



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











Sewer Cost Allocation Framework

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Sewer Rate Design Framework



Sewer Cost Allocation Results (\$M)



■ Volumetric ■ Fixed

Sewer Fixed Charge Calculation

Meter	FY 2021	FY 2022	FY 2021	FY 2022
Size	Inside City	Proposed*	Outside	Proposed*
		Inside City	City	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)



Average

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SEWER RATE DESIGN

92%

Boone County Regional Sewer District Rate Design

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Boone County Rate Calculation

Meter	FY 2021	Current	FY 2022	Proposed
Size	BCRSD	Multiplier	Proposed*	Multiplier
			BCRSD	
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	\$2.04	0.80**	\$2.56	0.87
CCF				

Net Rate Impact 92% 18

*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

System Development Fee =

Value of System - Credits

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 / Treatment / Pumping 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) Level of Service (gpd) Equivalent Residential Units		25.22 300 84,067		25.22 300 84,067]	25.22 300 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 Percent Change					\$	397 17%

CONNECTION FEES

Meter Size	Meter Equivalents	Cur	rent 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

SOLID WASTE FUND - DIAGNOSTIC

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SOLID WASTE FUND - RECOMMENDED RATE INCREASES





Solid Waste Cost Allocation Framework



Solid Waste Cost Allocation Results



Solid Waste Rate Design Framework

Ba	sis	Units o	of Service	Application		
Residentia	l Curbside I Recycling	Equivalen (per container, fa	t billing units , scaled for multi- mily)	Monthly cha	arge per unit	
Commercial Front Load & Rear Load Collection	Commercial Front Load & Rear Load Disposal	Equivalen Disposal E (scaling by cont	t Collection / Billing Factor tainer & frequency)	Monthly char container siz frequ	rge, based on e & collection uency	
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	
Lan	Landfill	Landfill Tonnage		Tipping Fee		
Community Impr	Equivalent (scaled by industr	t Billing Units ry factor, size, & freq.	Monthly charge			

Residential Solid Waste Rates



Survey of Monthly Bill for Residential Customers



Community Improvement District



Customer Type	Calculated	Change from
	Fees	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)	\$409.76	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

			Collection I	requency		
Container Size	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 k	ates				
		_	Collection I	requency		
Container Size	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

	Collection Frequency									
Container Size	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

3		STORMWATER FUND											40
Financial Analysis & Management System By Stantec		YOF	COLUN	MBIA,	MO -	S	No futui increa	re rate ases				CALC SAVE CT	Stantec
	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%













Expenses by Type





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															

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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 %
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