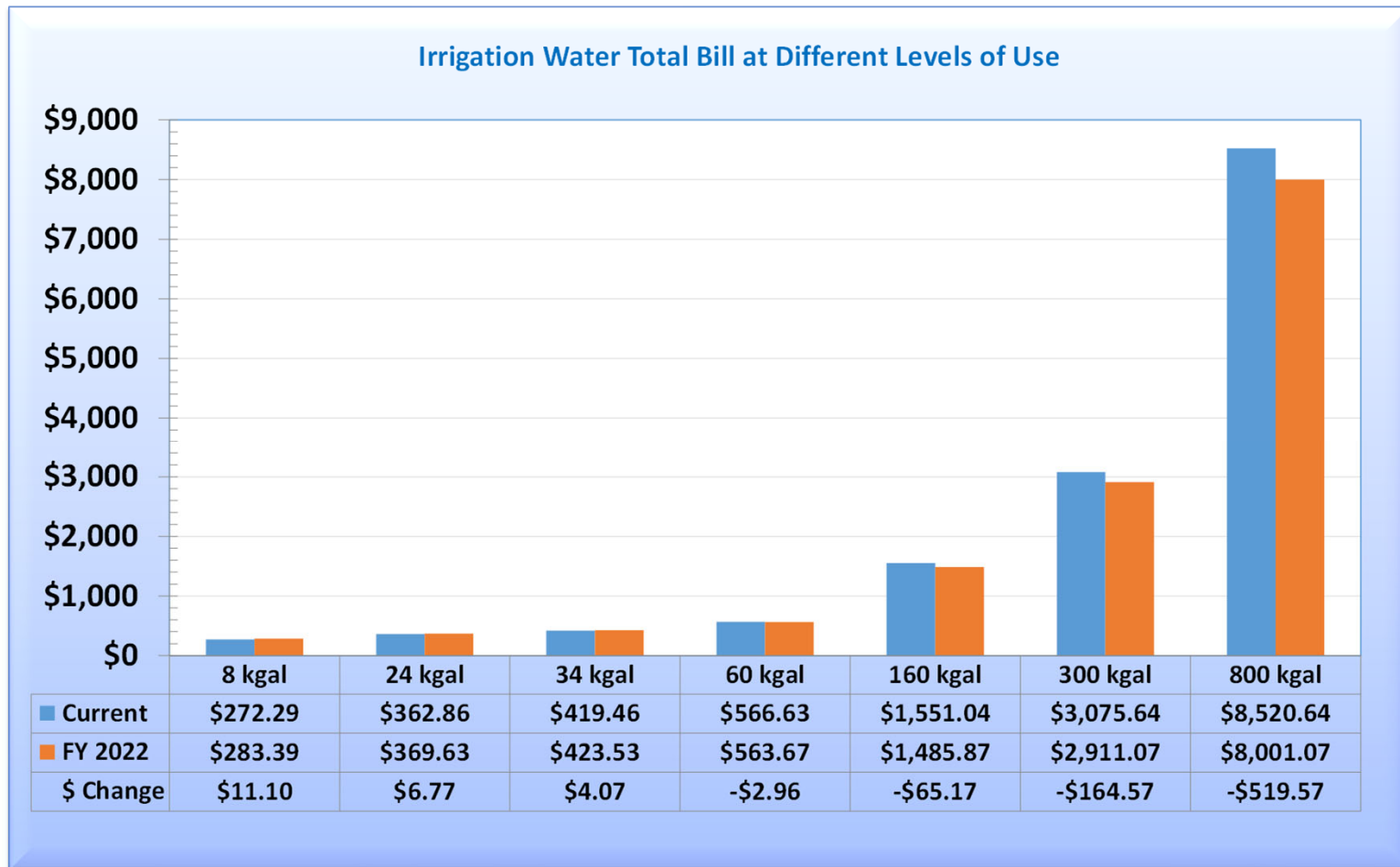
Single Family Residential Water Bill Impacts – 3/4” Meter



Multi Family / Commercial Water Bill Impacts – 2” Meter



Irrigation Water Bill Impacts – 2” Meter



Wastewater Cost-of-Service and Proposed Rates



Proposed Wastewater Rate Revenue Increases

METRIC	FYE 2022	FYE 2023	FYE 2024	FYE 2025	FYE 2026
Effective Month	October	July	July	July	July
% Adjustment	8.0%	8.0%	8.0%	7.0%	7.0%

- Key Drivers:
 - › \$1.2 million of rate funded capital improvements
 - › \$2.4 million of cash reserves

FY 2021 Wastewater Revenue Requirement (from Financial Plan)

Revenue Requirements	Operating	Capital	Total
Treatment and Disposal Charge	\$1,849,900		\$1,849,900
Labor	\$960,598		\$960,598
Compensation	\$793,534		\$793,534
Plant Operating	\$79,011		\$79,011
Collection System	\$116,222		\$116,222
General and Administrative Exp	\$341,607		\$341,607
Rate Funded CIP		\$239,500	\$239,500
Total Revenue Requirements	\$4,140,872	\$239,500	\$4,380,372
Revenue Offsets			
Other Operating Revenues	\$36,500		\$36,500
Non-Operating Revenues	\$500		\$500
Total Revenue Offsets	\$37,000	\$0	\$37,000
Adjustments			
Transfer to (from) Reserves	\$0	\$1,021,504	\$1,021,504
Annualized Rate Increase	\$0	\$0	\$0
Total Adjustments	\$0	\$1,021,504	\$1,021,504
COS to be Recovered from Was	\$4,103,872	(\$782,004)	\$3,321,867

Importance of Return Flows Determining the Wastewater Customer Class Cost-of-Service

- Depending on the complexity of the utility, wastewater customer class cost-of-service can be determined based on:
 - › The estimated strength of customer wastewater discharges reaching the treatment plant
 - › The percentage of billed water usage returning to the treatment plant (CVWD uses this approach)

FY 2021 Wastewater Customer Class Cost-of-Service

Customer Class	Estimated Water Use (kgal)	Estimated Return Factor	Estimated WW Flows (kgal)	% of WW Flows
Single Family - Winter Average	477,036	90%	429,332	72.75%
Multi-Family - Annual	127,518	100%	127,518	21.61%
Commercial - Annual	25,074	90%	22,567	3.82%
School - ADA	10,724	100%	10,724	1.82%
Total	640,352		590,141	100%

Customer Class	Total Revenue Requirement	% of WW Flows	Class Total (\$)
Single Family	\$3,321,867	72.75%	\$2,416,684
Multi-Family	\$3,321,867	21.61%	\$717,791
Commercial	\$3,321,867	3.82%	\$127,026
School	\$3,321,867	1.82%	\$60,367

FY 2021 Cost-of-Service Wastewater Rates (excluding schools)

Wastewater collection costs are 100% fixed in nature. City of Los Angeles treatment costs are 100% variable in nature. The resulting split is 61% fixed and 39% variable.

Customer Class	Cost of Service	Dwelling Units	Billing Periods	Fixed Cost Recovery (%)	FYE 2021 COS	Current Rates
Single Family	\$2,416,684	5,293	6	61%	\$46.50	\$47.79
Multi-Family	\$717,791	2,670	6	61%	\$27.38	\$31.25
Commercial *	\$127,026	N/A	6		\$27.38	\$31.25

* Commercial is subject to minimum charge

Customer Class	Cost of Service	Variable Cost Recovery (%)	Wastewater Flow (kgal)	FYE 2021 COS, \$/kgal of wastewater	Estimated Water Use (kgal)	FYE 2021 COS, \$/kgal of water	Current Rates
Single Family	\$2,416,684	39%	429,332	\$2.19	477,036	\$1.93	\$1.93
Multi-Family	\$717,791	39%	127,518	\$2.19	127,518	\$2.15	\$2.15
Commercial	\$127,026	100%	22,567	\$5.63	25,074	\$5.10	\$5.10
School	\$60,367	100%	10,724	\$5.63	10,724	\$5.63	

FY 2021 Cost-of-Service Wastewater Rates - Schools

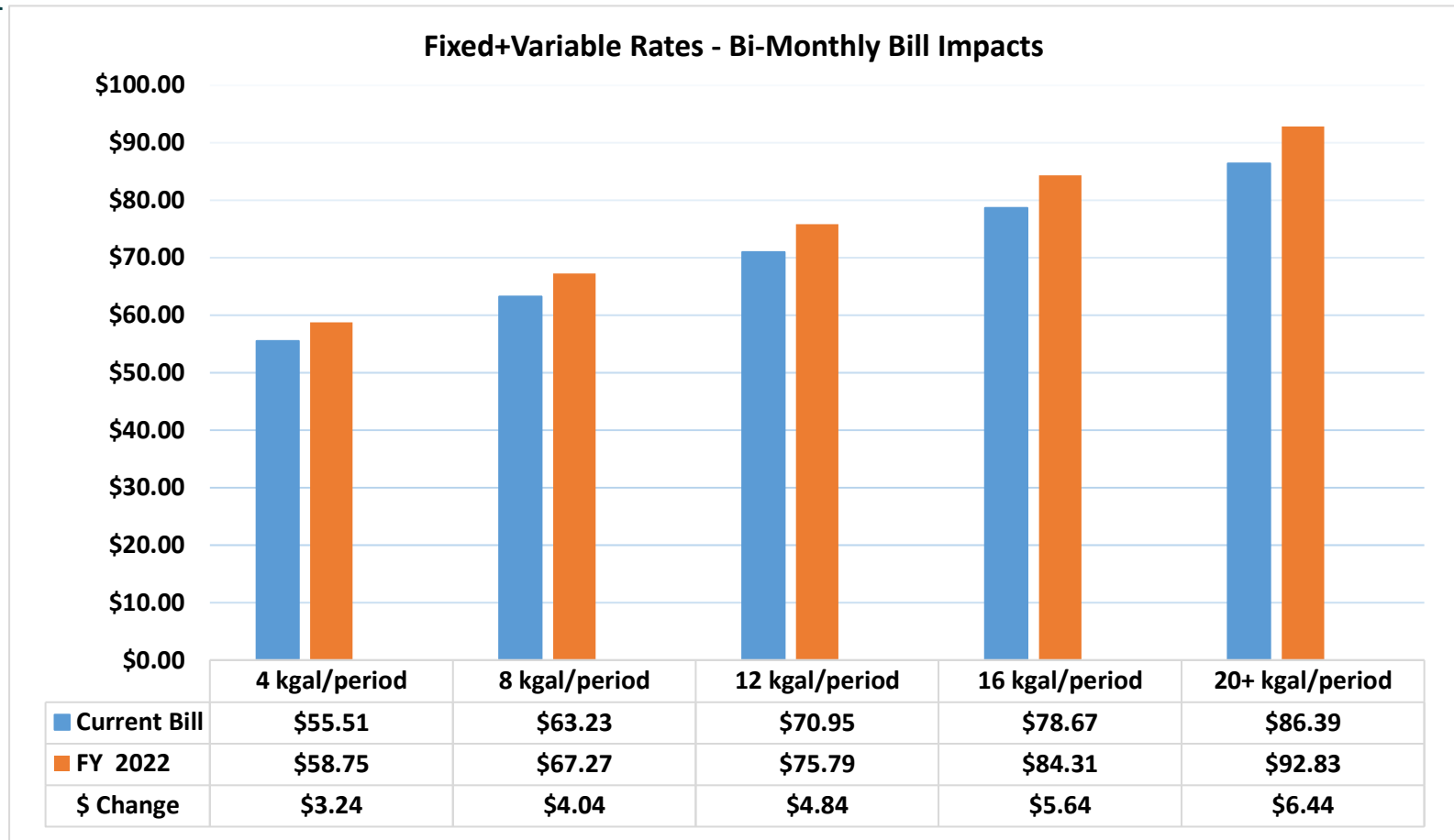
Schools	GPD / Student	ADA	Annual Water Use (kgal)	% of Use	Cost of Service	Variable Rate (\$/kgal)	kgal / year / student	\$ / student / bill	FYE 2021 COS	Current Rates
Elementary/Pre-K	5	1,849	1,664	16%	\$9,367	\$5.63	0.90	\$0.84	\$84.45	\$84.86
Middle School	10	1,183	2,129	20%	\$11,986	\$5.63	1.80	\$1.69	\$168.90	\$169.73
High School	15	2,567	6,931	65%	\$39,014	\$5.63	2.70	\$2.53	\$253.35	\$254.59
Total		5,599	10,724	100%	\$60,367					

Average daily attendance metrics are provided by the Glendale Unified School District

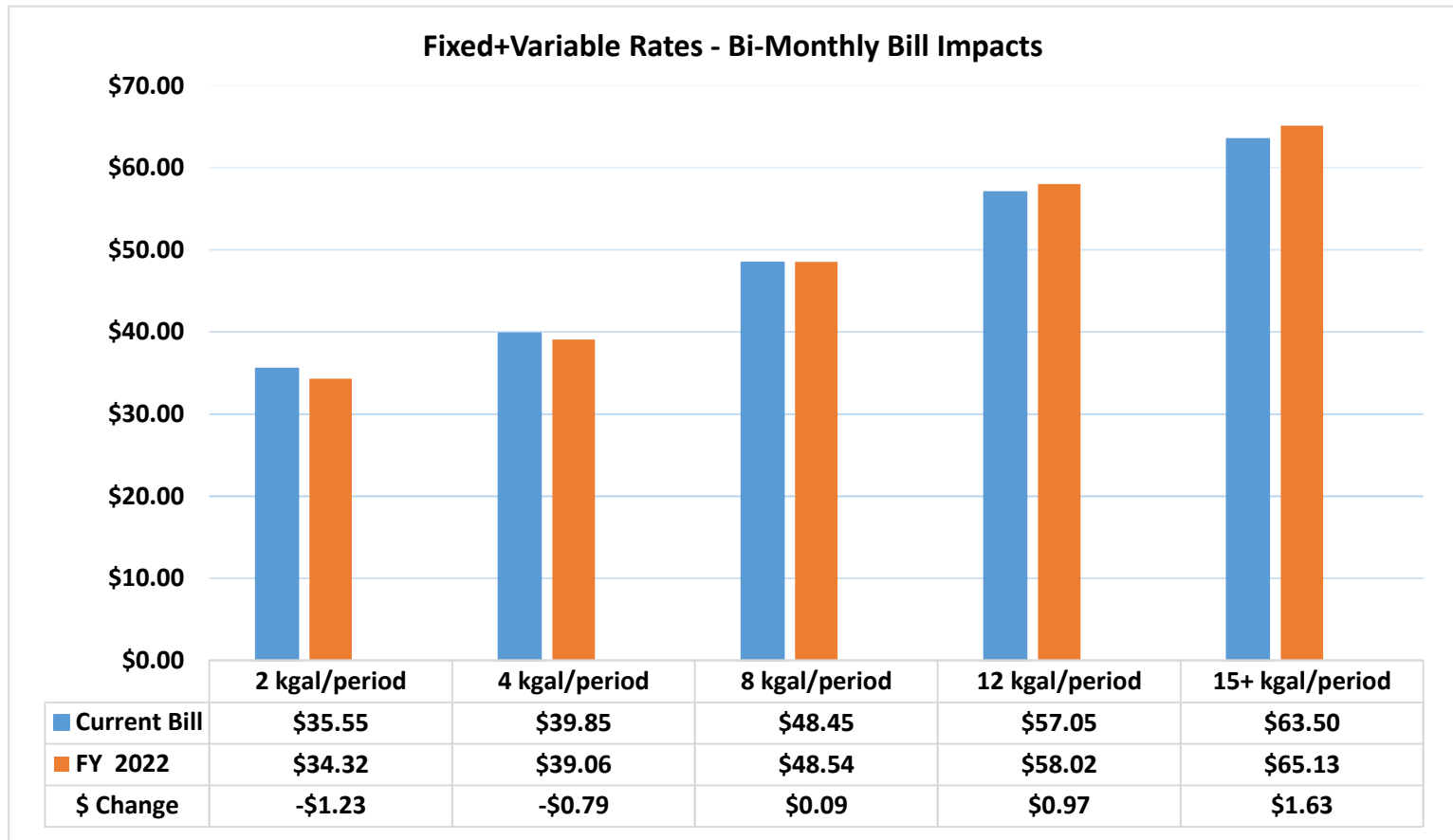
Proposed FY 2022 - FY 2026 Wastewater Rates

Rate/Charge	Basis of Rate / Charge	Current Rates	FY 2021	FY 2022	% Change FY 2022 vs. Current Rates	% Change FY 2022 vs. FY 2021 COS	FY 2023	FY 2024	FY 2025	FY 2026
		COS Rates	8.0%			8.0%	8.0%	7.0%	7.0%	
Wastewater Service Charge										
Single Family	DU	\$47.79	\$46.50	\$50.23	5.1%	8.0%	\$54.25	\$58.59	\$62.70	\$67.09
Multi Family	DU	\$31.25	\$27.38	\$29.58	-5.3%	8.0%	\$31.95	\$34.51	\$36.93	\$39.52
Commercial/Institutional (minimum charge)	Account	\$31.25	\$27.38	\$29.58	-5.3%	8.0%	\$31.95	\$34.51	\$36.93	\$39.52
Wastewater Use Charge										
Single Family, winter water use	kgal	\$1.93	\$1.97	\$2.13	10.4%	8.0%	\$2.31	\$2.50	\$2.68	\$2.87
Multi Family, winter water use	kgal	\$2.15	\$2.19	\$2.37	10.2%	8.2%	\$2.56	\$2.77	\$2.97	\$3.18
Commercial/Institutional, actual water use	kgal	\$5.10	\$5.07	\$5.48	7.5%	8.2%	\$5.92	\$6.40	\$6.85	\$7.33
Primary School/Elementary	100 ADA	\$84.86	\$84.45	\$91.21	7.5%	8.0%	\$98.51	\$106.40	\$113.85	\$121.82
Middle School	100 ADA	\$169.73	\$168.90	\$182.42	7.5%	8.0%	\$197.02	\$212.79	\$227.69	\$243.63
Secondary School/Middle School	100 ADA	\$254.59	\$253.35	\$273.62	7.5%	8.0%	\$295.51	\$319.16	\$341.51	\$365.42

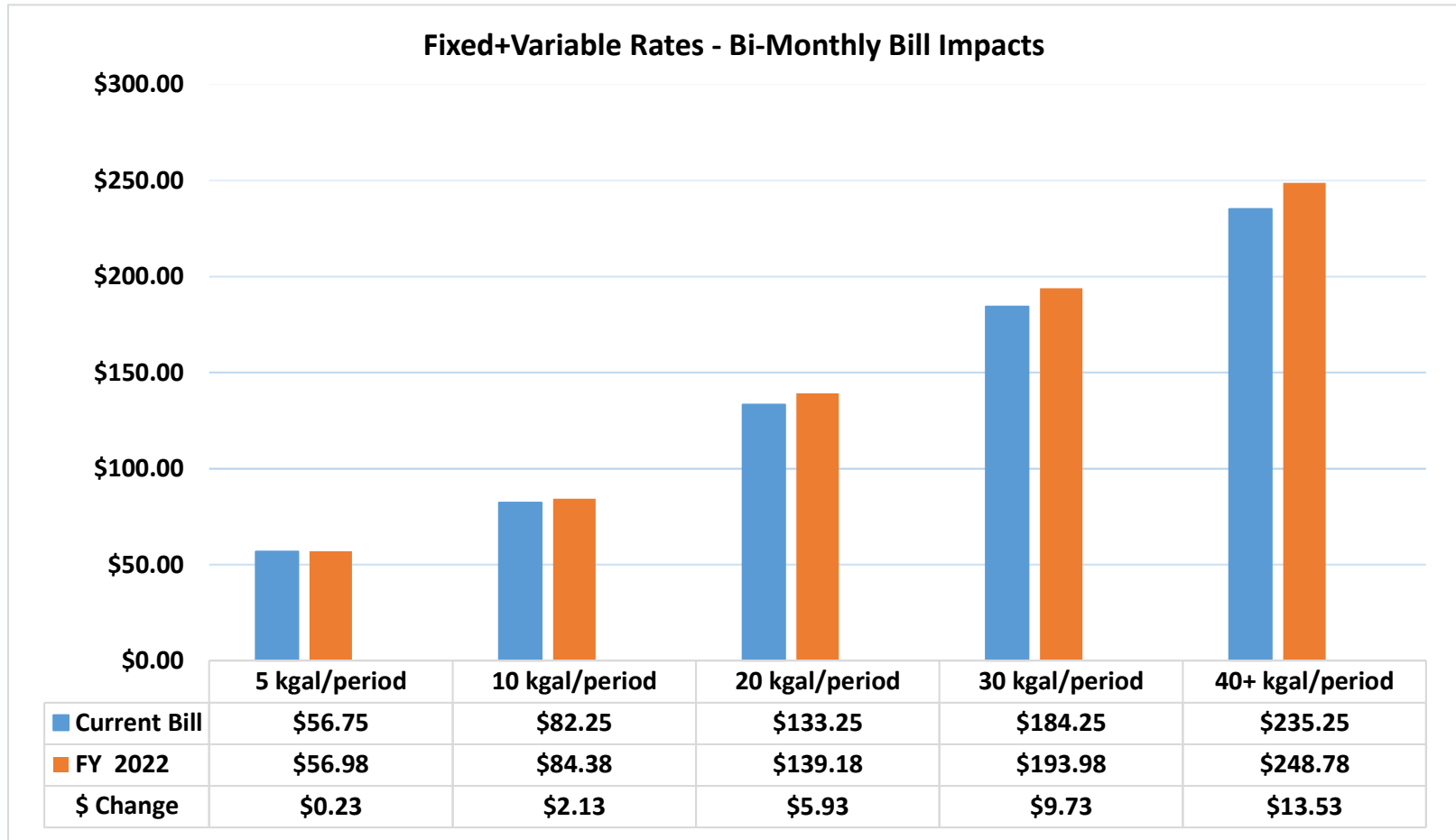
Single Family Residential Wastewater Bill Impacts



Multi-Family Residential Wastewater Bill Impacts



Commercial Wastewater Bill Impacts



Q&A