

2023 Water and Wastewater Rate Study – Draft Results

Rate Fairness Board
February 7, 2023



San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission



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RAFTELIS

Raftelis/MME Project Team



Steve Gagnon, PE (AZ)
Water Project Manager

- 24 years of experience
- 15 years of financial planning and rate setting for CA utilities
- Registered with the MSRB as a Municipal Advisor
- Registered environmental engineer in AZ
- Chair of CA-NV AWWA Financial Management Committee



John Wright, CPA (CO)
Wastewater Project Manager

- 28 years of experience and 13 years with Raftelis
- Registered with the MSRB as a Municipal Advisor
- Contributing author to WEF MOP No 27, Financing and Charges for Wastewater Systems
- Member of the AWWA Manual M1 Editorial Committee



Charles Diamond
Water Lead Consultant

- 5 years of financial and rate-setting experience in California
- Worked on over 25 water and/or wastewater rate studies across California
- Academic background in natural resource economics and water resources management



Cleo Koenig
Wastewater Lead Consultant

- Over a year of financial and rate-setting experience in California
- Academic background in environmental sciences
- Further academic background in environmental and water policy

Agenda

Meeting objective: solicit feedback on water and wastewater rate design

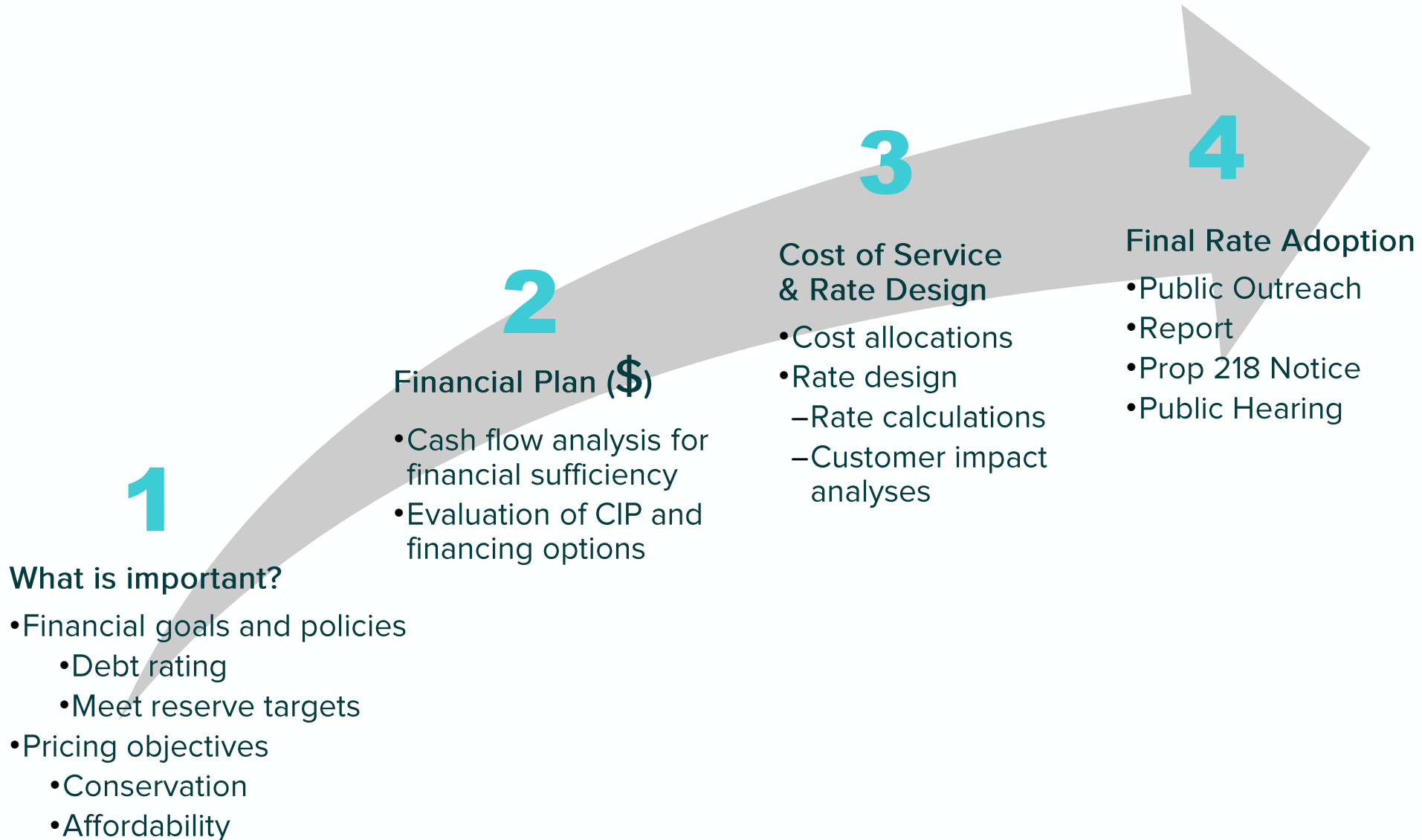
Agenda:

- Rate Study Basics
- Financial Plan (revenue adjustments for revenue sufficiency)
- Water Rate Design Discussion Items:
 1. Fixed vs. Variable Charges
 2. Residential Tier Breakpoints
- Wastewater Rate Design Discussion
 - › Wastewater vs. Stormwater Cost Allocations
 - › Key Drivers of Stormwater Costs
 - › Wastewater and Stormwater Rates

Rate Setting Basics



Steps in Conducting a Rate Study



Legal Environment of Rate Making

1. Cost of Service Requirements

- › Proposition 218 (Article XIII C and XIII D of California Constitution)

2. Pass-through Provision

- › AB 3030 – Section 53756 of the Government Code

3. Water Conservation

- › Article X of the California Constitution – prohibits water waste
- › CA Water Code Chapter 3.4 – Allocation-based Conservation Water Pricing (AB 2882)
- › Senate Bill X7-7 – 20% reduction by 2020
- › Exec Order B-37-16 – Each water agency will self-calculate a target based on an indoor and outdoor water budget

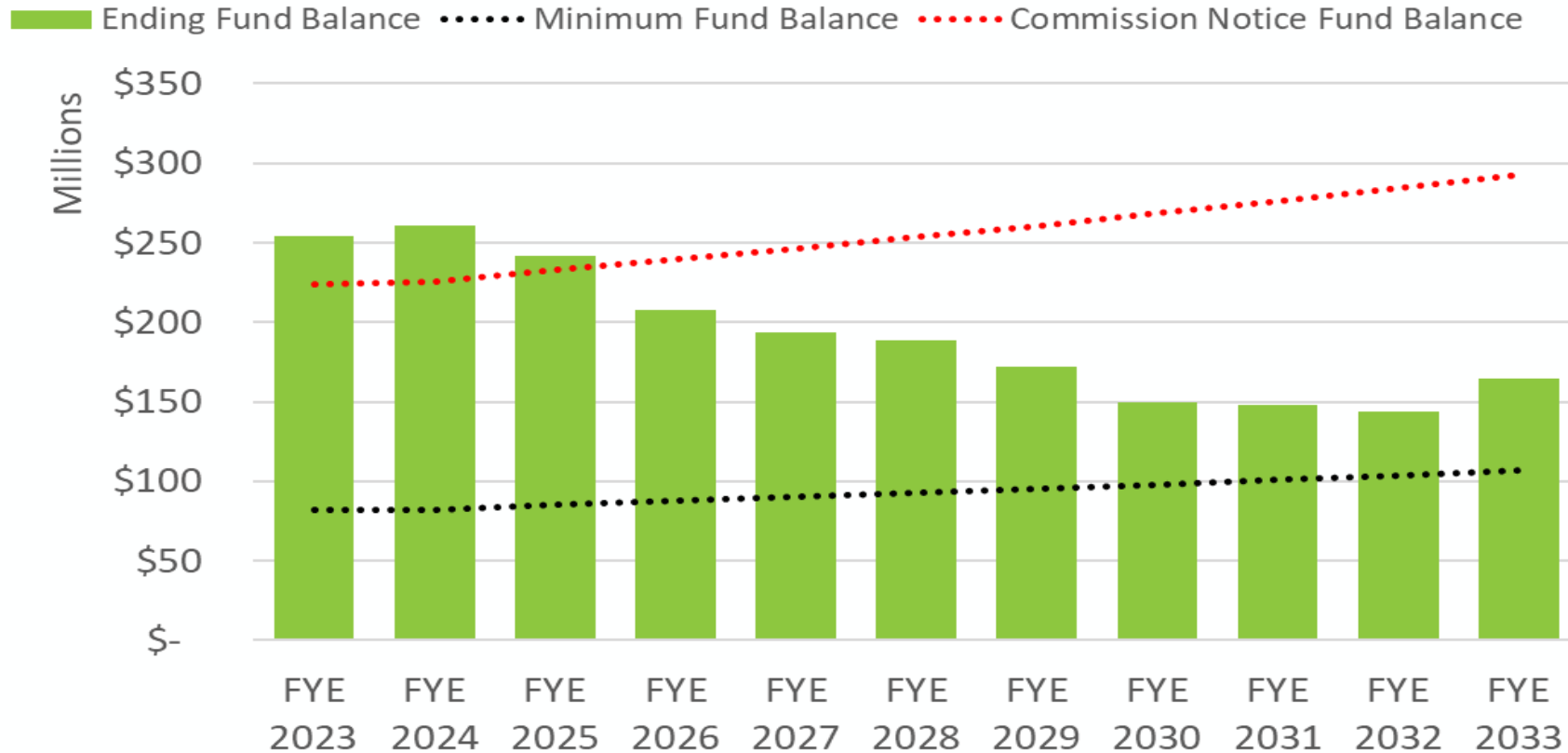
Proposition 218 Requirements

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 the 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 when the agency considers all written protests against the charge.

Water and Wastewater Financial Plans (\$ Revenue Sufficiency)



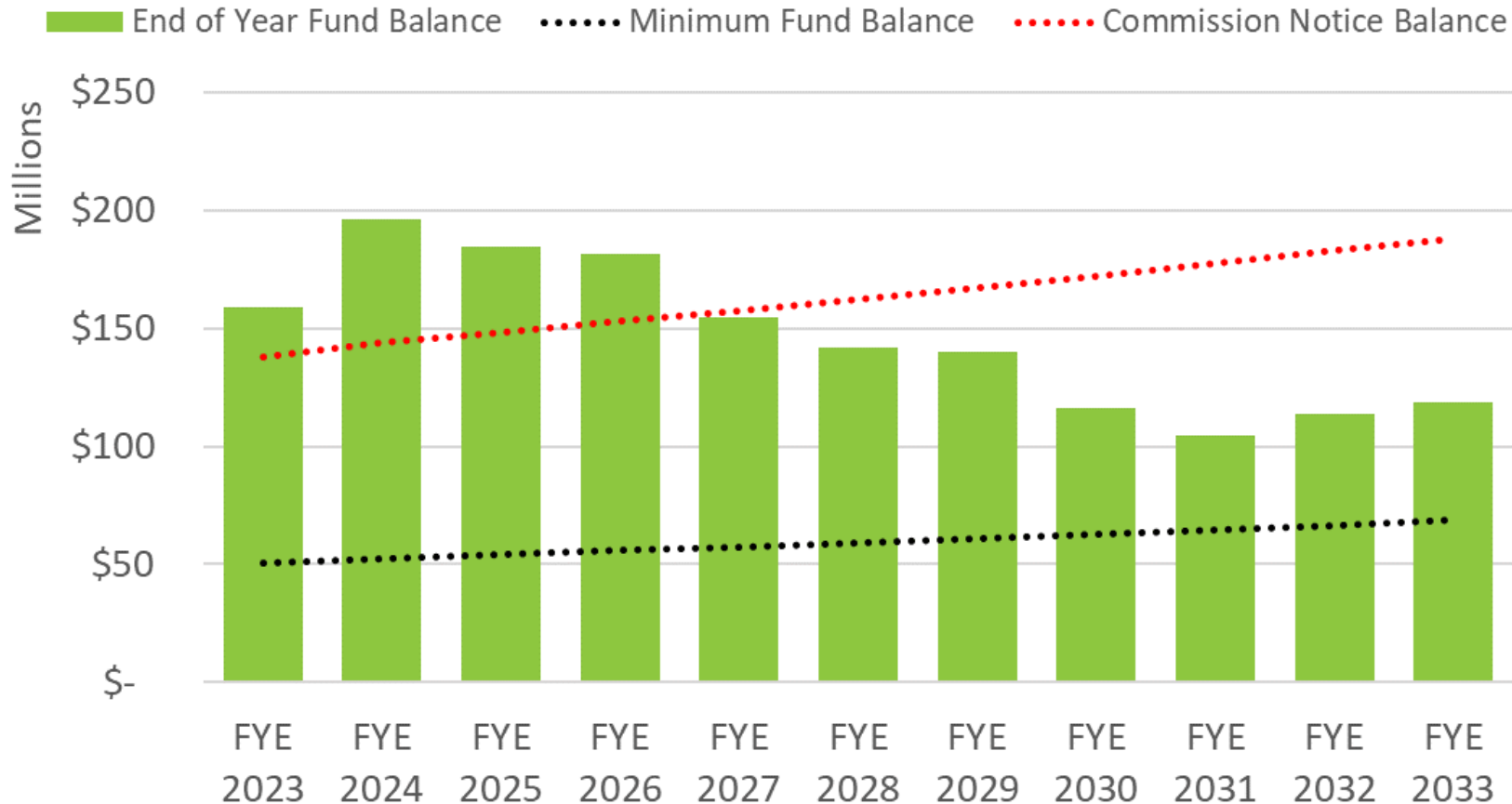
Water Revenue Adjustments and Fund Balance



Note: Revenue Increases are not the same as rate increases

Revenue Increase	0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%	4.0%	3.0%	3.0%	3.0%
Debt Service Coverage - Current	1.27	1.22	1.19	1.14	1.15	1.14	1.14	1.11	1.12	1.13	1.17
Debt Service Coverage - Indenture	1.73	1.89	1.97	1.79	1.70	1.63	1.60	1.51	1.47	1.47	1.50

Forecasted Wastewater Revenue Adjustments and Fund Balance



Rate Change

Rate Change	0%	9.0%	9.0%	9.0%	10.0%	10.0%	10.0%	9.0%	9.0%	5.0%	5.0%
Debt Service Coverage - Current	1.94	2.35	2.01	1.93	1.59	1.59	1.58	1.41	1.41	1.49	1.47
Debt Service Coverage - Indenture	3.54	4.03	3.65	3.20	2.50	2.28	2.14	1.85	1.74	1.79	1.78

Average Water Revenue Adjustments

Survey	Water Utility - Average Annual Increase
AWWA National (1996-2018)	5.1%
AWWA National (2016-2018)	7.2%
AWWA California-Nevada (2013-2017)	6.5%

Average Water Revenue Adjustments

AWWA/Raftelis 2021 Water and Wastewater Rate Survey	Average Annual Increase
Water Rates (2010-2020)	4.79%
Wastewater Rates (2010-2020)	4.87%
Consumer Price Index (2010-2020)	1.76%

Water Cost of Service and Rate Design



Water Cost Causation Components



Water Supply: Costs associated with purchasing/producing water



Base Costs: O&M expenses and capital costs associated with service to customers under *average* load conditions (base use)



Peaking Costs (Max Day or Extra Capacity): costs associated with serving water during peak flows

- Max day extra capacity



Meter Maintenance (and extra capacity): maintaining and replacing meters



Customer Service: costs associated with serving customers, irrespective of the amount or rate of use: Meter reading, billing, customer accounting, customer service, collection expenses



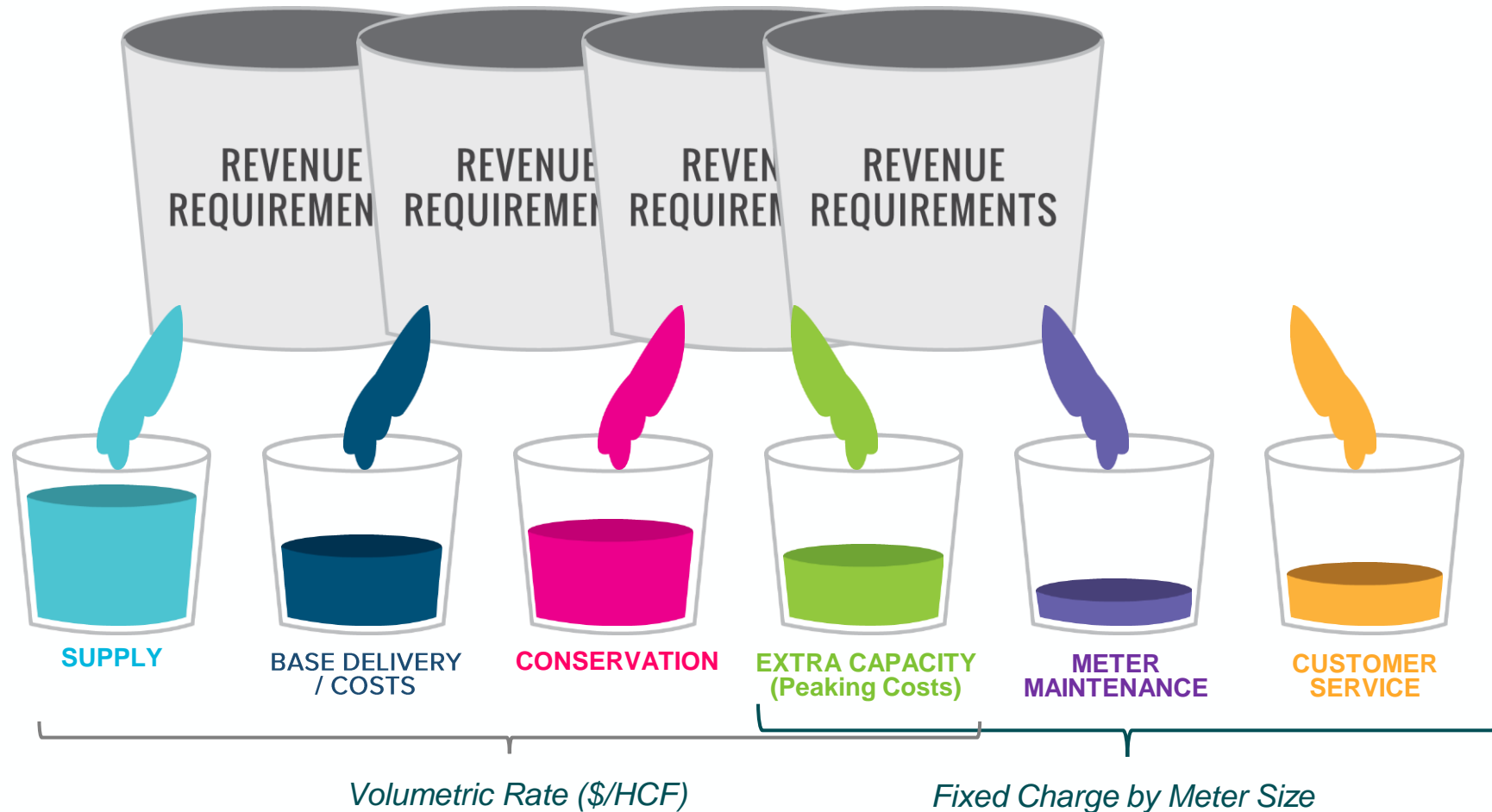
Conservation: Costs associated with a conservation program

Direct Fire Protection: costs that apply solely to the fire protection function

- Public hydrant maintenance
- Related branch mains and valves

Cost of Service

Allocation to Cost Components



Cost to Serve Each Class (% of Total Revenue)

Assumes one non-residential class

Current Study Cost to Serve Each Class Versus Current Rates	% of COS - Proposed Rates (%)	% of COS - Current Rates (%)	Difference (%)
Single Family Residential	27.0%	26.3%	2.6%
Multiple-Family Residential	36.9%	37.1%	-0.5%
Commercial/Industrial/Municipal	30.7%	30.6%	0.2%
Irrigation	4.0%	4.0%	0.2%
Docks & Shipping	0.0%	0.0%	0.5%
Builders & Contractors	0.5%	0.5%	0.3%
Fire Service	0.9%	1.5%	-42.1%
Non-Potable	0.1%	0.0%	78.6%
Total	100.0%	100.0%	0.0%

Rate Design



Current Water Rate Structure

Fixed Charge (\$/month)

Customer Charge

- Same for all customers

Meter Charge

- Increases with meter size
- Include public fire protection costs

Volumetric Rate (\$/ccf)

2 Tiers for Residential

- SFR Tier 1 = 4 CCF
- MFR Tier 1 = 3 CCF per dwelling

Uniform
(non-tiered) for
non-residential

Private Fire Charge (\$/month)

Increases with meter size

- Only applies to customers with private fire connections

Three Discussion Items for Water Rate Design

Fixed vs. Volumetric Cost Recovery

- Fixed cost recover is currently at 15% and propose to maintain 15%
- Many agencies collect 25 to 30%, but it varies widely
- Current recovery promotes conservation and affordability
- Large increases in wastewater fixed charge coming with stormwater charge

Adjust Residential Tier Breaks

- Increase the single-family residential tier 1 breakpoint from **4 CCF** to **5 CCF**
- Increase multi-family residential tier 1 breakpoint from **3 CCF** to **4 CCF** per dwelling unit

Fixed Charge Derivation

Assumes 15% fixed revenue recovery

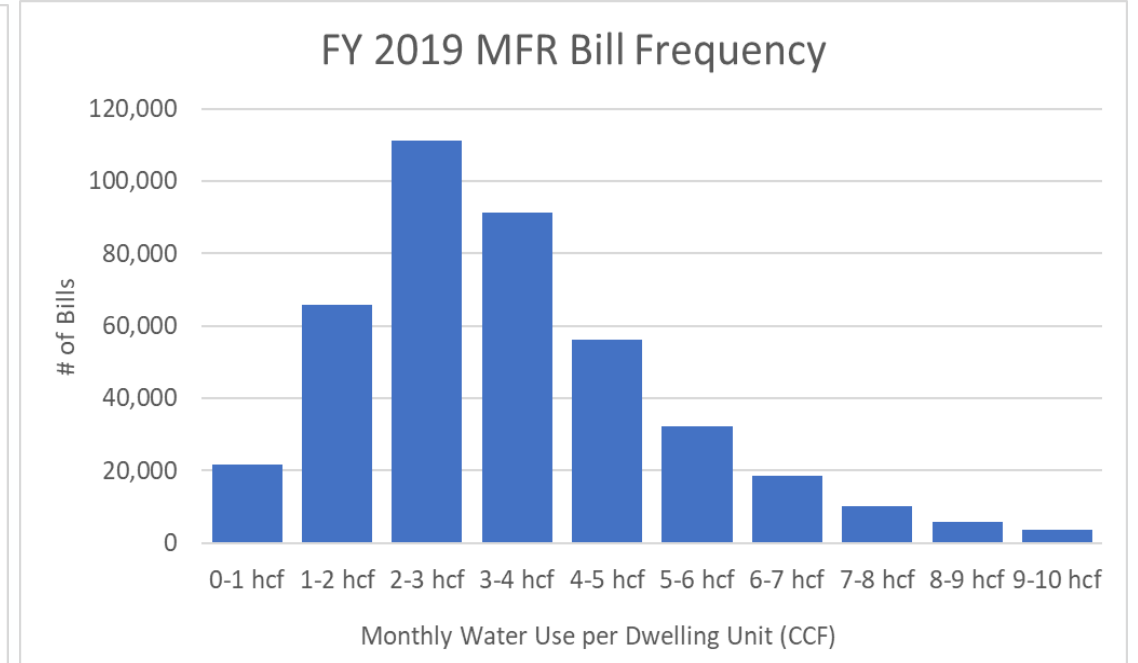
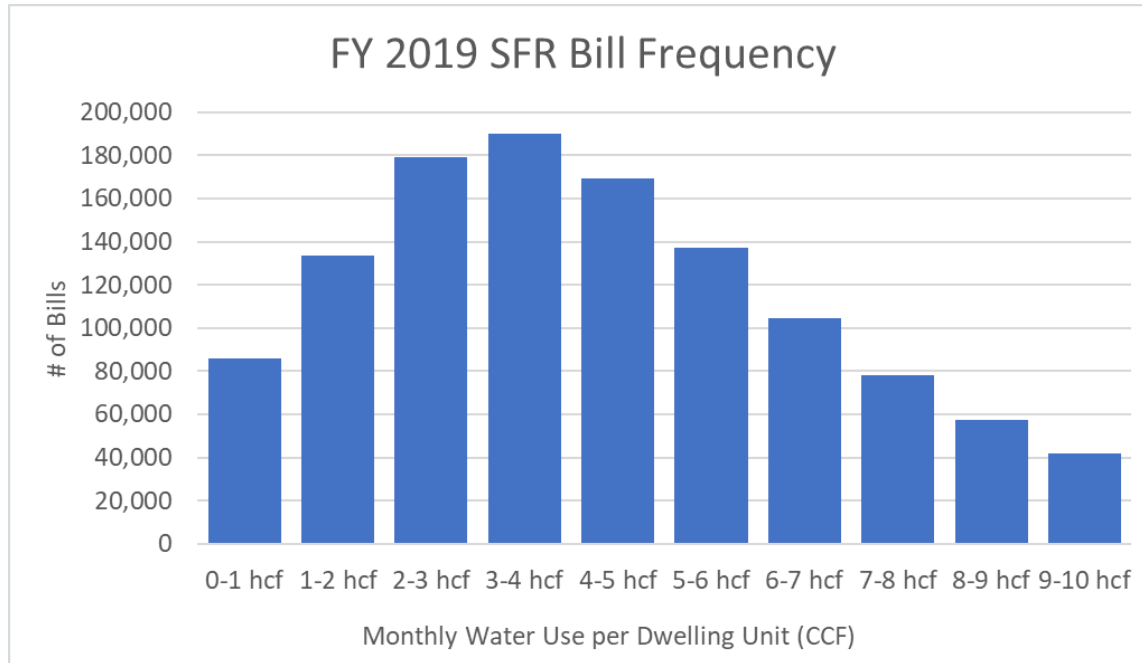
Meter Size	Meter Capacity Ratio	Customer Service	Meter Maintenance & Extra Capacity	Recommended Charge (FYE 2024)	Current Charge	Difference (\$)
5/8 inch	1.00	\$7.76	\$8.99	\$16.75	\$15.17	\$1.58
3/4 inch	1.50	\$7.76	\$13.49	\$21.25	\$19.43	\$1.82
1-inch	2.50	\$7.76	\$22.48	\$30.24	\$27.95	\$2.29
1-1/2 inch	5.00	\$7.76	\$44.95	\$52.71	\$49.25	\$3.46
2-inch	8.00	\$7.76	\$71.92	\$79.69	\$74.81	\$4.88
3-inch	16.00	\$7.76	\$143.84	\$151.61	\$142.97	\$8.64
4-inch	25.00	\$7.76	\$224.75	\$232.52	\$219.65	\$12.87
6-inch	50.00	\$7.76	\$449.51	\$457.27	\$432.65	\$24.62
8-inch	80.00	\$7.76	\$719.21	\$726.97	\$688.25	\$38.72
10-inch	125.00	\$7.76	\$1,123.77	\$1,131.53	\$1,071.65	\$59.88
12-inch	215.00	\$7.76	\$1,932.88	\$1,940.64	\$1,838.45	\$102.19
16-inch	375.00	\$7.76	\$3,371.30	\$3,379.06	\$3,201.65	\$177.41

Private Fire Charge Derivation

Only for customers with private fire protection (mostly businesses)

Connection Size	Fire Demand Factor	Customer Service	Backflow Administration	Private Fire Protection	Recommended Charge (FYE 2024)	Current Charge	Difference (\$)
1-inch	1.00	\$7.76	\$0.53	\$0.25	\$8.54	\$9.55	(\$1.01)
1-1/2 inch	2.90	\$7.76	\$0.53	\$0.73	\$9.02	\$12.45	(\$3.43)
2-inch	6.19	\$7.76	\$0.53	\$1.55	\$9.84	\$15.93	(\$6.09)
3-inch	17.98	\$7.76	\$0.53	\$4.51	\$12.80	\$25.21	(\$12.41)
4-inch	38.32	\$7.76	\$0.53	\$9.60	\$17.89	\$35.65	(\$17.76)
6-inch	111.31	\$7.76	\$0.53	\$27.89	\$36.19	\$64.56	(\$28.37)
8-inch	237.21	\$7.76	\$0.53	\$59.44	\$67.73	\$99.45	(\$31.72)
10-inch	426.58	\$7.76	\$0.53	\$106.90	\$115.19	\$151.65	(\$36.46)
12-inch	689.04	\$7.76	\$0.53	\$172.67	\$180.96	\$256.05	(\$75.09)

Water Rate Design: Residential Tier Breakpoints



Monthly Usage Per Dwelling Unit (CCF)	Single Family	Multi-Family
Yearly Average Use	5.2	3.7
Winter Median Use	4.3	3.1

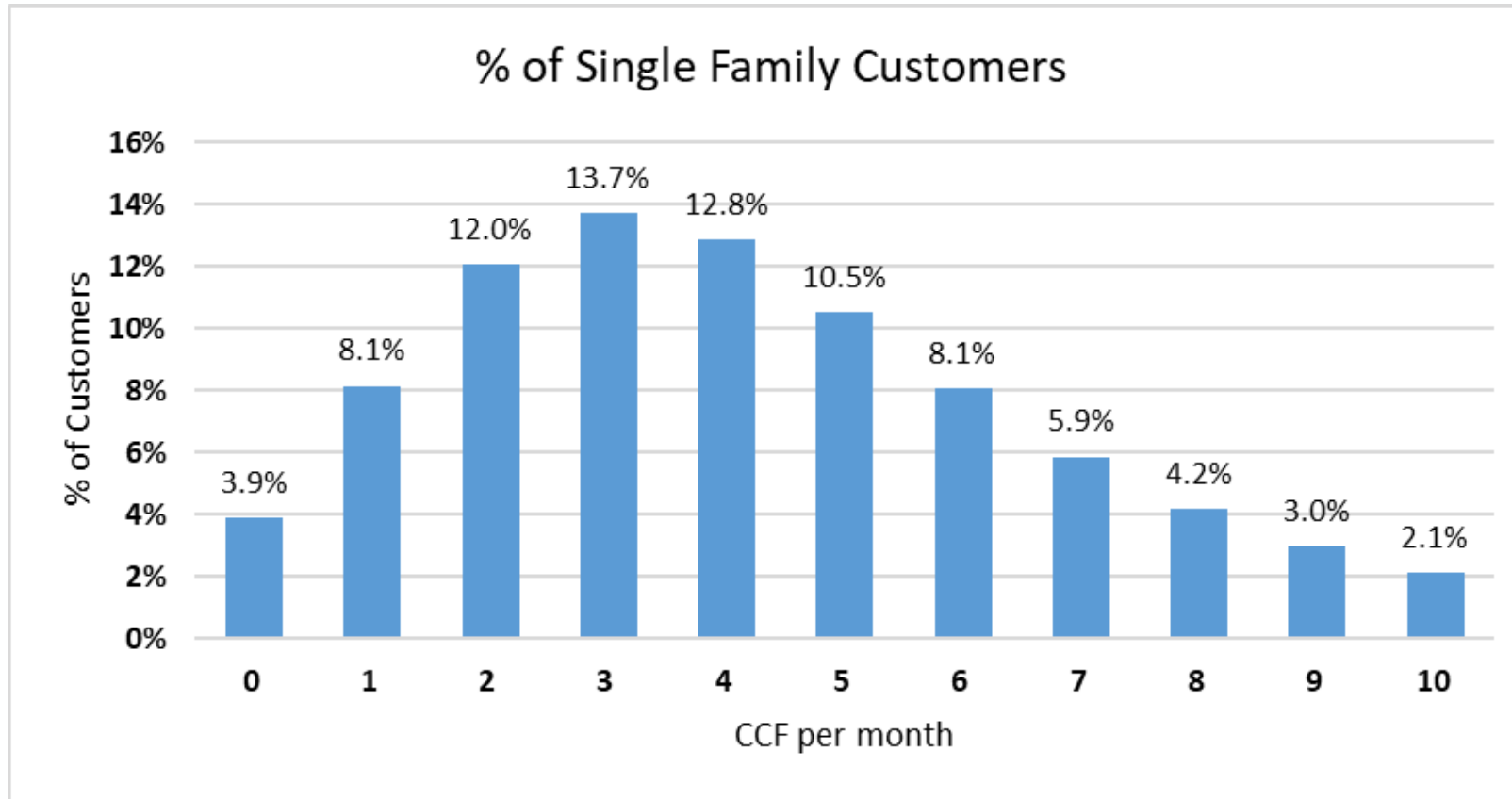
Water Rate Design: Tier Breakpoint Alternatives

Tier Breakpoints	Current FYE 2023	Current Tiers		Alternative Expanded Tiers		
		Proposed FYE 2024 Rates	Change from Current	Tier Breakpoints	FYE 2024 Rates	Change from Current
Single Family Residential						
0 - 4 CCF per month	\$9.60	\$10.32	7.5%	0 - 5 CCF per month	\$10.39	8.2%
> 4 CCF	\$10.71	\$11.46	7.0%	> 5 CCF	\$11.64	8.8%
Multi-Family Residential						
0 - 3 CCF per dwelling unit per month	\$9.60	\$10.18	6.0%	0 - 4 CCF per dwelling unit per month	\$10.24	6.8%
All additional usage	\$10.76	\$10.93	1.6%	All additional usage	\$11.08	3.0%

- With higher tier breaks, customers get more water at the lower rate
- Updated peaking for larger tier 1 results in an increase in rates

SFR Monthly Bill Impacts with Revised Tier Breakpoints

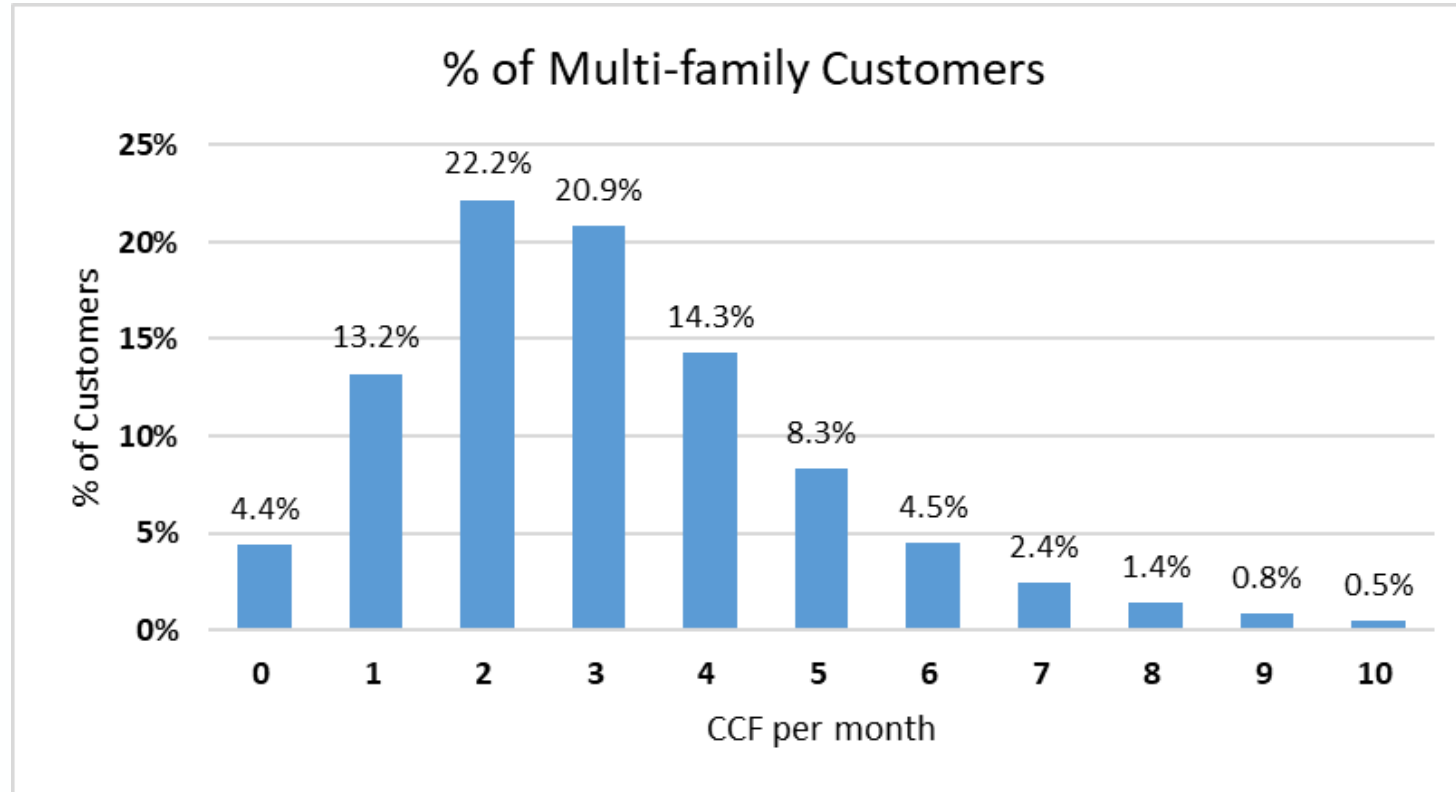
5/8-inch meter



Current Bill	\$15.17	\$24.77	\$34.37	\$43.97	\$53.57	\$64.28	\$74.99	\$85.70	\$96.41	\$107.12	\$117.83
Current Breakpoint Bill	\$16.75	\$27.07	\$37.39	\$47.71	\$58.03	\$69.49	\$80.95	\$92.41	\$103.87	\$115.33	\$126.79
Revised Tier Breakpoint Bill	\$16.75	\$27.14	\$37.53	\$47.92	\$58.31	\$68.70	\$80.34	\$91.98	\$103.62	\$115.26	\$126.90
Difference b/t Current & Revised	\$0.00	\$0.07	\$0.14	\$0.21	\$0.28	-\$0.79	-\$0.61	-\$0.43	-\$0.25	-\$0.07	\$0.11

MFR Monthly Bill Impacts with Revised Tier Breakpoints

5/8" Meter and 3 dwelling units per account



Current Bill	\$15.17	\$43.97	\$72.77	\$101.57	\$133.85	\$166.13	\$198.41	\$230.69	\$262.97	\$295.25	\$327.53
0-4 Breakpoint Bill	\$16.75	\$47.29	\$77.83	\$108.37	\$141.16	\$173.95	\$206.74	\$239.53	\$272.32	\$305.11	\$337.90
0-5 Tier Breakpoint Bill	\$16.75	\$47.50	\$78.25	\$109.00	\$139.75	\$172.99	\$206.23	\$239.47	\$272.71	\$305.95	\$339.19
Difference	\$0.00	\$0.21	\$0.42	\$0.63	-\$1.41	-\$0.96	-\$0.51	-\$0.06	\$0.39	\$0.84	\$1.29

Tier Breakpoints

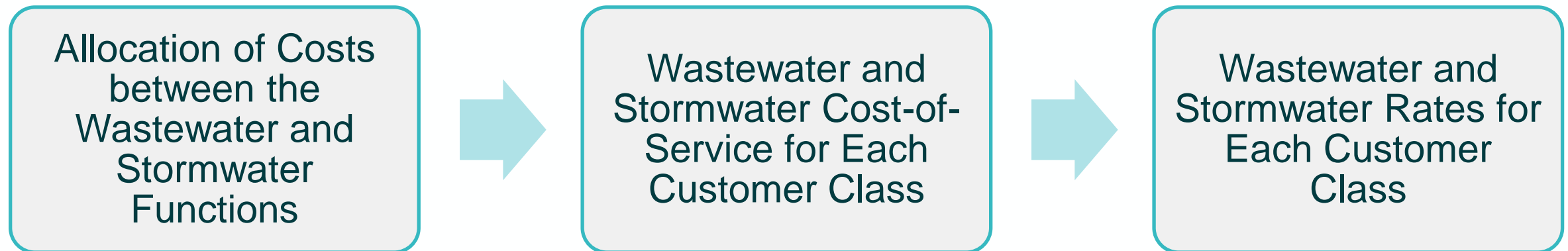
- Current statewide CA indoor water use standard is 55 gallons per person per day (gpcd)
 - Proposed to decrease to 47 gpcd in 2025 and 42 in 2030
- **40** gpcd x 4 people/home x 30.5 days / 748 gal per CCF = **6.5** CCF
- 5 CCF per Single family home would benefit bigger families
- It's the average use for all single-family homes
- Bill impacts are minimal (prior two slides)
- SFPUC Staff affordability research suggests low-income customers have larger household sizes and higher (but not highest) usage – potential equity benefit
- MFR is a proportion of SFR due to fewer people per dwelling

Wastewater Cost-of-Service Study



Key Wastewater Cost-of-Service Issue

- **Stormwater Rate Implementation**
 - › What costs should be allocated to stormwater?
 - › Recommended wastewater and stormwater rates?
 - › Customer bill impacts



Cost Functionalization

FY 2024 Revenue Requirement from Rates



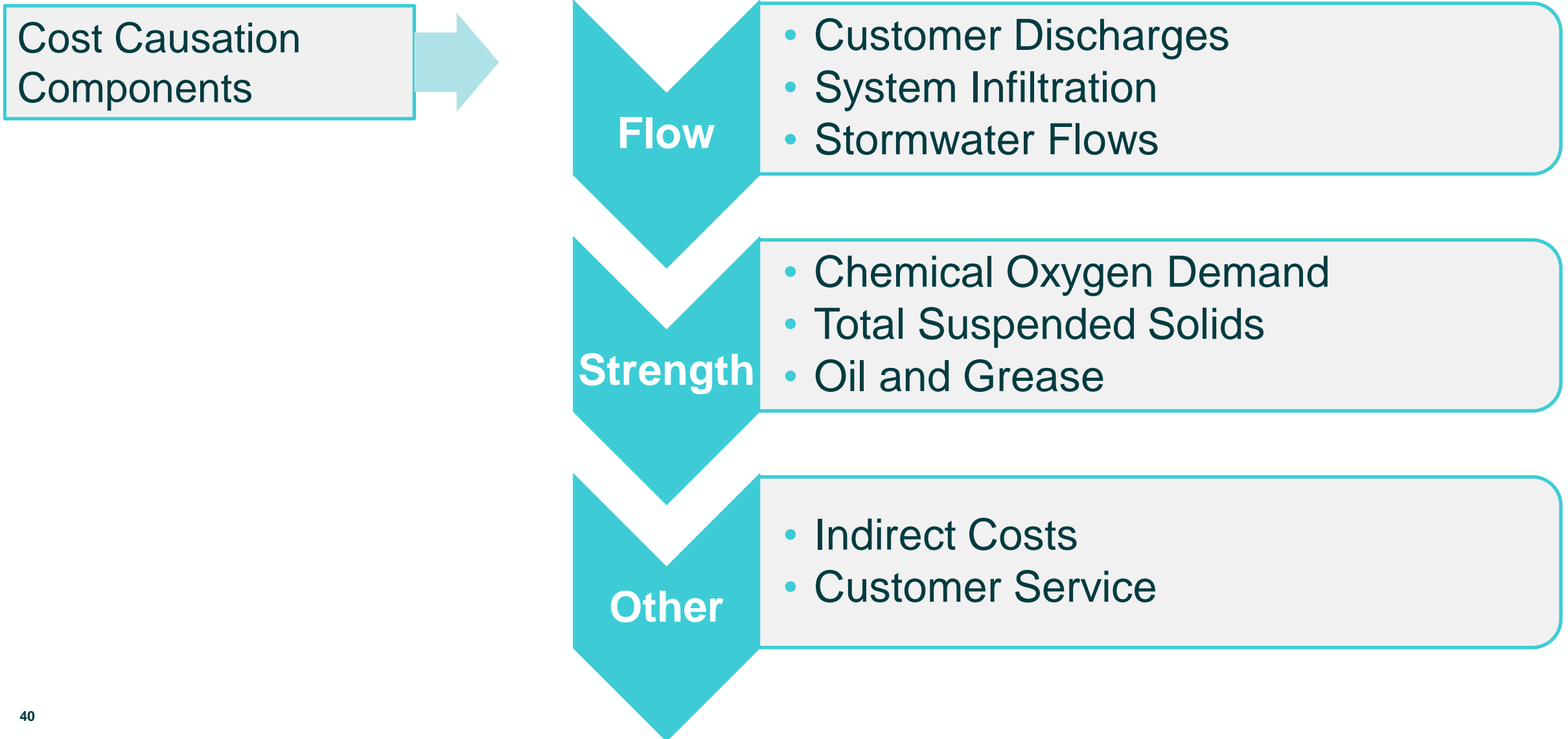
Cost Components	FY 2024
Operations & Maintenance Costs	\$210,448,416
Capital Costs	230,004,734
Less: Non-Rate Revenues	18,432,951
Total Revenue Requirement	\$422,020,200

Wastewater System Functions



Example Functions	
Headworks	Pumping / Lift Stations
Primary Treatment	Stormwater
Secondary Treatment	General Collections
Disinfection / Discharge	Interceptors
Solids Handling / Digestors	Customer Service

Cost Causation Components (Demand Drivers)



Wastewater/Stormwater Cost-of-Service

Wastewater = 77.6% (\$327.7 million)

Stormwater = 22.4% (\$94.4 million)

Service	Flow	COD	TSS	O/G	CS	Total
Wastewater	\$163.7	\$80.3	\$60.1	\$12.6	\$10.9	\$327.7
Stormwater	<u>\$79.0</u>	<u>\$8.8</u>	<u>\$6.1</u>	<u>\$0.4</u>	<u>\$0.0</u>	<u>\$94.4</u>
Total	\$242.8	\$89.1	\$66.3	\$13.0	\$10.9	\$422.0
% Wastewater	67.5%	90.1%	90.8%	96.9%	100.0%	77.6%
% Stormwater	<u>32.5%</u>	<u>9.9%</u>	<u>9.2%</u>	<u>3.1%</u>	<u>0.0%</u>	<u>22.4%</u>
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Key Drivers of the Stormwater COS

- **3-year analysis of treatment plant influent volumes and strength loadings (FY 2020 – FY 2022)**
 - › 10.8% of volumes received the treatment Plant = Stormwater
 - › Stormwater volumes include strength loading for COD, TSS, and O/G
- **Engineering analysis of system functions - key functional components of the system are used for stormwater**
 - › Collection system, interceptor mains, pumping, lift stations, treatment plant headworks

Wastewater and Stormwater FY 2024 COS by Class

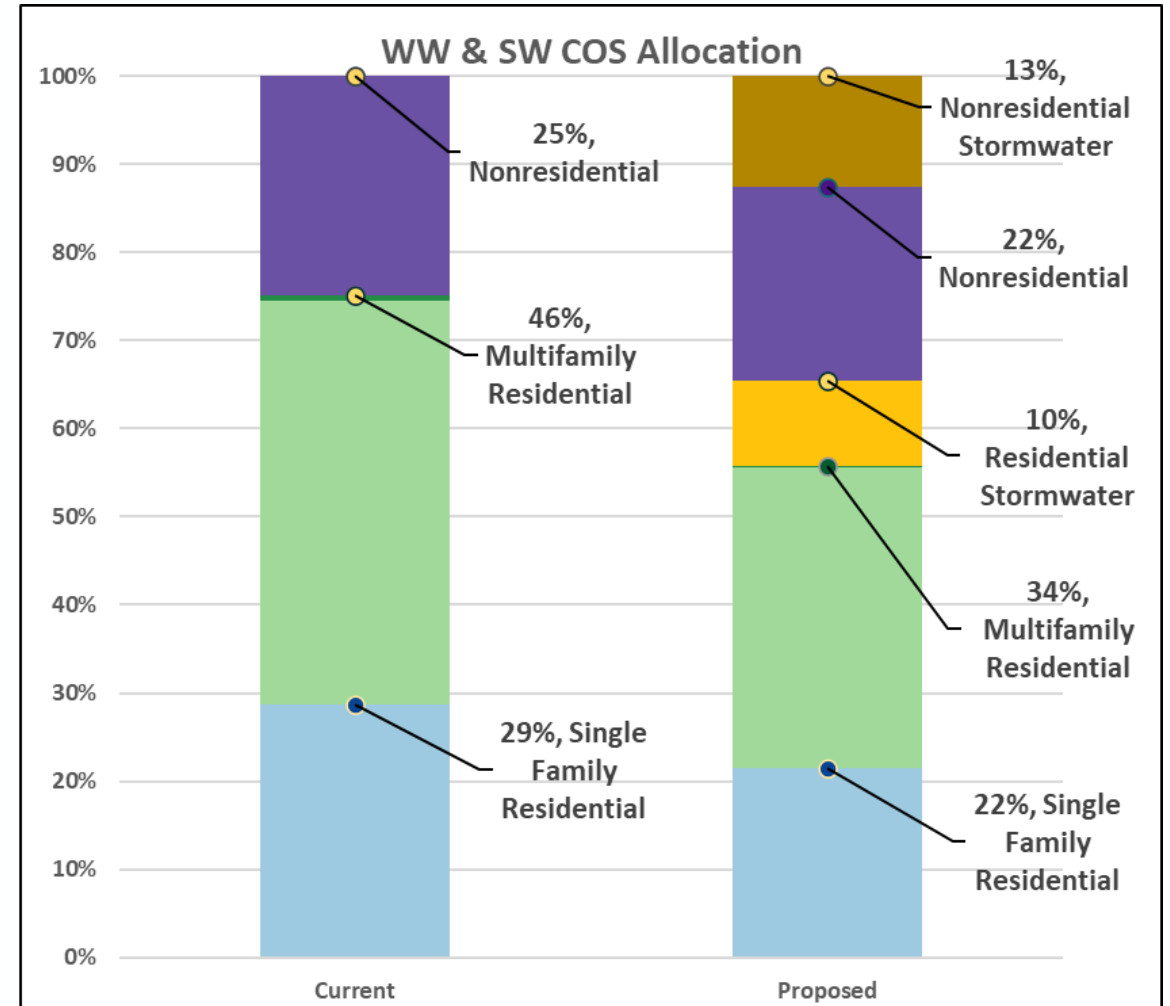
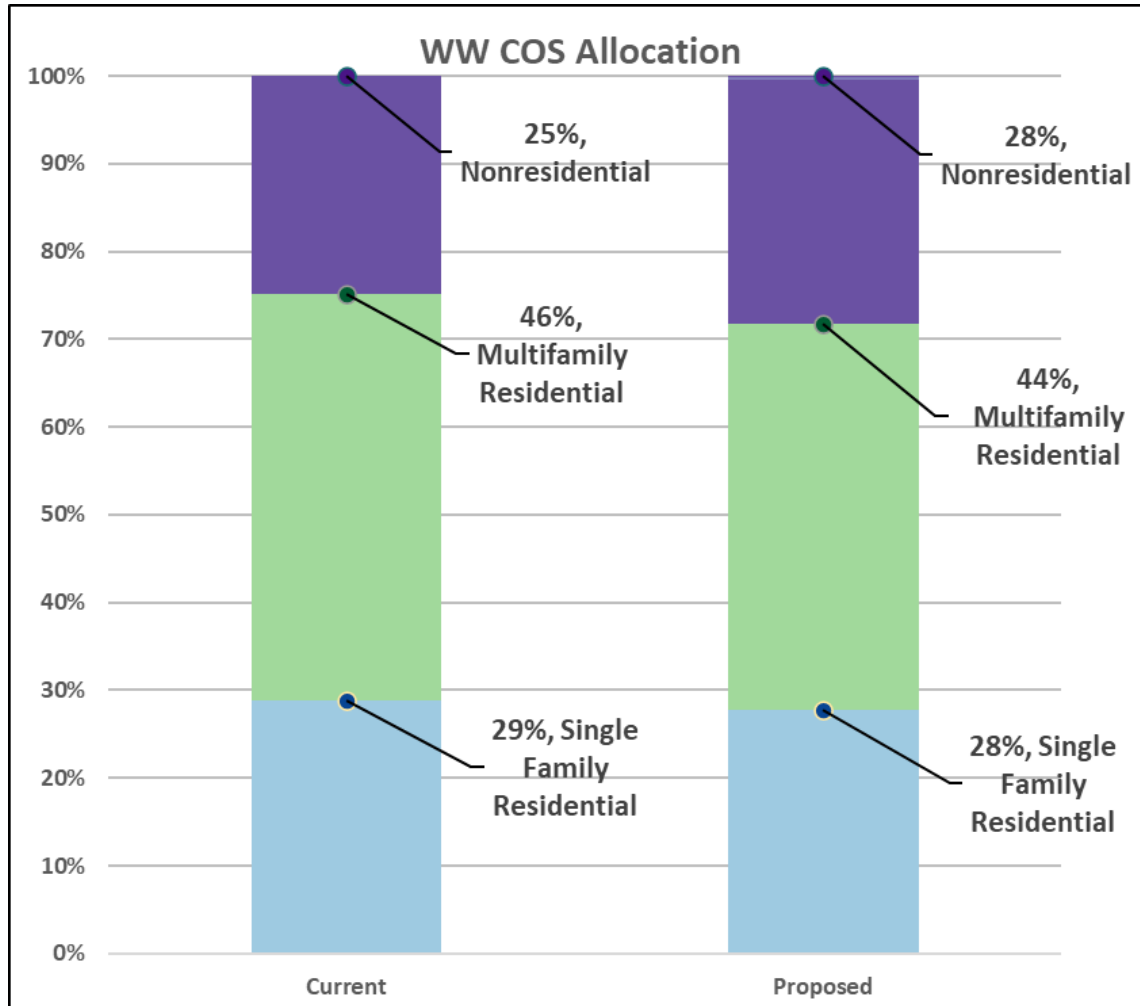
Wastewater (\$ Millions)

Class	FY 2024 COS	FY 2024 Revenues at Existing Rates	\$ Difference	% Difference
Single Family	\$91.0	\$103.3	(\$12.4)	-11.97%
Multifamily	144.4	165.3	(20.9)	-12.65%
Non-Residential	<u>92.3</u>	<u>105.6</u>	<u>(13.3)</u>	-12.60%
Total	\$327.7	\$374.2	(\$46.6)	-12.45%

Stormwater (\$ Millions)

Customer Class	FY 2024
Simplified Residential	\$41.0
Standard	<u>53.3</u>
Total	\$94.4

Cost Allocation Comparisons



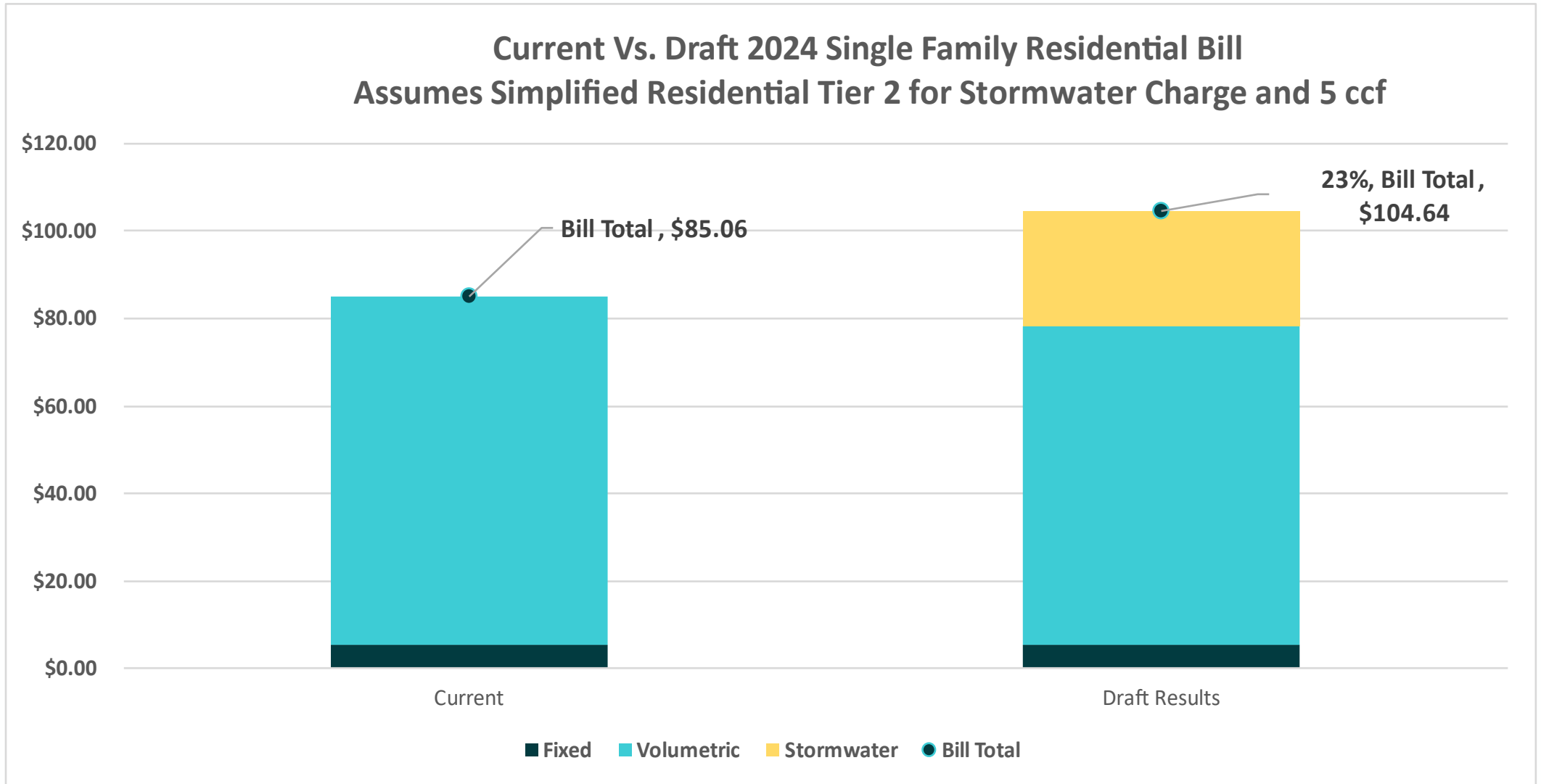
Recommended FY 2024 Wastewater Rates

Class/Charge	Current	Recommended FY 2024	% Change
Monthly Service Charge (\$/Bill)	\$5.21	\$5.21	-0.1%
Commodity Rates			
Residential (\$/ccf)	\$15.97	\$14.62	-8.5%
Nonresidential/Commercial			
Flow (\$/ccf)	\$9.46	\$7.53	-20.4%
COD (\$/pound)	\$0.65	\$0.85	31.6%
TSS (\$/pound)	\$1.65	\$1.66	0.5%
O/G (\$/pound)	\$1.66	\$1.07	-35.5%

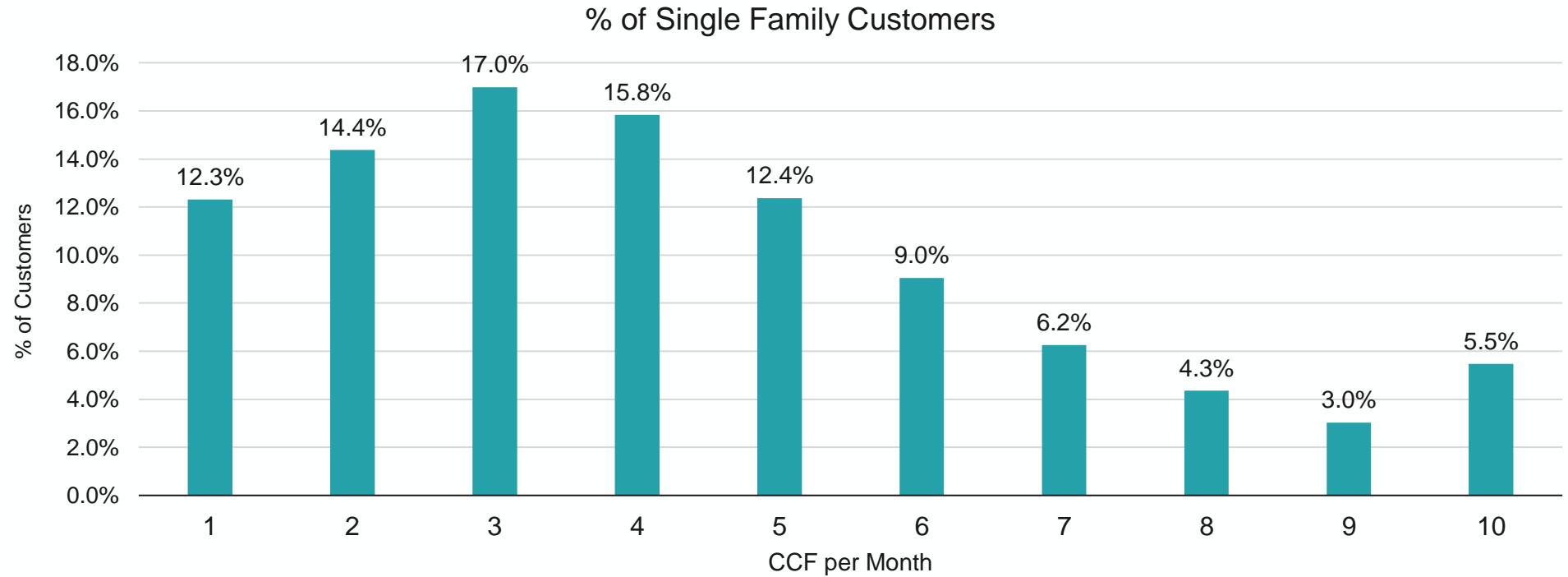
Recommended FY 2024 Stormwater Rates

Customer Type	Monthly Charge
Simplified Residential Rate Structure	
Tier 1: 1 - 1,700 square feet parcel size	\$17.68
Tier 2: 1,701 - 3,300 square feet parcel size	\$26.35
Tier 3: 3,301 - 6,000 square feet parcel size	\$37.78
Standard Rate Structure (1)	
\$/1,000 square feet of permeable area	\$1.36
\$/1,000 square feet of impermeable area	\$13.62
(1) Standard rate structure includes non-residential properties, mixed-use properties, and residential properties with greater than six dwelling units and/or parcels larger than 6,000 square feet	

Single Family Residential Bill Comparison



SFR Monthly Bill Impacts

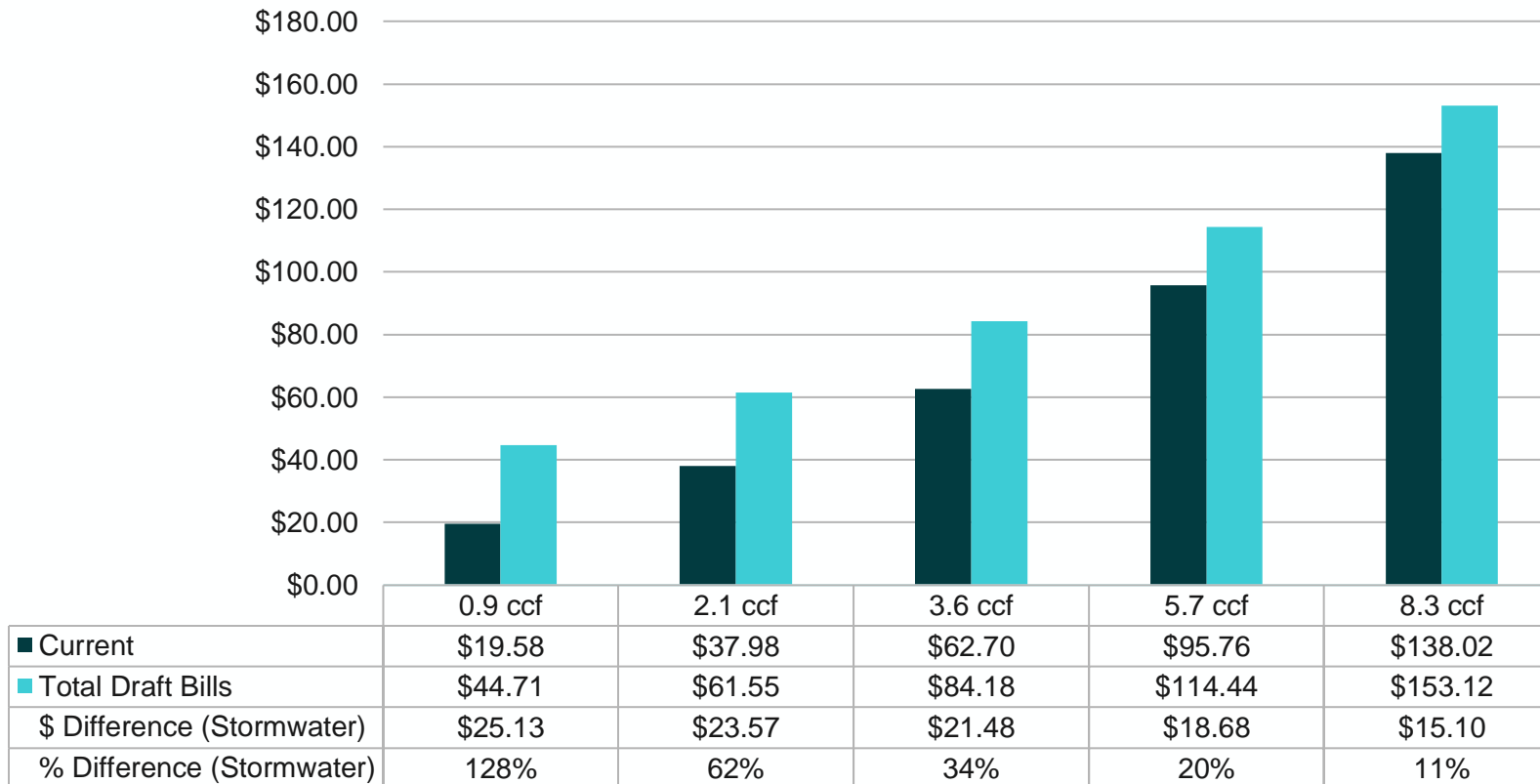


CCF	1	2	3	4	5	6	7	8	9	10
Current Bill	\$21.18	\$37.15	\$53.12	\$69.09	\$85.06	\$101.03	\$117.00	\$132.97	\$148.94	\$164.91
Draft Bill (Simplified Res. Tier 2)	\$46.17	\$60.79	\$75.41	\$90.03	\$104.64	\$119.26	\$133.88	\$148.50	\$163.12	\$177.73
Difference from Current Rates (\$)	\$24.99	\$23.64	\$22.29	\$20.94	\$19.58	\$18.23	\$16.88	\$15.53	\$14.18	\$12.82

Single Family Bill Impacts

Assumes Simplified Residential Tier 2 for Stormwater Charge

Monthly Bill Impacts Based on Percentile



Discharge Use	CCF per Month
10th Percentile	0.9 ccf
25th Percentile	2.1 ccf
Median	3.6 ccf
75th Percentile	5.7 ccf
90th Percentile	8.3 ccf



Thank you

Contacts:

Steve Gagnon, PE (AZ) / sgagnon@raftelis.com

John Wright, CPA / jwright@raftelis.com