



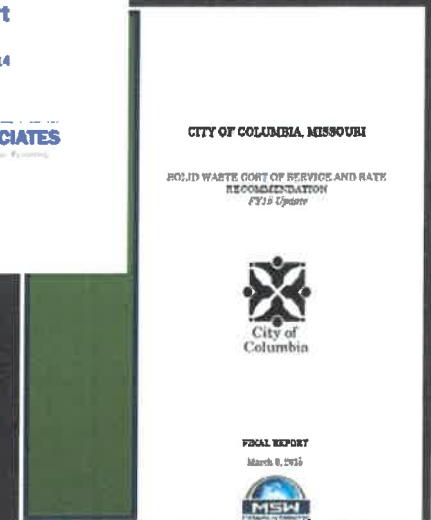
City of Columbia, MO Utilities Cost of Service Study Recommendations

December 1, 2021



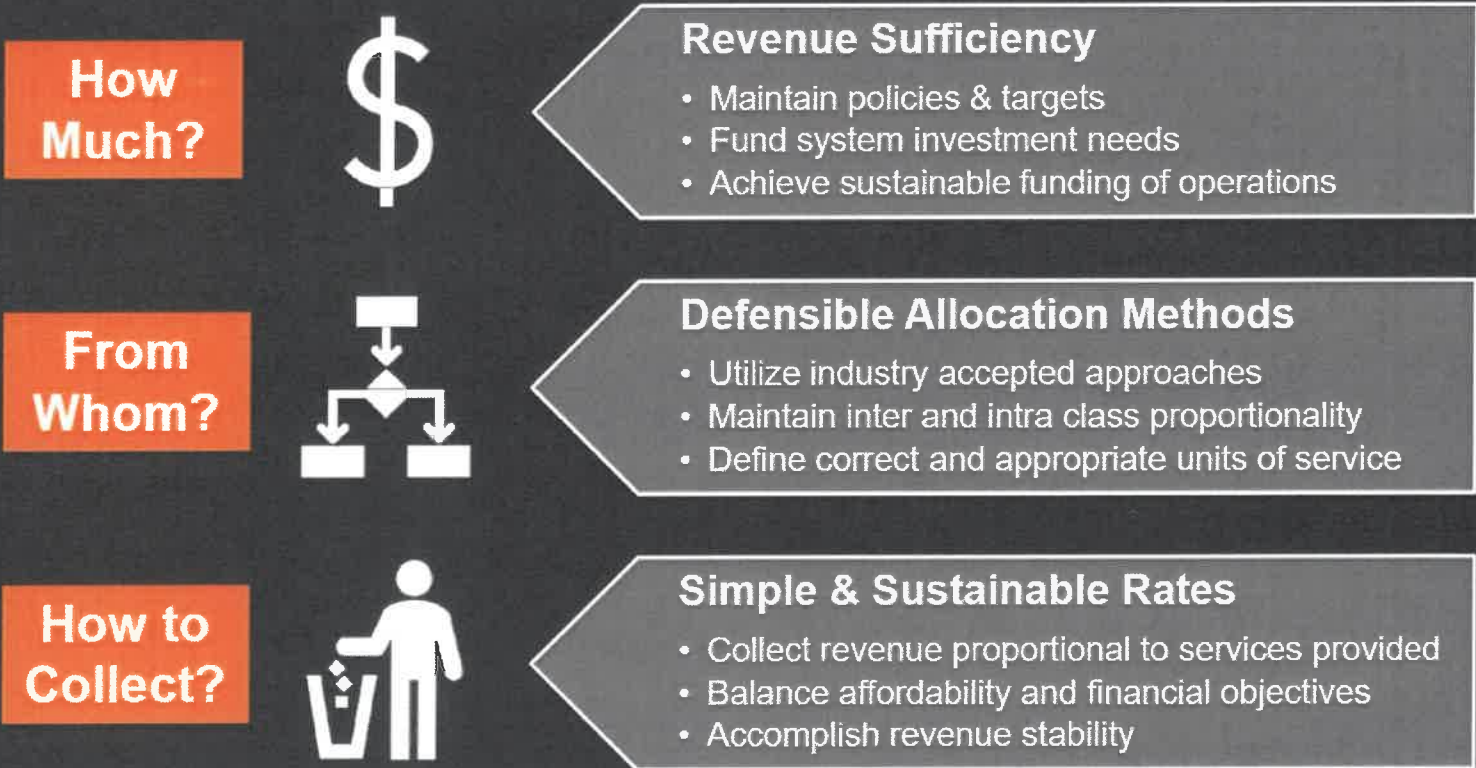
Rate Study Background

- Stantec (formerly Burton & Associates) conducted initial sewer rate study in 2014
- Five-year plan of sewer rate increases and sewer rate structure modifications were developed for FY 2015 - 2019
- 2021 Rate Study includes recommended rate adjustments for sewer, stormwater, and solid waste for FY 2022 - 2026





A Rate Study is a Series of Connected Investigations





Executive Summary

- Adopt 5-year plan of rate increases for sewer and solid waste (FY 2022 effective April 1, 2022)
- Make rate structure adjustments for sewer and solid waste
- Revisit BCRSD contracts to incorporate multiplier to volume rate based on rate design analysis
- Collect impervious area data and perform stormwater cost allocation and rate design
- Implement calculated Sewer connection fees

	FY 2021	FY 2022 (April)	Change \$	Change %
Sewer (5 CCF)	\$25.12	\$26.38	\$1.26	5.00%
Solid Waste	\$17.37	\$18.00	\$0.63	3.63%
Stormwater	\$3.96	\$3.96	\$0.00	0.00%
Total	\$46.45	\$48.34	\$1.89	4.07%



Wastewater

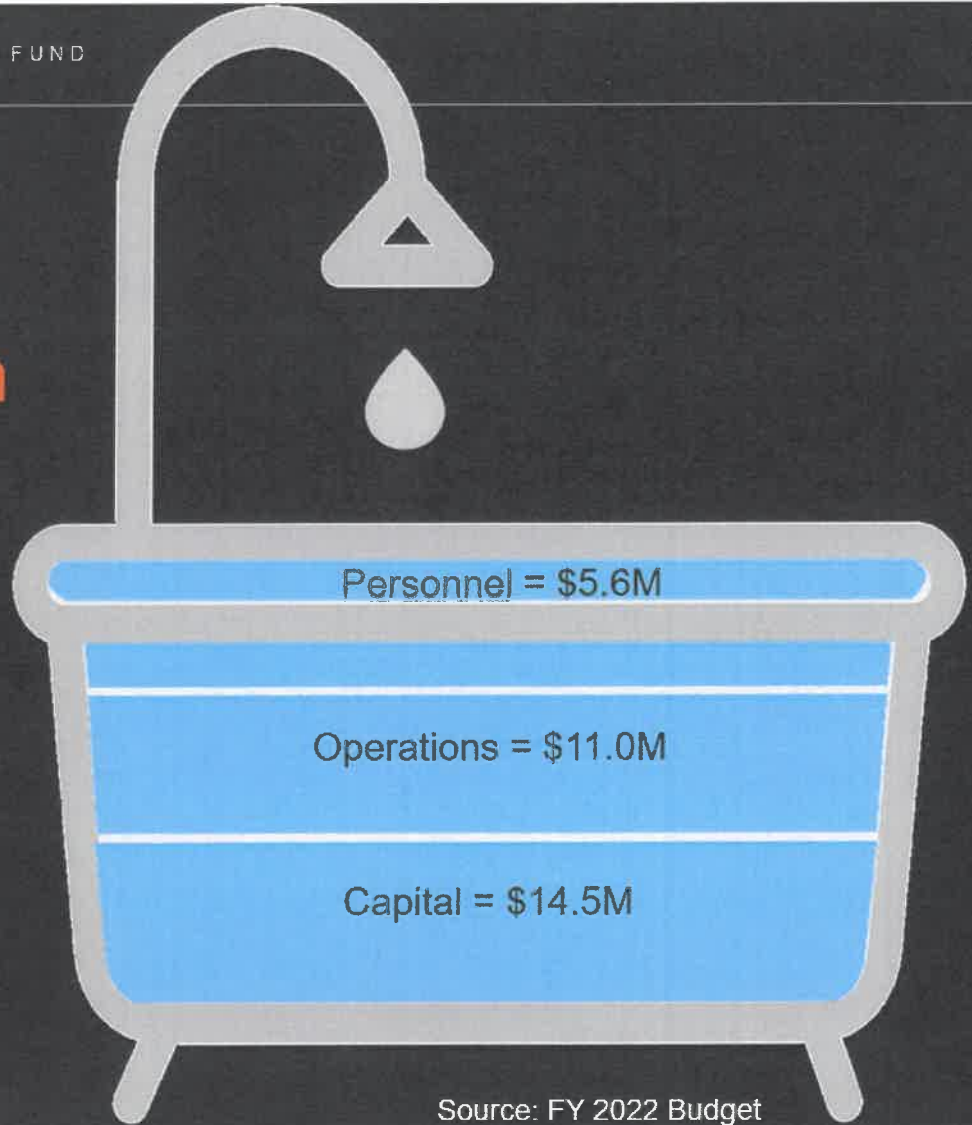


Components of Utility Revenue Requirements





What is the cost to **drain**
a tub?



Source: FY 2022 Budget



CITY OF COLUMBIA, MO



CALC SAVE CTRL LAST OVR

No future rate increases

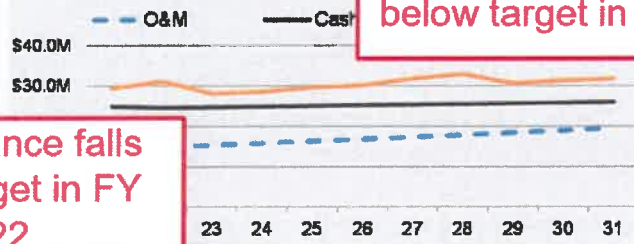
	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2026	FY 2031
Sewer Rate Plan	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
All-In DSC	1.32	1.28	1.24	1.21	1.19	1.15	1.08	1.03	0.97	0.92	0.86		
Total Single Family Bill	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12	\$25.12		

Operating Fund



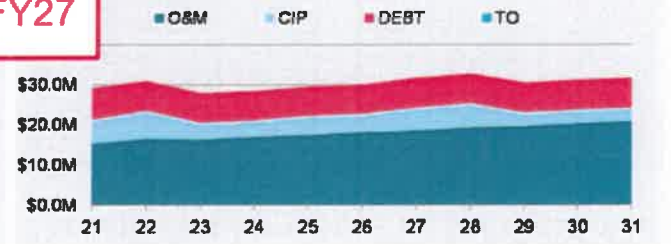
Fund balance falls below target in FY 2022

Revenues vs. Expenses



Debt coverage falls below target in FY27

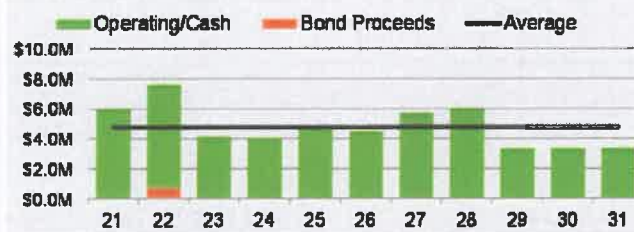
Expenses by Type



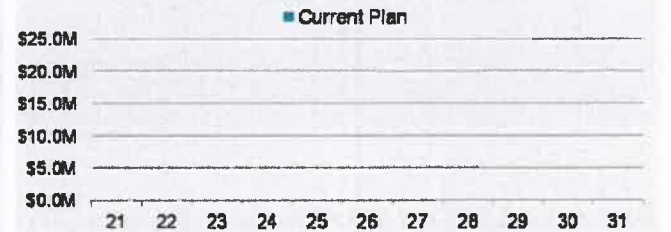
CIP Spending



CIP Funding



Borrowing





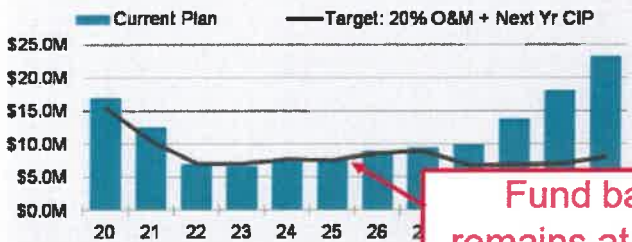
6.5% rate increase April 1, 2022;
followed by 6.5% in FY23, 5% in
FY24, and 3% each year thereafter

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2026	FY 2031
Sewer Rate Plan	0.00%	6.50%	6.50%	5.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	26.35%	46.48%
All-In DSC	1.32	1.38	1.63	1.78	1.88	1.95	1.99	2.06	2.13	2.21	2.29		
Date of Rate Increase		4/1/2022	10/1/2022	10/1/2023	10/1/2024	10/1/2025	10/1/2026	10/1/2027	10/1/2028	10/1/2029	10/1/2030		
Total Single Family Bill	\$25.12	\$26.77	\$28.53	\$29.98	\$30.87	\$31.78	\$32.71	\$33.64	\$34.57	\$35.50	\$36.43	\$36.87	\$36.87

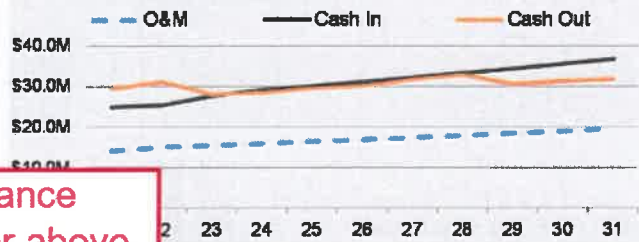
Debt coverage
remains above target

Fund balance
remains at or above
target

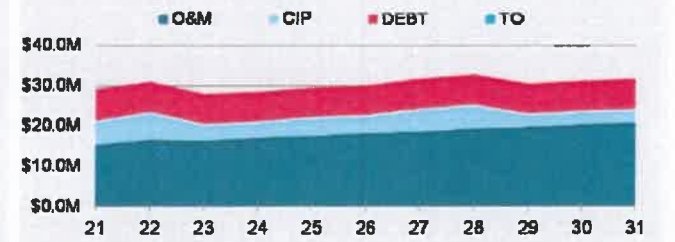
Operating Fund



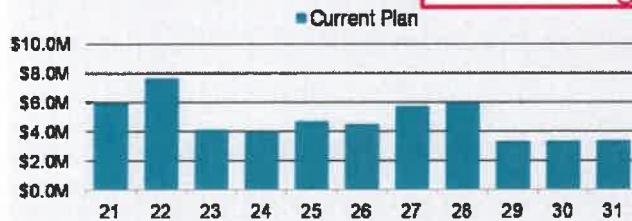
Revenues vs. Expenses



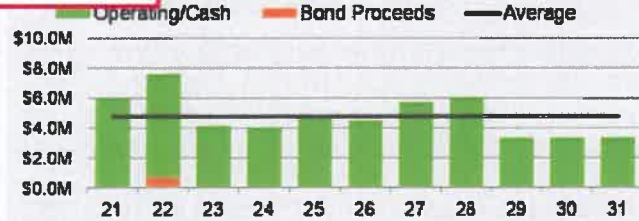
Type



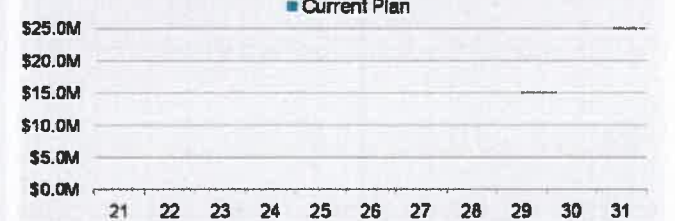
CIP Spending



Borrowing



Borrowing





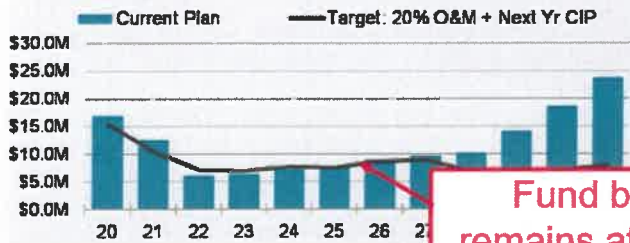
No rate increase in FY22;
followed by 16% in FY23, and 3%
each year thereafter

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2026	FY 2031
Sewer Rate Plan	0.00%	0.00%	16.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	26.76%	46.89%
All-In DSC	1.32	1.28	1.70	1.80	1.89	1.97	2.00	2.07	2.15	2.23	2.31		
Date of Rate Increase			10/1/2022	10/1/2023	10/1/2024	10/1/2025	10/1/2026	10/1/2027	10/1/2028	10/1/2029	10/1/2030		
Total Single Family Bill	\$25.12	\$25.12	\$29.15	\$30.03	\$30.92	\$31.83	\$32.74	\$33.65	\$34.56	\$35.47	\$36.38	\$36.92	\$37.46

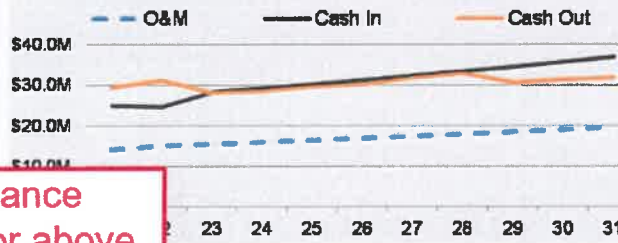
Debt coverage
remains above target

Fund balance
remains at or above
target

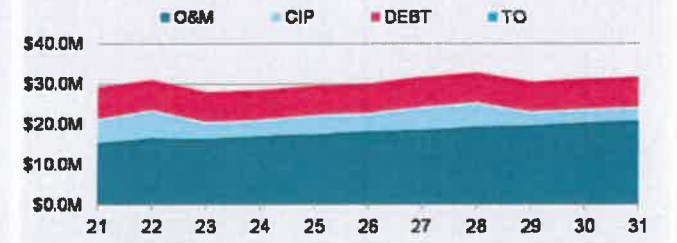
Operating Fund



Revenues vs. Expenses



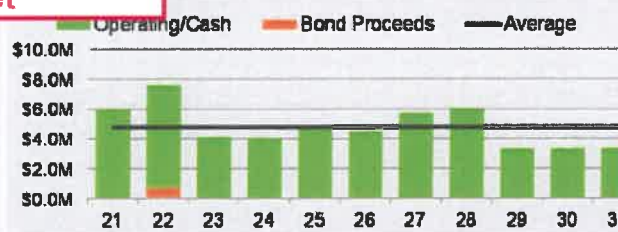
Expenses by Type



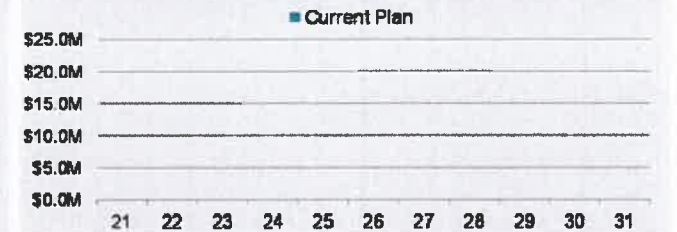
CIP Spending



Bond Proceeds

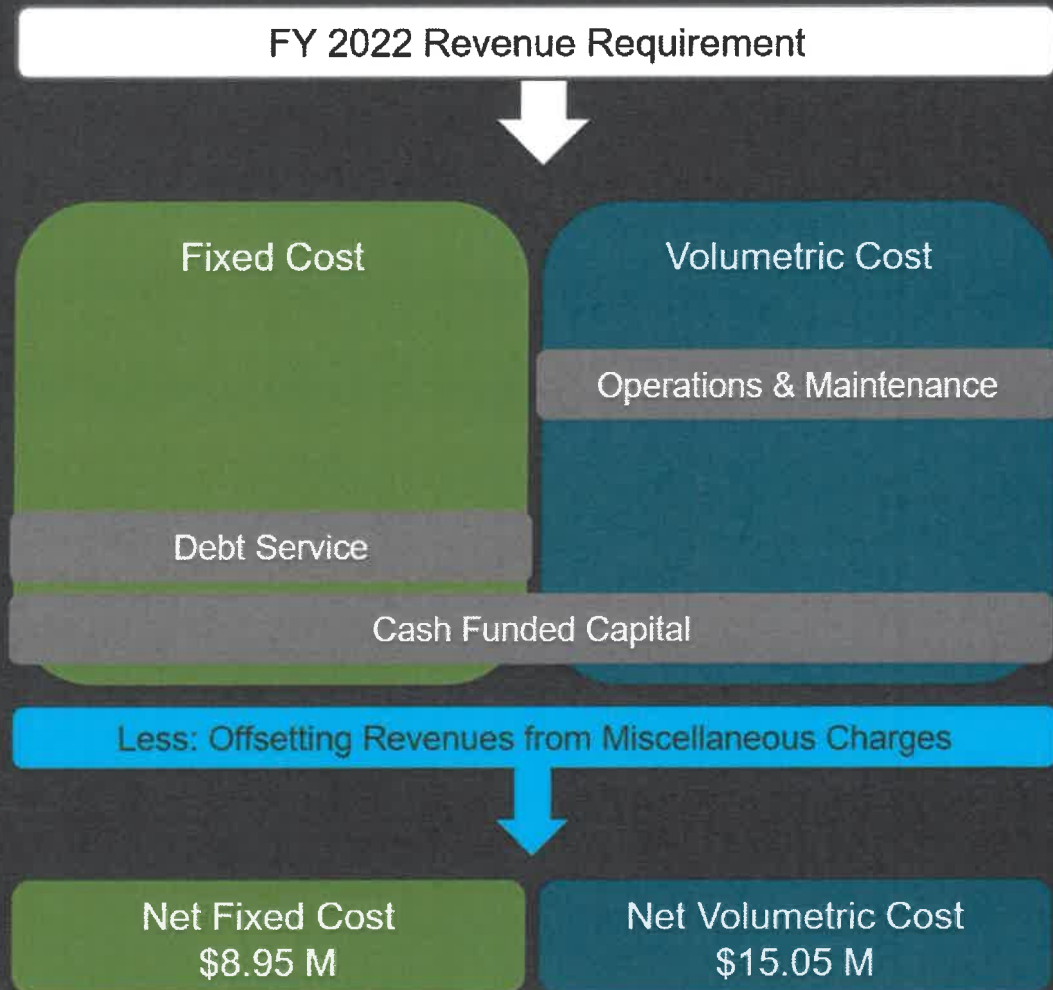


Borrowing



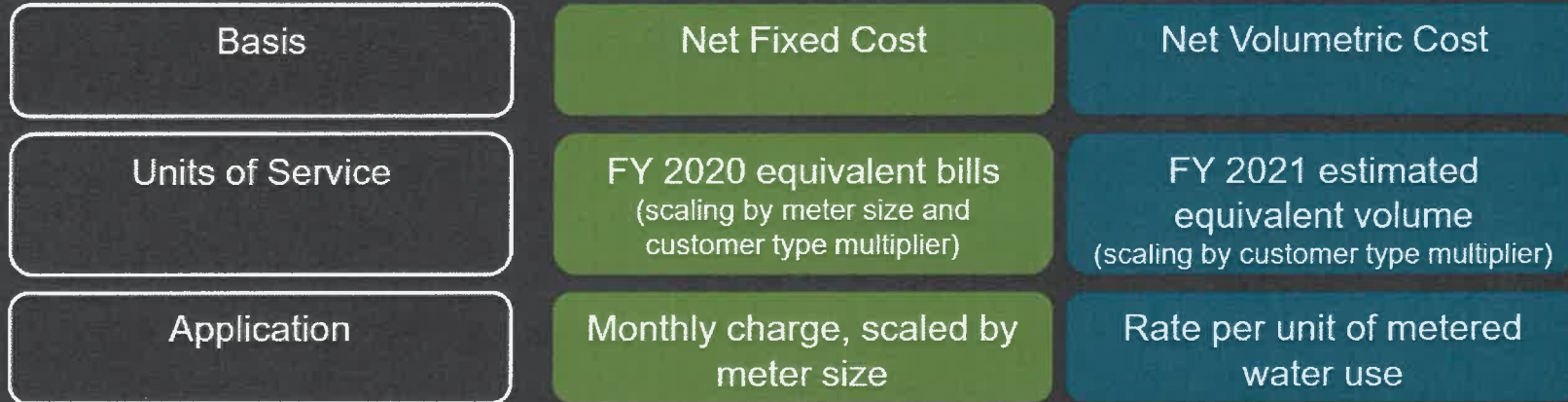


Sewer Cost Allocation Framework



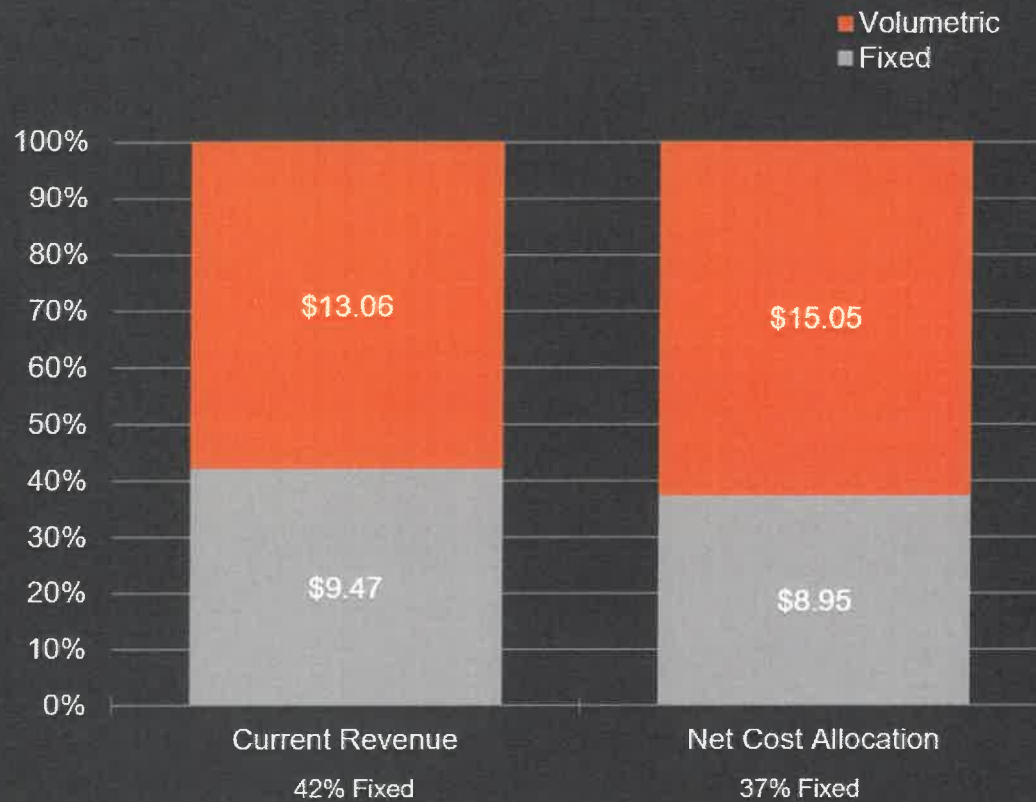


Sewer Rate Design Framework





Sewer Cost Allocation Results (\$M)



Overall revenue increase: 6.50%



Sewer Fixed Charge Calculation

Meter Size	FY 2021 Inside City	FY 2022 Proposed* Inside City	FY 2021 Outside City	FY 2022 Proposed* Outside City
5/8"	\$12.37	\$11.69	\$18.56	\$17.53
3/4"	\$18.57	\$17.53	\$27.86	\$26.29
1"	\$30.95	\$29.21	\$46.43	\$43.82
1.5"	\$61.88	\$58.43	\$92.82	\$87.64
2"	\$99.01	\$93.48	\$148.52	\$140.22
3"	\$198.03	\$186.96	\$297.05	\$280.44
4"	\$309.41	\$292.13	\$464.12	\$438.19
6"	\$618.84	\$584.26	\$928.26	\$876.39

*Effective April 1, 2022



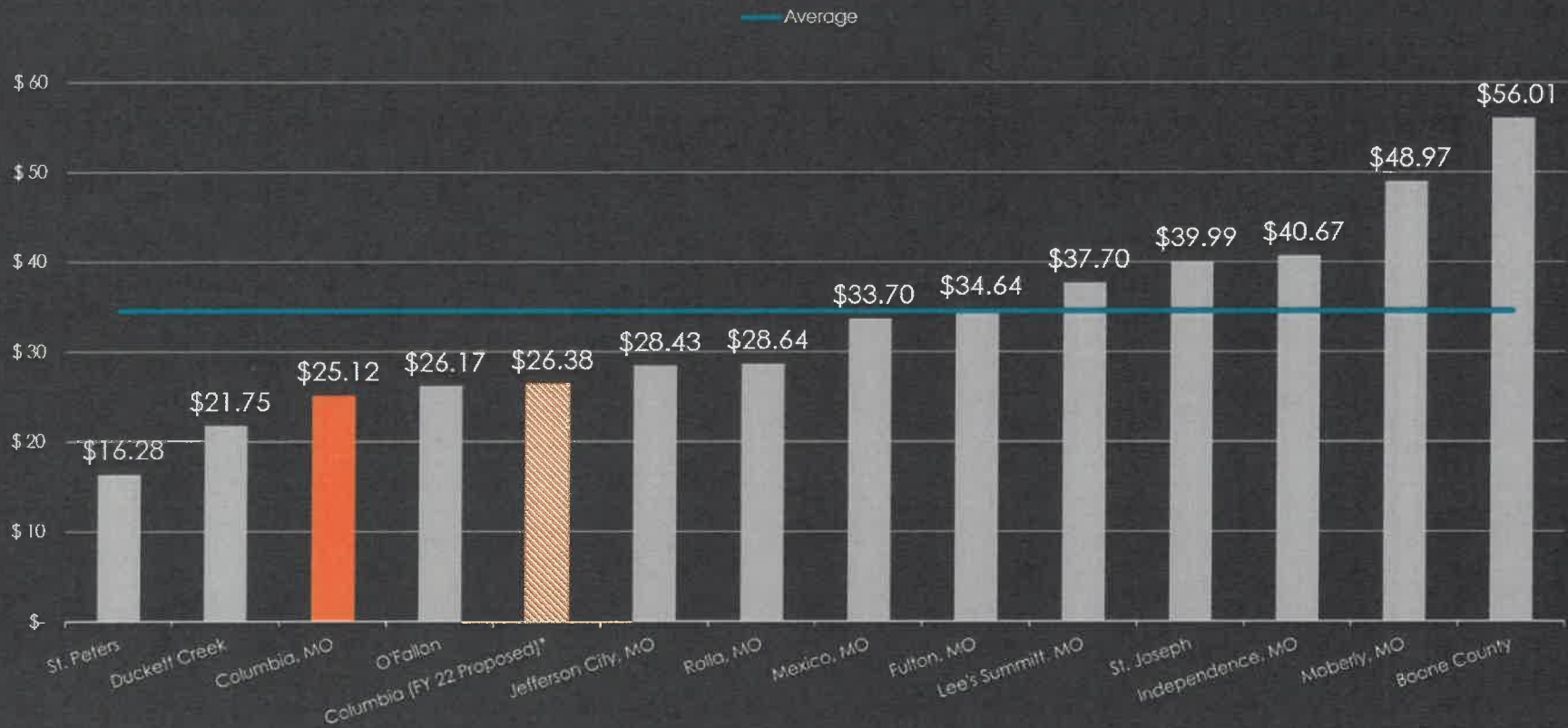
Sewer Volumetric Rate Calculation

Meter Size	FY 2021 Inside City	FY 2022 Proposed* Inside City	FY 2021 Outside City	FY 2022 Proposed* Outside City
Rate per CCF	\$2.55	\$2.94	\$3.83	\$4.41

*Effective April 1, 2022



Survey of Monthly Bill for Average 5/8" Customer (5 CCF)

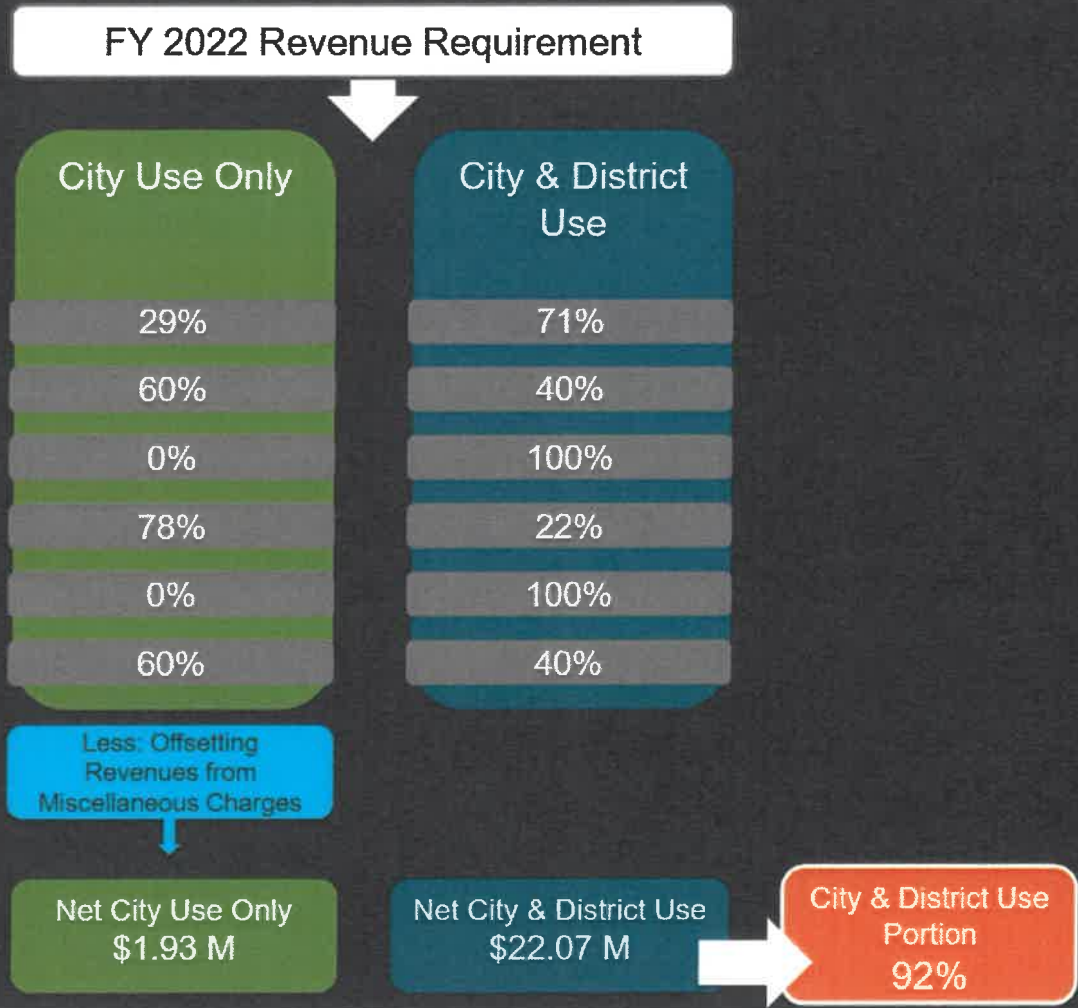


*Effective April 1, 2022



Boone County Regional Sewer District Rate Design

Expense Type	Allocation Criteria
Admin Costs	Weighted
Engineering Costs	5-Year CIP
Treatment Costs	City & District Use
Line Maintenance	Linear Feet of Pipe
Debt	City & District Use
Cash Funded Capital	5-Year CIP





Boone County Rate Calculation

Meter Size	FY 2021 BCRSD	Current Multiplier	FY 2022 Proposed* BCRSD	Proposed Multiplier
5/8"	\$9.90	0.80**	\$11.69	1.00
3/4"	\$14.86	0.80**	\$17.53	1.00
1"	\$24.76	0.80**	\$29.21	1.00
1.5"	\$49.50	0.80**	\$58.43	1.00
2"	\$79.21	0.80**	\$93.48	1.00
3"	\$158.42	0.80**	\$186.96	1.00
4"	\$247.53	0.80**	\$292.13	1.00
6"	\$495.07	0.80**	\$584.26	1.00
Rate per CCF	\$2.04	0.80**	\$2.56	0.87

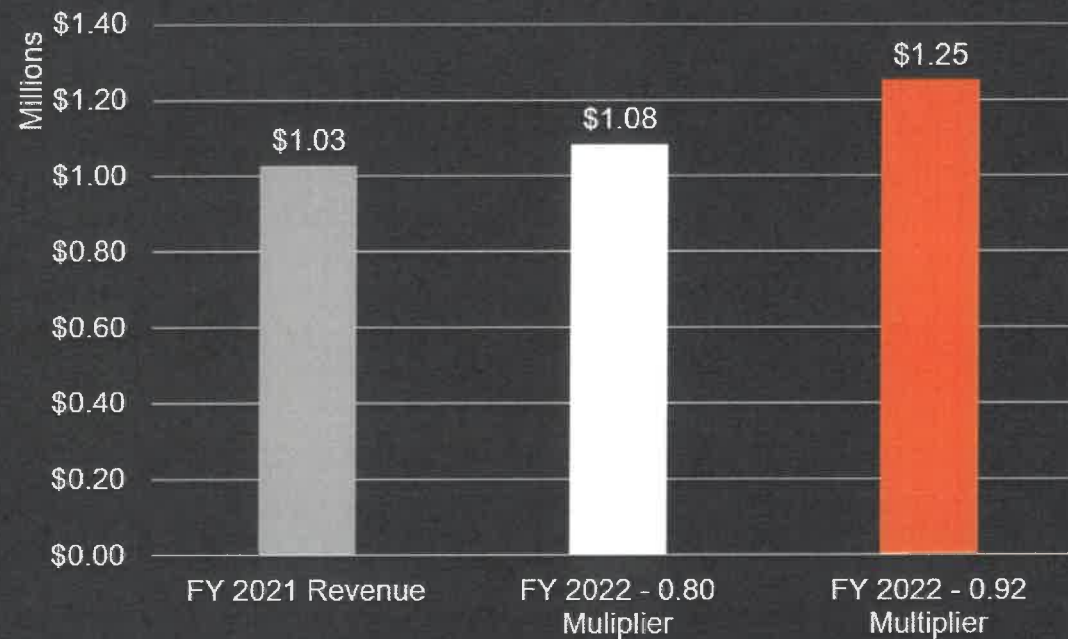
Net Rate Impact
92%

*Effective April 1, 2022

**Some customers receive 1.00x fixed charge.



Boone County Rate Option Results (\$M)





Sewer Connection Fees



Connection Fee Methodology

Methodology	Description	Use of System Dev. Fee Revenues	Appropriate For
Buy-In Method	Fees are based on cost of constructing existing utility system	Revenues can be used for reimbursement of existing costs & rehab	System with ample existing capacity to sell
Incremental Cost Method	Fees are based on planned capital improvements	Revenues can be used for expansion related capital projects	System with no/very limited existing capacity to sell
Combined Method	Fees are based on cost of existing system and planned capital improvements	Revenues can be used for expansion related capital projects and existing costs	System with existing capacity to sell and with significant growth related capital projects



System Development Fee Calculation

$$\text{System Development Fee} = \frac{\text{Value of System} - \text{Credits}}{\text{System Capacity}}$$

1) Value of Utility System

- Asset value plus expansion related CIP

2) Credits

- Outstanding principal on existing utility debt, grants, contributions

3) System Capacity

- Total capacity in utility system in terms of equivalent units (total capacity divided by level of service for 1 unit)



CONNECTION FEES

Functional Component:	Conveyance / Pumping	Treatment / Disposal	Total
Gross Plant in Service Value	\$ 297,754,847	\$ 102,857,503	\$ 400,612,350
Construction Work in Progress	6,139,843	2,120,969	8,260,812
Gross System Value	\$ 303,894,689	\$ 104,978,473	\$ 408,873,162
Less:			
Principal Credit	\$ 65,891,057	\$ 22,761,643	\$ 88,652,700
Specific Asset Contributions/Exclusions	95,066,918	1,191,805	96,258,724
Net System Value	\$ 142,936,714	\$ 81,025,024	\$ 223,961,738

Fee Calculation:

Capacity			
Million Gallons Per Day (MGD)	25.22	25.22	25.22
Level of Service (gpd)	300	300	300
Equivalent Residential Units	84,067	84,067	84,067
Initial Capacity Cost per ERU	\$ 1,700	\$ 964	\$ 2,664
Escalation Factor to Effective Year			5.00%
Calculated Fee per ERU			\$ 2,797
Current Fee per ERU			2,400
Dollar Change			\$ 397
Percent Change			17%



CONNECTION FEES

Meter Size	Meter Equivalents	Current Connection Fee	Calculated Connection Fee	\$ Difference
5/8"	1.00	\$ 2,400	\$ 2,797	\$ 397
3/4"	1.50	\$ 3,600	\$ 4,196	\$ 596
1"	2.50	\$ 6,000	\$ 6,993	\$ 993
1.5"	5.00	\$ 12,000	\$ 13,986	\$ 1,986
2"	8.00	\$ 19,200	\$ 22,378	\$ 3,178
3"	16.00	\$ 38,400	\$ 44,755	\$ 6,355
4"	25.00	\$ 60,000	\$ 69,930	\$ 9,930
6"	50.00	\$ 120,000	\$ 139,860	\$ 19,860
8"	80.00	\$ 192,000	\$ 223,776	\$ 31,776
10"	115.00	\$ 276,000	\$ 321,678	\$ 45,678
12"	215.00	\$ 516,000	\$ 601,398	\$ 85,398



Solid Waste



What is the cost to **empty** your trash and recycling bins?

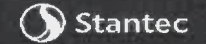


Source: FY 2022 Budget



CITY OF COLUMBIA, MO - SOLID WASTE

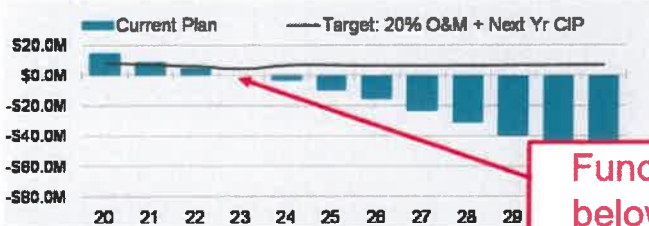
No future rate increases



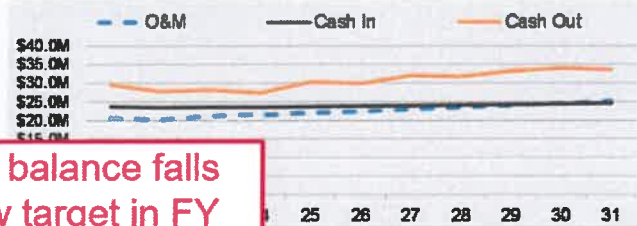
Calc Save Print Last Over

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2023 - FY 2028	
Override ▶	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Cumulative	
Rate Revenue 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%
Total Residential Bill	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37	\$17.37		

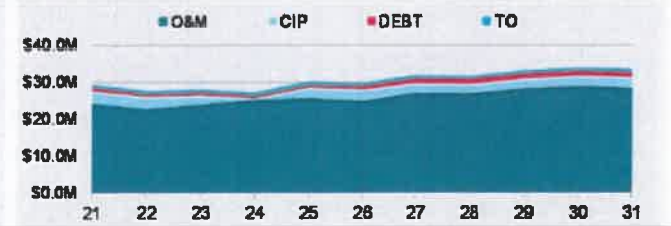
Operating Fund



Revenues vs. Expenses



Expenses by Type

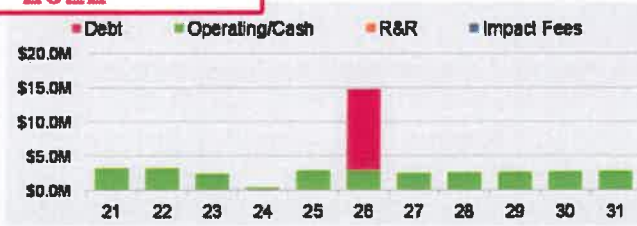


Fund balance falls below target in FY 2022

CIP Spending



Borrowing



Borrowing





CITY

7.5% rate increase in FY 22 (April 1st),
7.5% in FY 23, 5% in FY 24,
3% thereafter



CALC SAVE CTRL LAST OVR

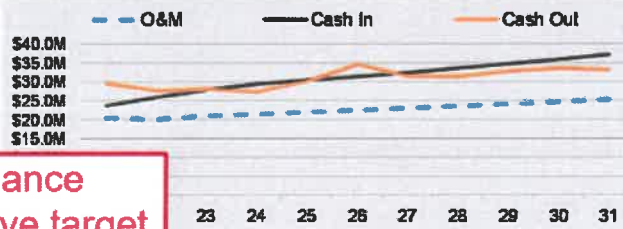
	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2023	FY 2028
Override ▶	0.00%	7.50%	7.50%	5.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	Cumulative	
Rate Revenue Plan	0.00%	7.50%	7.50%	5.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	28.67%	49.11%
Total Residential Bill	\$17.37	\$18.67	\$20.07	\$21.07	\$21.70	\$22.35	\$23.02	\$23.71	\$24.42	\$25.15	\$25.90		

Operating Fund

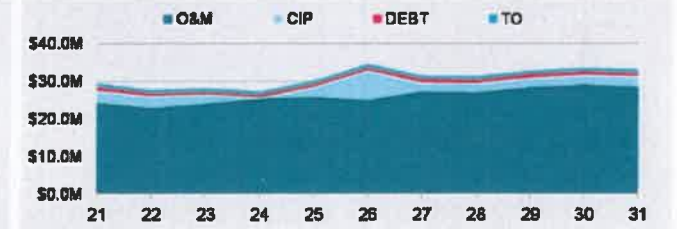


Fund balance remains above target in every year

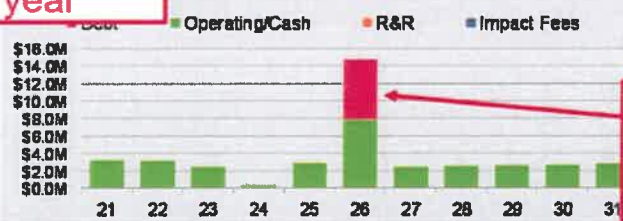
Revenues vs. Expenses



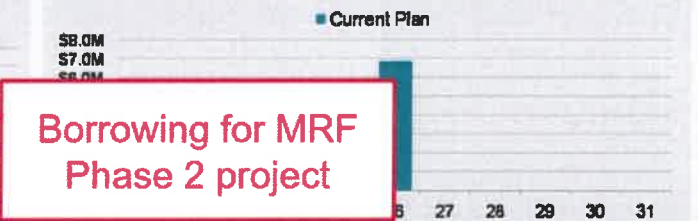
Expenses by Type



CIP Spending



Borrowing



Borrowing for MRF Phase 2 project

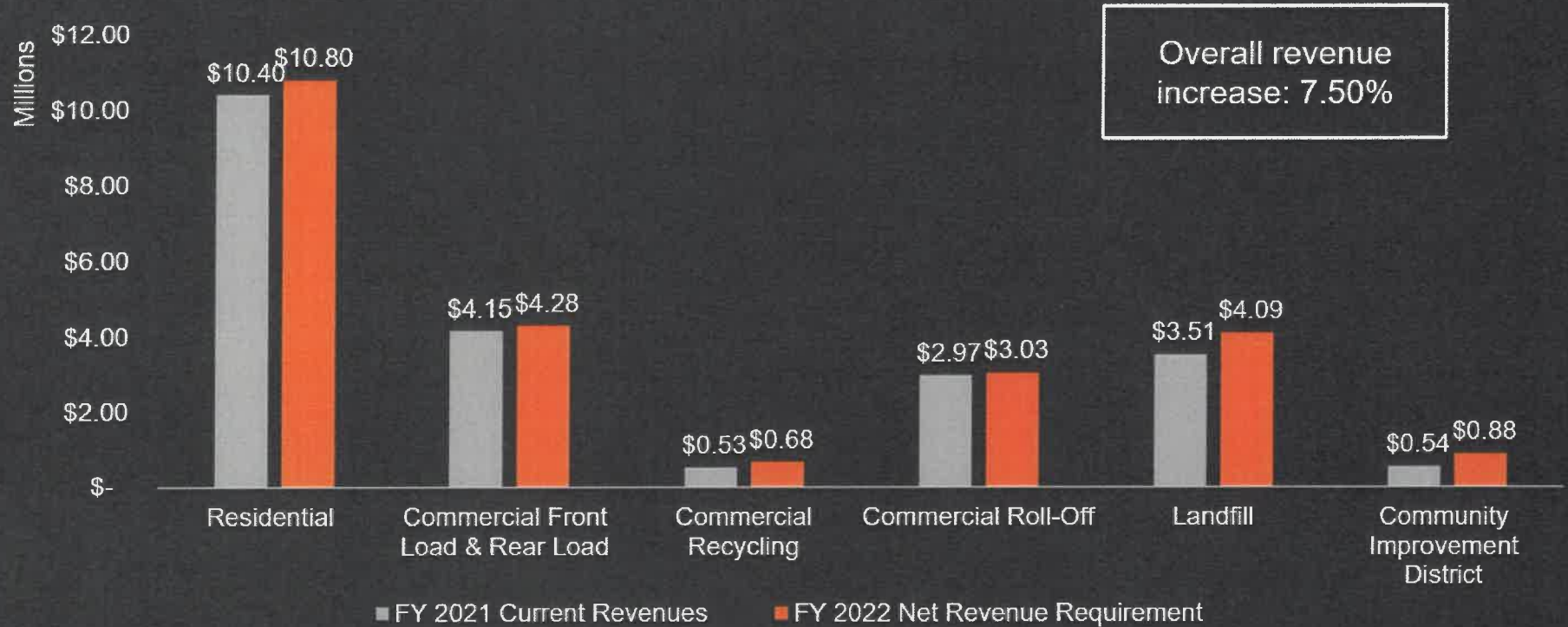


Solid Waste Cost Allocation Framework





Solid Waste Cost Allocation Results





Solid Waste Rate Design Framework

Basis		Units of Service		Application	
Residential Curbside		Equivalent billing units (per container, scaled for multi-family)		Monthly charge per unit	
Residential Recycling					
Commercial Front Load & Rear Load Collection	Commercial Front Load & Rear Load Disposal	Equivalent Collection / Disposal Billing Factor (scaling by container & frequency)		Monthly charge, based on container size & collection frequency	
Fill Sized Roll-Off Tipping Cost	Fill Sized Roll-Off Remainder	Roll-Off Tonnage	Roll-Off Pulls	Tipping Fee	Fee per Pull
Mini Roll-Off Tipping Cost	Mini Roll-Off Remainder	Roll-Off Tonnage	Roll-Off Pulls	Tipping Fee	Fee per Pull
Landfill		Landfill Tonnage		Tipping Fee	
Community Improvement District		Equivalent Billing Units (scaled by industry factor, size, & freq.)		Monthly charge	

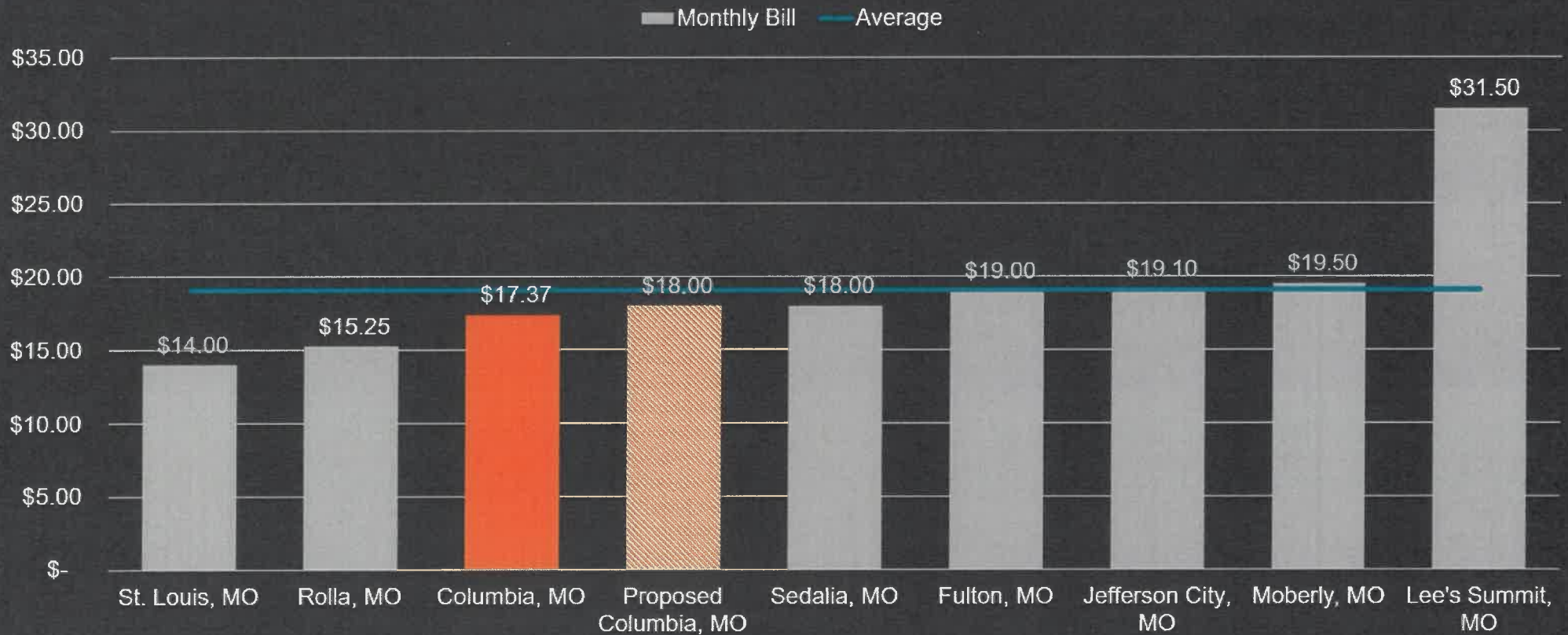


Residential Solid Waste Rates



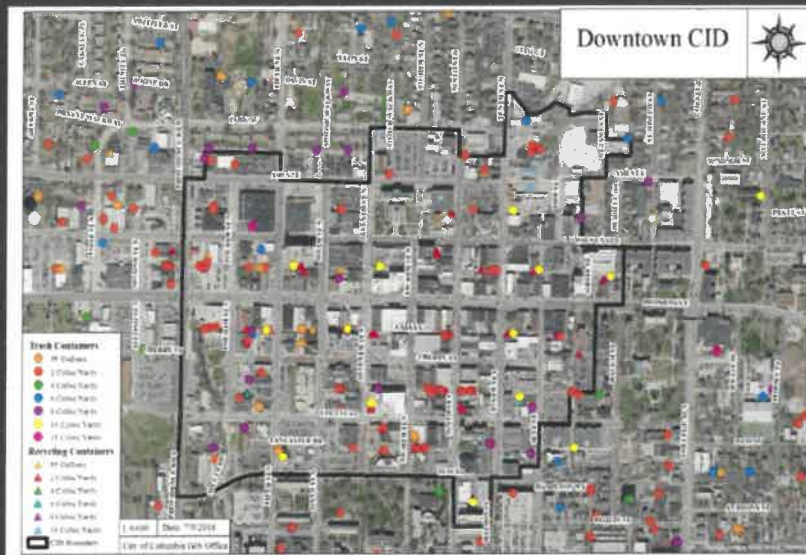


Survey of Monthly Bill for Residential Customers





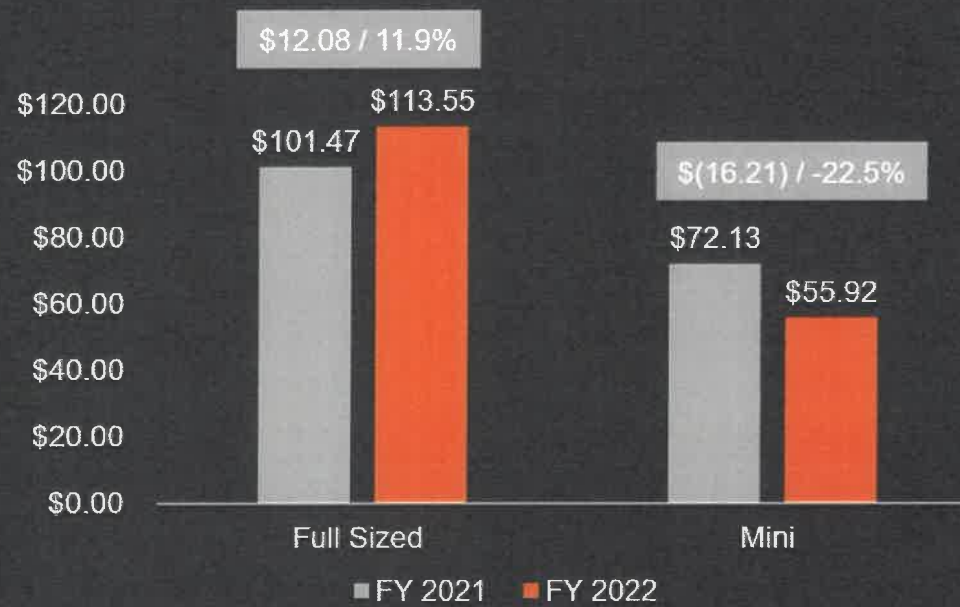
Community Improvement District



Customer Type	Calculated Fees	Change from Current
Container - Downtown Bank (large)	\$243.73	62.3%
Container - Downtown Bank (med)	\$162.49	116.4%
Container - Downtown Bank (small)	\$81.24	229.5%
Container - Downtown Church (large)	\$158.96	67.1%
Container - Downtown Church (small)	\$52.99	252.8%
Container - Downtown Industrial (med)	\$423.89	35.2%
Container - Downtown Industrial (small)	\$211.94	31.2%
Container - Downtown Lodging (large)	\$614.63	3.3%
Container - Downtown Lodging (med)	\$408.76	39.0%
Container - Downtown Office (large)	\$286.12	61.4%
Container - Downtown Office (med)	\$190.75	101.2%
Container - Downtown Office (small)	\$95.37	179.7%
Container - Downtown Restaurant (large)	\$551.05	49.7%
Container - Downtown Restaurant (med)	\$367.37	97.2%
Container - Downtown Restaurant (small)	\$183.68	202.8%
Container - Downtown Retail (large)	\$222.54	31.3%
Container - Downtown Retail (med)	\$148.36	72.5%
Container - Downtown Retail (small)	\$74.18	147.7%
Residential CID	\$16.30	-15.2%



Roll Off Rates





Front Load/Rear Load Rates

- Combine front load and rear load rates to one uniform schedule
- Rescale pricing based on collection/disposal effort

Current Front Load Rates

Container Size	Collection Frequency					
	1	2	3	4	5	6
2 Yard	\$89.48	\$143.81	\$210.92	\$290.84	\$383.54	\$489.02
4 Yard	\$103.74	\$185.97	\$289.50	\$414.35	\$560.52	\$727.95
6 Yard	\$122.36	\$228.61	\$360.43	\$517.80	\$700.77	\$909.31
8 Yard	\$139.88	\$276.14	\$446.47	\$650.93	\$889.48	\$1,162.12

Current Rear Load Rates

Container Size	Collection Frequency					
	1	2	3	4	5	6
Roll Cart	\$26.10	\$40.75	\$58.60	\$79.64	\$103.88	\$131.31
2 Yard	\$104.39	\$162.99	\$234.38	\$318.55	\$415.50	\$525.25

Calculated Front/Rear Load Rates

Container Size	Collection Frequency					
	1	2	3	4	5	6
Roll Cart	\$38.92	\$77.83	\$116.75	\$155.66	\$194.58	\$233.49
2 Yard	\$47.44	\$94.89	\$142.33	\$189.77	\$237.21	\$284.66
4 Yard	\$94.89	\$189.77	\$284.66	\$379.54	\$474.43	\$569.31
6 Yard	\$142.33	\$284.66	\$426.99	\$569.31	\$711.64	\$853.97
8 Yard	\$189.77	\$379.54	\$569.31	\$759.08	\$948.86	\$1,138.63



Landfill Tonnage Rates

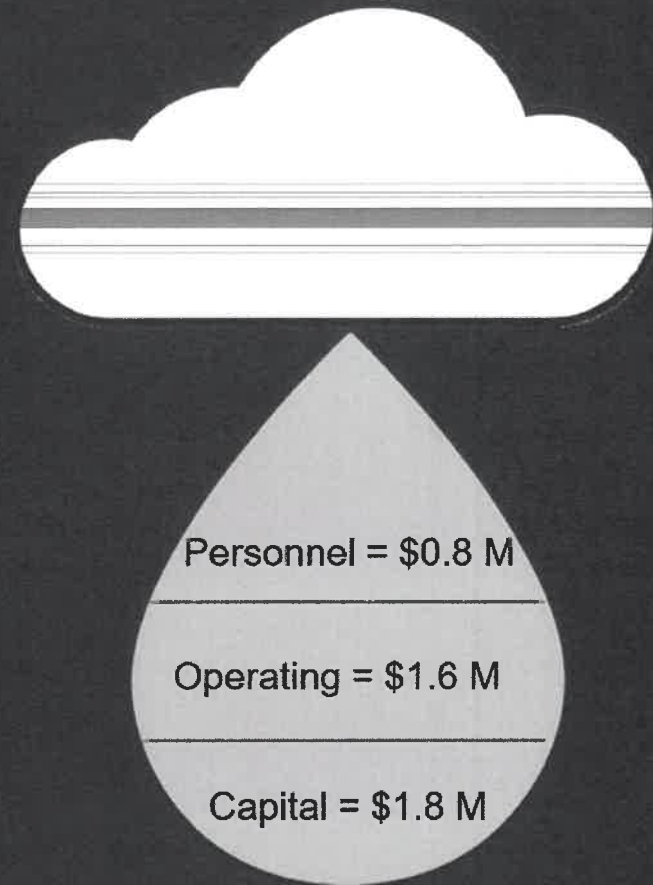




Stormwater



What is the cost to **manage** the rain that falls in the city?



Source: FY 2022 Budget



CITY OF COLUMBIA, MO - S

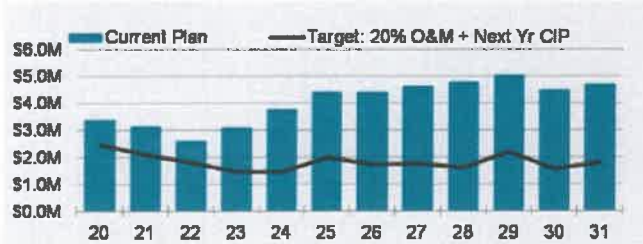


CALC SAVE CTRL LAST OVR

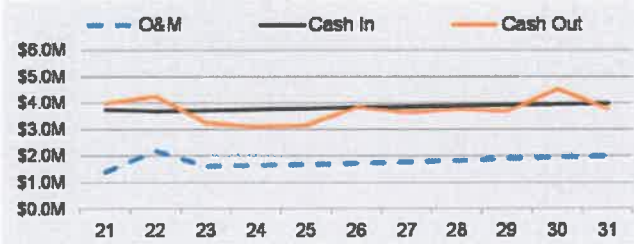
No future rate increases

	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	FY 2031	FY 2023	FY 2028
Stormwater 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%

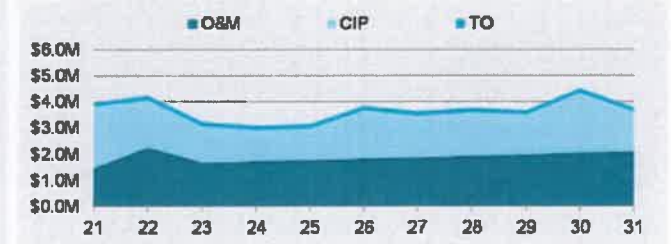
Operating Fund



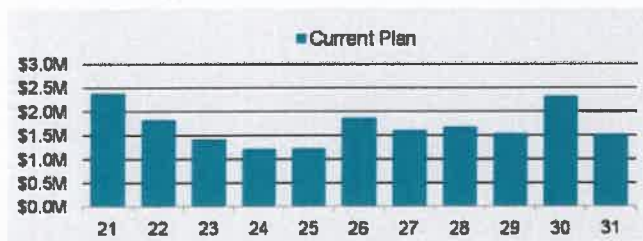
Revenues vs. Expenses



Expenses by Type



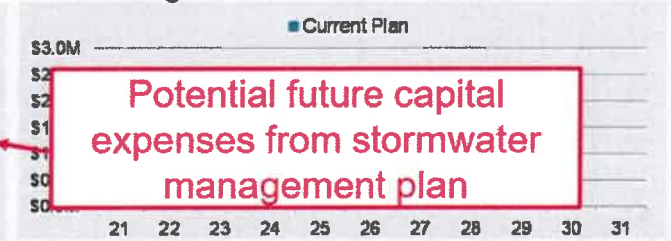
CIP Spending



CIP Funding



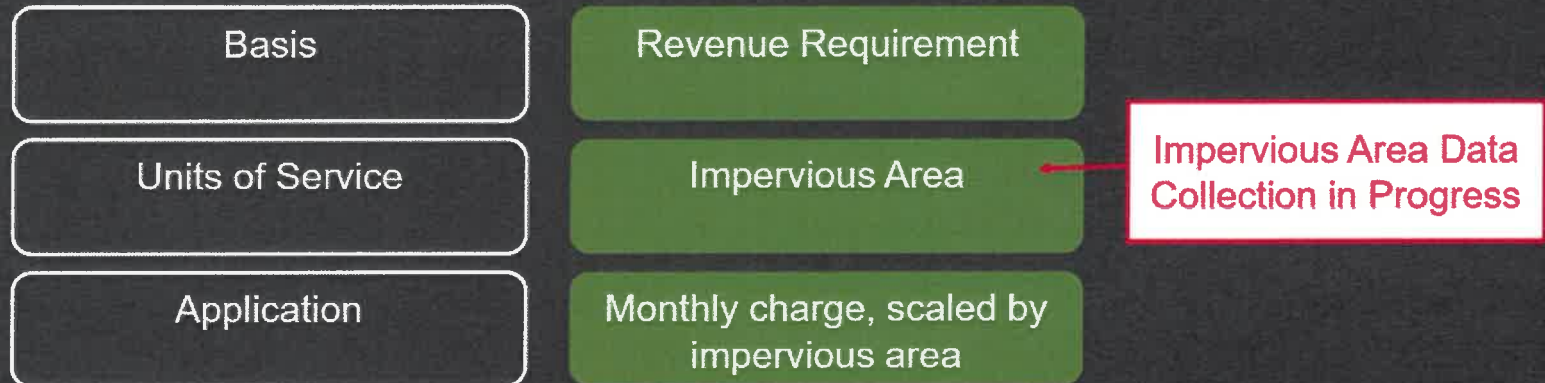
Borrowing



Potential future capital expenses from stormwater management plan

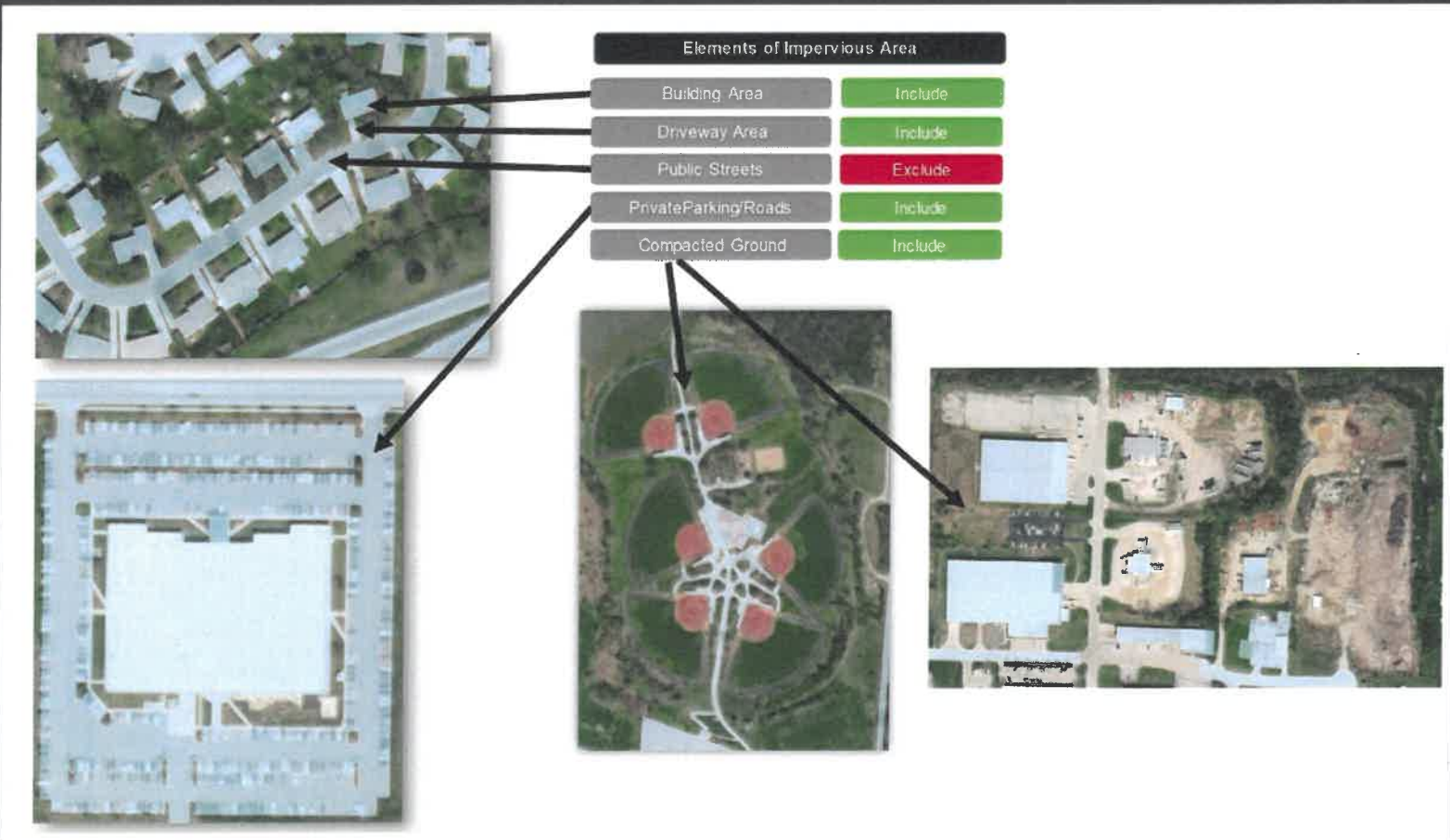


Stormwater Rate Design Framework





Impervious Area Considerations



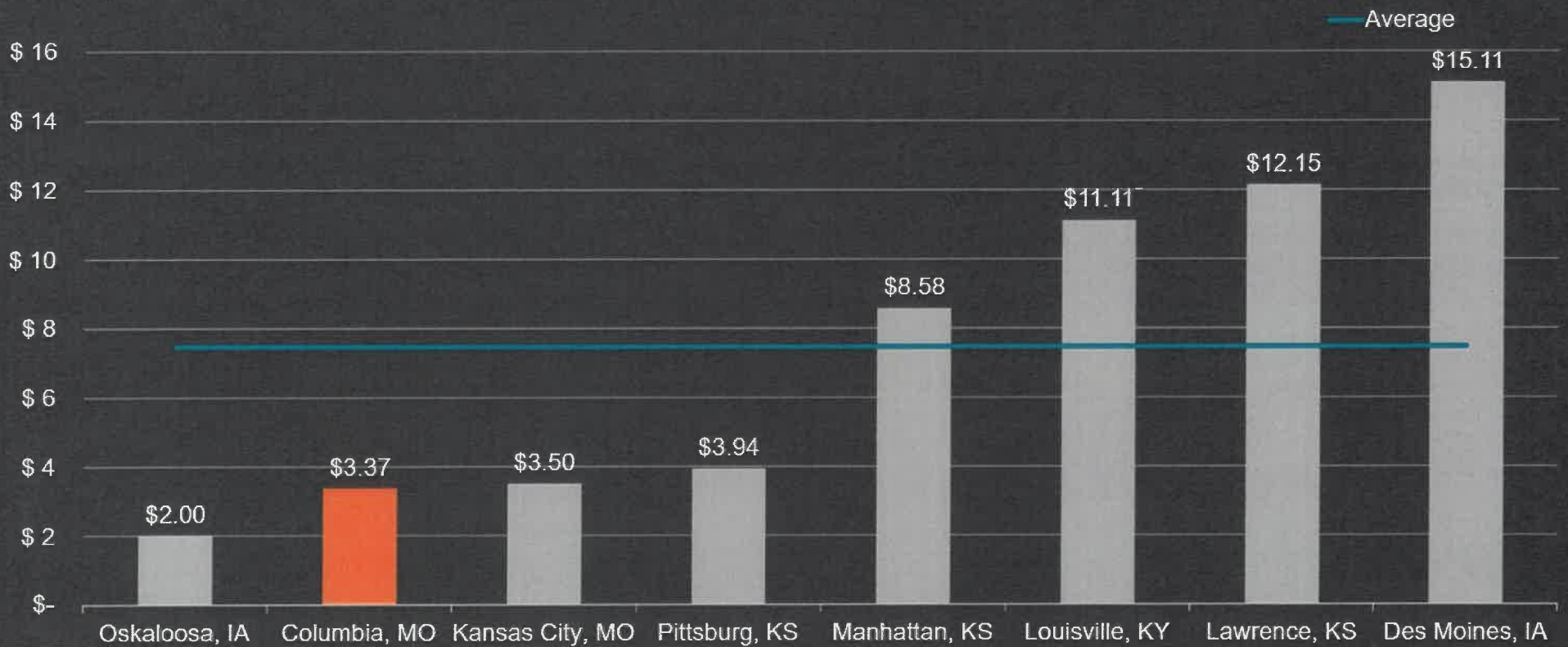


Stormwater Rate Design Timeline

Task	Month														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Define Impervious Area	█														
Impervious Area Identification		█	█	█	█	█	█								
Impervious Area Cut to Parcels					█	█	█								
Calculation of Stormwater Rates							█	█	█	█	█				
Council Workshops & Public Outreach										█	█	█	█		
Public Referendum													█		
Billing System Integration													█	█	
Stormwater Fee Changes Implemented															█



Survey of Monthly Bill for Average Residential Customer (2,000 sq. ft. main floor)





Summary



RESIDENTIAL BILL COMBINED BILL IMPACT

	FY 2021	FY 2022 (April)	Change \$	Change %
Sewer (5 CCF)	\$25.12	\$26.38	\$1.26	5.00%
Solid Waste	\$17.37	\$18.00	\$0.63	3.63%
Stormwater	\$3.96	\$3.96	\$0.00	0.00%
Total	\$46.45	\$48.34	\$1.89	4.07%



Summary of Recommendations

- Adopt 5-year plan of rate increases for sewer and solid waste (FY 2022 effective April 1, 2022)
- Make rate structure adjustments for sewer and solid waste
- Revisit BCRSD contracts to incorporate multiplier to volume rate based on rate design analysis
- Collect impervious area data and perform stormwater cost allocation and rate design
- Implement calculated Sewer connection fees