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Date Testimony Prepared: April 23, 2019

**BEFORE THE
RATE COMMISSION OF
THE METROPOLITAN ST. LOUIS SEWER DISTRICT**

Wastewater Rate Change Proceeding - 2019

Rebuttal Testimony of

Michael P. Gorman

On behalf of

Missouri Industrial Energy Consumers

April 23, 2019



Project 10765

**BEFORE THE
 RATE COMMISSION OF
 THE METROPOLITAN ST. LOUIS SEWER DISTRICT
 WASTEWATER RATE CHANGE PROCEEDING - 2019**

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Rebuttal Testimony of Michael P. Gorman**

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**Michael P. Gorman
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BEFORE THE
RATE COMMISSION OF
THE METROPOLITAN ST. LOUIS SEWER DISTRICT

WASTEWATER RATE CHANGE PROCEEDING - 2019

Rebuttal Testimony of Michael P. Gorman

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q WHAT IS YOUR OCCUPATION?**

5 A I am a consultant in the field of public utility regulation and a Managing Principal of
6 Brubaker & Associates, Inc., energy, economic and regulatory consultants.

7 **Q PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

8 A This information is included in Appendix A to this testimony.

9 **Q ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

10 A I am appearing on behalf of the Missouri Industrial Energy Consumers ("MIEC"), a
11 group of large industrial customers of the Metropolitan St. Louis Sewer District
12 ("MSD" or "District").

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I. SUMMARY

2 **Q PLEASE SUMMARIZE YOUR RECOMMENDATIONS AND FINDINGS.**

3 A In my testimony I will recommend adjustments to the District’s proposal to increase its
4 wastewater revenue over its fiscal years (“FY”) 2021 through 2024. Second, I will
5 comment on the reasonable adjustments to its wastewater rates to reflect a need for
6 an increase in wastewater revenue, and to reflect its cost of providing service to its
7 various customer classes.

8 **I.A. Wastewater Revenue Requirement**

9 **Q PLEASE SUMMARIZE YOUR FINDINGS AND CONCLUSIONS RELATED TO THE**
10 **DISTRICT’S ESTIMATED WASTEWATER REVENUE DEFICIENCY.**

11 A As outlined in Table 1 below, the District is proposing to increase wastewater revenue
12 by about \$69 million during the FY 2021 through FY 2024 period (to \$510 million from
13 \$440 million). The District’s estimated increase per year (Column 1), along with my
14 estimated adjustment (Column 2), is shown below in Table 1.

TABLE 1		
<u>Annual Revenue Req.</u>		
(Millions)		
<u>Description</u>	<u>MSD Proposed</u>	<u>Adjusted</u>
	(1)	(2)
<u>Approved Rates</u>		
FY 2020	\$441	\$441
<u>Forecast Rates</u>		
FY 2021	\$453	\$441
FY 2022	\$471	\$450
FY 2023	\$490	\$465
FY 2024	<u>\$510</u>	<u>\$486</u>
FY 2020-2024	\$69	\$45
Schedule MPG-1.		

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1 As shown in Table 1 above, my adjustments reduce MSD's proposed revenue
2 increase by about \$24 million by FY 2024.

3 **Q PLEASE DESCRIBE THE ADJUSTMENTS YOU MADE TO MSD'S FORECASTED**
4 **WASTEWATER REVENUE REQUIREMENT OVER THE FY 2021 THROUGH**
5 **FY 2024 PERIOD.**

6 A I largely adopt MSD's revenue requirement model but with only three adjustments.
7 The adjustments include the following:

8 1. I revised the model to maintain the previously Board-approved financial
9 policy used to set MSD's revenue requirement. This includes a Capital
10 Improvement and Replacement Program ("CIRP") funding mix of 75%
11 debt/25% equity (or Pay-As-You-Go ("PAYGO") financing), and a debt
12 service coverage ("DSC") ratio of no less than 1.6x. MSD proposes to
13 revise this financial policy in this case to reflect a 60/40 debt and equity
14 financing mix and a minimum DSC of 1.8x.

15 I reject MSD's proposed changes to its financial policy because the
16 changes are not needed to support its bond rating and maintain its access
17 to capital under reasonable terms and prices, but the proposed financial
18 policy change will unnecessarily increase wastewater prices to MSD's
19 customers. Because reasonable prices are necessary to maintain MSD's
20 credit standing, I believe the proposed revision to the financial policy is not
21 reasonable or justified.

22 2. I adjusted MSD's projected interest rates on new tax exempt wastewater
23 utility revenue bonds with an AA rating. MSD assumed a 5% bond interest
24 rate. Current interest rates for these securities range from 2.5% to 3%,
25 and projected interest rates show a relatively flat interest rate outlook by
26 independent economists relative to current levels. I am proposing to use a
27 3% AA revenue bond interest rate as a conservative estimate of MSD's
28 interest rates on new AA rated utility revenue bond issues. I made no
29 other changes to MSD's Proposed System Indebtedness assumptions.

30 3. In order to follow the previously approved financial policy that MSD has
31 used to set rates, and maintain adequate DSC ratios, I set a wastewater
32 revenue requirement reflecting approximately a 70% bond funding and
33 30% PAYGO rate funding. This higher level of PAYGO was necessary in
34 order to meet the target DSC ratio over the forecast period.

35 4. I modified the proposed annual CIRP budget in calendar years 2023 and
36 2024. MSD's projections show an increase in annual CIRP spending in
37 FY 2023 and FY 2024 of around \$70 million in these two years relative to

1 FY 2021-2022. MSD's projections show a material decrease in CIRP in
2 the years FY 2025-FY 2028.

3 A review of MSD's projected CIRP spending in FY 2023 and FY 2024
4 shows certain projects that can be deferred to a future period. Adjusting
5 the CIRP annual spend in FY 2023/2024 allows for a more levelized level
6 of CIRP annual spending over the period FY 2021 through FY 2024, that
7 will continue in FY 2025 through FY 2028. In other words, this adjustment
8 creates more of a uniform levelized annual CIRP spending over the period
9 of FY 2021 through FY 2028.

10 MSD's proposal for a significant spike in CIRP spending in FY 2023 and
11 FY 2024 creates an unjustified need to increase wastewater rates in FY
12 2023 and FY 2024. The unnecessary wastewater rate increase can be
13 mitigated by deferring discretionary CIRP projects out over a few years.

14 Each of these adjustments will be described and supported below. My
15 adjustments were made to Exhibit MSD 52, St. Louis MSD Rate Financial Plan Model
16 FY21-24, following the instructions provided in Exhibit MSD 53, Rate Model Guide.

17 **I.B. Proposed Wastewater Rates**

18 **Q PLEASE SUMMARIZE MSD'S PROPOSED WASTEWATER RATE¹ INCREASE**
19 **PROPOSAL.**

20 A MSD is proposing four consecutive increases to its wastewater service charges at the
21 beginning of Fiscal Years ("FY") 2021 through FY 2024. The District is proposing
22 these rate increases in order to fund a four-year wastewater CIRP of approximately
23 \$1.5 billion. This CIRP is part of a larger CIRP needed to comply with a Consent
24 Decree ("CD") settlement with the U.S. Environmental Protection Agency ("EPA").

25 The wastewater user charges MSD proposes the Rate Commission approve
26 are listed in Exhibit MSD 1 at page ES-4. These proposed wastewater user charges
27 are included in the "Proposed" columns for FY21 through FY24 and are summarized
28 in my Table 2 below.

¹The terms "wastewater rates" and "wastewater user charges" are used interchangeably throughout this testimony.

TABLE 2
MSD Proposed Annual Rate Increases
(With Bond Financing)

Line	Description	Approved FY 2020	Proposed					Proposed Annual Increase							
			FY 2021	FY 2022	FY 2023	FY 2024	Amount				Percent				
			FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024	
Base Charge (\$/Bill)															
1	Billing & Collection	\$ 7.38	\$ 5.11	\$ 5.31	\$ 5.51	\$ 5.72	\$ (2.27)	\$ 0.20	\$ 0.20	\$ 0.21	-30.8%	3.9%	3.8%	3.8%	
2	System Availability	18.97	21.40	22.21	23.05	23.92	2.43	0.81	0.84	0.87	12.8%	3.8%	3.8%	3.8%	
3	Total Base Charge (Residential)	26.35	26.51	27.52	28.56	29.64	0.16	1.01	1.04	1.08	0.6%	3.8%	3.8%	3.8%	
Compliance Charge (\$/Bill)¹															
4	Tier 1	\$ 3.14	\$ 4.44	\$ 4.55	\$ 4.71	\$ 4.85	\$ 1.30	\$ 0.11	\$ 0.16	\$ 0.14	41.4%	2.5%	3.5%	3.0%	
5	Tier 2	62.61	62.16	63.64	65.80	67.67	(0.45)	1.48	2.16	1.87	-0.7%	2.4%	3.4%	2.8%	
6	Tier 3	137.75	133.20	136.37	140.99	144.98	(4.55)	3.17	4.62	3.99	-3.3%	2.4%	3.4%	2.8%	
7	Tier 4	203.49	177.60	181.83	187.98	193.30	(25.89)	4.23	6.15	5.32	-12.7%	2.4%	3.4%	2.8%	
8	Tier 5	266.10	222.00	227.29	234.98	241.63	(44.10)	5.29	7.69	6.65	-16.6%	2.4%	3.4%	2.8%	
Total Non-Residential Service Charge²															
9	Tier 1	\$ 29.49	\$ 30.95	\$ 32.07	\$ 33.27	\$ 34.49	\$ 1.46	\$ 1.12	\$ 1.20	\$ 1.22	5.0%	3.6%	3.7%	3.7%	
10	Tier 2	88.96	88.67	91.16	94.36	97.31	(0.29)	2.49	3.20	2.95	-0.3%	2.8%	3.5%	3.1%	
11	Tier 3	164.10	159.71	163.89	169.55	174.62	(4.39)	4.18	5.66	5.07	-2.7%	2.6%	3.5%	3.0%	
12	Tier 4	229.84	204.11	209.35	216.54	222.94	(25.73)	5.24	7.19	6.40	-11.2%	2.6%	3.4%	3.0%	
13	Tier 5	292.45	248.51	254.81	263.54	271.27	(43.94)	6.30	8.73	7.73	-15.0%	2.5%	3.4%	2.9%	
Volume Charge															
14	Metered - \$/Ccf	\$ 4.87	\$ 5.02	\$ 5.21	\$ 5.41	\$ 5.62	\$ 0.15	\$ 0.19	\$ 0.20	\$ 0.21	3.1%	3.8%	3.8%	3.9%	
15	Unmetered (\$/Bill per fixture														
16	Per Room	2.89	2.97	3.09	3.21	3.34	0.08	0.12	0.12	0.13	2.8%	4.0%	3.9%	4.0%	
17	Per Water Closet	10.72	11.07	11.49	11.93	12.38	0.35	0.42	0.44	0.45	3.3%	3.8%	3.8%	3.8%	
18	Per Bath	8.93	9.23	9.58	9.94	10.32	0.30	0.35	0.36	0.38	3.4%	3.8%	3.8%	3.8%	
19	Per Separate Shower	8.93	9.23	9.58	9.94	10.32	0.30	0.35	0.36	0.38	3.4%	3.8%	3.8%	3.8%	
Extra Strength Surcharges (\$/ton)¹															
15	Suspended Solids > 300 mg/l	\$ 283.87	\$314.00	\$321.47	\$332.35	\$341.76	\$ 30.13	\$ 7.47	\$10.88	\$ 9.41	10.6%	2.4%	3.4%	2.8%	
16	BOD > 300 mg/l	708.56	898.00	919.37	950.46	977.36	189.44	21.37	31.09	26.90	26.7%	2.4%	3.4%	2.8%	
17	COD > 600 mg/l	354.30	449.00	459.69	475.24	488.69	94.70	10.69	15.55	13.45	26.7%	2.4%	3.4%	2.8%	

ccf = hundred cubic feet (approx. 748 gallons)
mg/l = milligram per liter

¹Applicable only to non-residential customers.
²Total Base Charge plus Tiered Compliance Charge.

1 **Q ARE YOU PROPOSING ANY CHANGES TO MSD'S PROPOSED WASTEWATER**
2 **RATES OVER THE FORECAST REVENUE REQUIREMENT PERIOD?**

3 **A** Yes. I identified several concerns I have with MSD's cost of service model used to
4 develop its proposed wastewater rates.

5 First, in its proof of revenue, MSD did not use the rates it identified as
6 proposed wastewater rates during the forecast period. Rather, it used a different set
7 of rates than its revenue proof model. This revenue proof model then was used to
8 identify the amount of rate increase needed to adjust current revenues to the
9 forecasted revenue requirement. Adjusting this revenue proof model to reflect MSD's

1 proposed wastewater rates increases the amount of revenue that would be generated
2 under MSD's proposed wastewater rates.

3 Second, I proposed adjustments to MSD's cost of service that more accurately
4 reflect MSD's cost of service. MSD inappropriately allocated over 60% of the cost
5 associated with infiltration and inflow ("I/I") on a throughput or volume basis. I have
6 several disagreements I have with MSD on I/I cost classification. Allocating 60% of
7 collector system infrastructure costs on the basis of volume does not accurately
8 describe how capacity on the collector system is designed in order to accommodate
9 both wastewater and I/I flow. Further, the length of the collector system, number of
10 manholes and lift stations, and other points of water infiltration are directly related to
11 the number of customers on the system and the length of collector system necessary
12 to connect these customers to the system. For all these reasons, I/I costs are more
13 accurately reflected as 50% customer and 50% throughput, but more accurately, the
14 percentage of I/I costs allocated on customer should be much higher than 50%.
15 However, for the sake of limiting the issues in this case, I am using a conservative
16 classification of I/I costs of 50% customer and 50% volume.

17 With these adjustments to the class cost of service study, I am proposing a
18 modification to the District's wastewater rate design to incorporate more revenue
19 collections in fixed monthly charges and less in volumetric charges. An additional
20 benefit of this rate design is that it will produce more stable and predictable revenue
21 collections for MSD, which will support its increasing debt load at its current strong
22 AA-rated credit rating.

23 The wastewater rates that accomplish these objectives are shown below in
24 Table 3.

TABLE 3
MIEC Proposed Annual Rate Increases
(With Bond Financing)

Line	Description	Approved FY 2020	Proposed					Proposed Annual Increase							
			FY 2021	FY 2022	FY 2023	FY 2024	Amount				Percent				
			FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024	
Base Charge (\$/Bill)															
1	Billing & Collection	\$ 7.38	\$ 5.11	\$ 5.31	\$ 5.51	\$ 5.72	\$ (2.27)	\$ 0.20	\$ 0.20	\$ 0.21	-30.8%	3.9%	3.8%	3.8%	
2	System Availability	<u>18.97</u>	<u>21.40</u>	<u>22.21</u>	<u>23.05</u>	<u>23.92</u>	<u>2.43</u>	<u>0.81</u>	<u>0.84</u>	<u>0.87</u>	12.8%	3.8%	3.8%	3.8%	
3	Total Base Charge (Residential)	26.35	26.51	27.52	28.56	29.64	0.16	1.01	1.04	1.08	0.6%	3.8%	3.8%	3.8%	
Compliance Charge (\$/Bill)¹															
4	Tier 1	\$ 3.14	\$ 4.44	\$ 4.55	\$ 4.71	\$ 4.85	\$ 1.30	\$ 0.11	\$ 0.16	\$ 0.14	41.4%	2.5%	3.5%	3.0%	
5	Tier 2	62.61	62.16	63.64	65.80	67.67	(0.45)	1.48	2.16	1.87	-0.7%	2.4%	3.4%	2.8%	
6	Tier 3	137.75	133.20	136.37	140.99	144.98	(4.55)	3.17	4.62	3.99	-3.3%	2.4%	3.4%	2.8%	
7	Tier 4	203.49	177.60	181.83	187.98	193.30	(25.89)	4.23	6.15	5.32	-12.7%	2.4%	3.4%	2.8%	
8	Tier 5	266.10	222.00	227.29	234.98	241.63	(44.10)	5.29	7.69	6.65	-16.6%	2.4%	3.4%	2.8%	
Total Non-Residential Service Charge²															
9	Tier 1	\$ 29.49	\$ 30.95	\$ 32.07	\$ 33.27	\$ 34.49	\$ 1.46	\$ 1.12	\$ 1.20	\$ 1.22	5.0%	3.6%	3.7%	3.7%	
10	Tier 2	88.96	88.67	91.16	94.36	97.31	(0.29)	2.49	3.20	2.95	-0.3%	2.8%	3.5%	3.1%	
11	Tier 3	164.10	159.71	163.89	169.55	174.62	(4.39)	4.18	5.66	5.07	-2.7%	2.6%	3.5%	3.0%	
12	Tier 4	229.84	204.11	209.35	216.54	222.94	(25.73)	5.24	7.19	6.40	-11.2%	2.6%	3.4%	3.0%	
13	Tier 5	292.45	248.51	254.81	263.54	271.27	(43.94)	6.30	8.73	7.73	-15.0%	2.5%	3.4%	2.9%	
Volume Charge															
14	Metered - \$/Ccf	\$ 4.87	\$ 4.70	\$ 4.75	\$ 4.90	\$ 5.11	\$ (0.17)	\$ 0.05	\$ 0.14	\$ 0.22	-3.5%	1.1%	3.0%	4.4%	
15	Unmetered (\$/Bill per fixture														
16	Per Room	2.89	2.79	2.83	2.93	3.07	(0.10)	0.04	0.10	0.14	-3.6%	1.5%	3.5%	4.9%	
17	Per Water Closet	10.72	10.41	10.57	10.94	11.48	(0.31)	0.16	0.37	0.54	-2.8%	1.5%	3.5%	4.9%	
18	Per Bath	8.93	8.69	8.82	9.13	9.57	(0.24)	0.13	0.31	0.45	-2.7%	1.5%	3.5%	4.9%	
19	Per Separate Shower	8.93	8.69	8.82	9.13	9.57	(0.24)	0.13	0.31	0.45	-2.7%	1.5%	3.5%	4.9%	
Extra Strength Surcharges (\$/ton)¹															
15	Suspended Solids > 300 mg/l	\$ 283.87	\$277.81	\$284.81	\$297.73	\$315.43	\$ (6.06)	\$ 7.00	\$12.92	\$17.70	-2.1%	2.5%	4.5%	5.9%	
16	BOD > 300 mg/l	708.56	693.41	710.89	743.16	787.34	(15.15)	17.48	32.26	44.18	-2.1%	2.5%	4.5%	5.9%	
17	COD > 600 mg/l	354.30	346.71	355.45	371.58	393.67	(7.59)	8.74	16.13	22.09	-2.1%	2.5%	4.5%	5.9%	

ccf = hundred cubic feet (approx. 748 gallons)
mg/l = milligram per liter

¹Applicable only to non-residential customers.
²Total Base Charge plus Tiered Compliance Charge.

II. WASTEWATER REVENUE REQUIREMENT

II.A. CIRP Funding Financial Policy

Q HAS MSD PROPOSED TO REVISE ITS FINANCIAL POLICY PREVIOUSLY USED TO ESTABLISH ITS REVENUE REQUIREMENT IN SETTING WASTEWATER RATES?

A Yes. MSD witness Bethany Pugh describes the District’s proposed new financial policy for its Capital Investment and Replacement Program (“CIRP”). Ms. Pugh states that previously, the District developed a revenue requirement using a CIRP funding policy of 75% debt and 25% PAYGO (equity) funding from the period 2004 through 2018.

1 For this filing, the District proposes to modify that funding policy to 60% debt
2 and 40% PAYGO financing.² Ms. Pugh also states that the District proposes to
3 establish a revenue requirement with a targeted “minimum” DSC ratio of total debt of
4 1.8x, with a range of 2.1x to 1.8x.³ In MSD’s last rate case, its DSC target fell
5 between 1.6x and 1.8x.

6 **Q HOW DID MSD DESCRIBE ITS FINANCIAL POLICY IN ITS LAST TWO RATE**
7 **FILINGS?**

8 A In its 2007 filing, MSD proposed a 100% PAYGO financing. In his Direct Testimony,
9 MSD then Treasurer Karl Tyminski recommended an all equity financing program
10 because of the uncertainty of the CIRP and pace of annual spending, and that use of
11 debt financing would ultimately increase the cost to customers of the CIRP program in
12 the long run.⁴ MIEC objected to MSD's proposal because of the impact 100%
13 PAYGO financing would have on wastewater rates. The Rate Commission
14 temporarily approved MSD's proposal for rates that would be in effect for 2008 and
15 then reviewed alternative PAYGO approaches during 2008.⁵ The Rate Commission
16 and eventually the Executive Board rejected MSD Staff’s proposal for 100% rate
17 revenue funding, and instead adopted a prudent funding mix of approximately 75%
18 debt and 25% PAYGO or equity financing. As outlined in current MSD financial
19 witness Bethany Pugh’s testimony at 4, this financing mix has been largely used by
20 MSD from FY 2004 through FY 2018.⁶

²Exhibit MSD 3G, Bethany Pugh Direct Testimony, page 4, lines 7-16.

³*Id.* at 5.

⁴2011 Rate Change Proceeding, MSD Exhibit No. 9E, Direct Testimony of Karl J. Tyminski, May 11, 2011, at 3.

⁵ 2011 Wastewater Rate Proposal, Exhibit MSD 1.

⁶Exhibit MSD 3G, Bethany Pugh Direct Testimony, at 4, lines 12 and 13.

1 With respect to targeted DSC ratio, in the 2011 and 2015 rate filings, MSD
2 witnesses described the targeted DSC ratio needed to maintain an AA bond rating.

3 In MSD's 2015 rate case, Bethany Pugh described the District's financial plan
4 in the past case as she does in this case. However, in the 2015 rate case, Ms. Pugh
5 stated that the District developed "financial obligations to maintain AA- category credit
6 ratings"⁷ and described the targeted DSC ratio as:

7 Based on the District's historical performance and expected
8 required coverage to maintain ratings in the AA-category,
9 senior lien bonds have a projected minimum coverage target of
10 2.50X while the minimum total coverage (including senior lien
11 bonds and subordinate SRF obligations) is targeted at 1.60X.⁸

12 In MSD's 2011 rate case, its Treasurer, Karl Tyminski, described the District's
13 projected DSC as "District's senior lien bond debt service coverage is projected at
14 234 percent in FY 16 of the proposed rate change cycle while total debt service
15 coverage is projected at 166 percent."⁹ On a total maximum DSC, Mr. Tyminski
16 projected a total maximum DSC of 1.4x.

17 In this proceeding, Ms. Pugh explains that the District had previously used a
18 funding mix of 75% debt and 25% equity to fund its CIRP for FY 2004 through
19 FY 2018.¹⁰ However, the District is now proposing to change its policy in this
20 proceeding to fund CIRP using a mix of 60% debt and 40% equity. Further, Ms. Pugh
21 also proposes to increase the target DSC ratio to a minimum on total debt of 1.8x,
22 from 1.6x in MSD's last two rate proceedings.¹¹

⁷2015 Rate Change Proceeding, MSD Exhibit No. MSD 3F, Direct Testimony of Bethany Pugh, February 26, 2015, at 5.

⁸*Id.*

⁹2011 Rate Change Proceeding, MSD Exhibit No. 9E, Direct Testimony of Karl J. Tyminski, May 11, 2011, at 2.

¹⁰Exhibit MSD 3G, Bethany Pugh Direct Testimony, at 4, lines 12 and 13.

¹¹*Id.* at 4-5.

1 Importantly, Ms. Pugh simply has not provided any evidence that there is a
2 need to change the financing policy that MSD has previously used to measure a
3 wastewater revenue requirement. Therefore, I propose to use the same financial
4 policy that has previously been used to measure MSD's revenue requirement, and
5 has supported its AA bond rating.

6 **Q HAVE THE RATE-SETTING POLICIES OF MSD SUPPORTED ITS AA BOND**
7 **RATING?**

8 **A** Yes. Ms. Pugh notes in her testimony in this case, the Rate Commission's financial
9 policies have supported MSD's AA bond rating. Ms. Pugh goes over credit rating
10 agencies' reports from Moody's, Standard & Poor's ("S&P") and Fitch, the three
11 primary credit rating agencies assessing corporate debt and municipal debt including
12 that issued by MSD. All those credit rating agencies have found previous rate
13 decisions for MSD have been supportive of its credit rating, and provide a reasonable
14 opportunity to recover its costs including its significant capital costs associated with
15 CIRP. More importantly, these credit rating agencies also assess the credit standing
16 of the utility by considering not only the financial metrics of the utility, but whether or
17 not the customers of the utility can afford to pay their bills. That is, as part of the
18 credit rating process, credit rating agencies consider rate affordability.

19 I would note that in MSD's last rate case, its earned DSC was much higher
20 than the target DSC used for ratemaking purposes. MSD explained that rate
21 projections used in 2015 over-recovered its cost of service. Specifically, MSD
22 witness Marion Gee states that MSD's updated revenue requirement forecast
23 compared to the 2015 rate model, resulted in an understatement of other revenue by
24 approximately \$9.7 million, overstatement of operating expenses by around

1 \$43.2 million, and an overstatement of debt service expenses by approximately
2 \$26.9 million.¹² By understating miscellaneous revenues, and overstating operating
3 expenses and debt service costs, MSD's actual earned DSC was much higher than
4 that used to set rates. The Rate Commission should again be careful to ensure that
5 MSD is not again overstating operating expenses and debt service costs, and
6 understating revenue collections from non-wastewater service charges.

7 **Q IS SETTING REASONABLE WASTEWATER RATES IMPORTANT FOR**
8 **MAINTAINING MSD'S BOND RATING?**

9 A Yes. Credit rating agencies are keenly concerned about the utility's ability to recover
10 its cost of service from its ratepayers. This requires some expectation that ratepayers
11 can afford to pay the utility's bills. Indeed, the credit reports referenced by MSD
12 consultant Bethany Pugh and the benchmark factors by S&P, Moody's and Fitch all
13 include rate affordability factors such as debt per customer, and comparisons of the
14 utility bill to the income of customers of the utility.

15 **Q HAS MSD PROPOSED TO SET WASTEWATER RATES WITH A FINANCIAL**
16 **POLICY THAT WAS DIFFERENT THAN THAT USED IN ITS LAST TWO RATE**
17 **CASES?**

18 A Yes. However, the Rate Commission rejected a more expensive financial policy
19 proposed by MSD in a 2007 rate case. In that wastewater rate case, MSD proposed
20 100% PAYGO financing because of the uncertainty about future CIRP annual spend,
21 and a perspective that debt financing would help cushion the initial rate shock, but

¹²Exhibit MSD 3E, Direct Testimony of Marion Gee, at 6-7.

1 would ultimately cost more in the long run.¹³ Importantly, the Rate Commission
2 rejected that proposed financial mix, and approved setting wastewater revenue
3 requirements using a 75% debt and 25% funding mix in that proceeding and the next
4 two cases. I would also note that contrary to MSD's assertions in that case,
5 wastewater rates are considerably lower today than they would have been had
6 MSD's proposed 100% more expensive financial policy been adopted in that
7 proceeding. This history I believe supports my recommendation to the Rate
8 Commission to not accept MSD's proposed modification to the financial policy that
9 has been used to set wastewater revenue requirements in MSD's last three rate
10 cases, and has been supported by credit analysts in maintaining MSD's current
11 investment grade AA bond rating, despite an increasing level of MSD debt needed to
12 support its very large CIRP program.

13 **Q IS A CHANGE IN MSD'S FINANCIAL POLICY NEEDED TO REFLECT AN**
14 **INCREASING LEVEL OF DEBT?**

15 A No. I encourage the Rate Commission to consider that MSD's CIRP program is
16 approaching the end of the EPA Consent Decree capital spending. MSD's
17 projections in this case, as described below, show a significant decline in CIRP
18 spending after the end of this rate period, FY 2024. MSD's rates currently will be set
19 to recover in excess of \$100 million of annual CIRP funding as PAYGO financing.
20 This level of PAYGO funding is necessary in order to maintain a DSC ratio of at least
21 1.6x. Going forward, the DSC ratio will set the level of PAYGO funding, and because
22 CIRP spending will start to wind down over the next five to ten years, MSD will
23 eventually begin recovering nearly all of its CIRP annual spend with PAYGO funding.

¹³MSD Treasurer Karl Tyminski, March 7, 2007 testimony at 3.

1 At that point in time, MSD will start to pay down its level of debt, will maintain an
2 adequate DSC ratio of at least 1.6x, and will accomplish this strengthening of its
3 balance sheet and maintenance of strong investment grade credit standing but at the
4 most reasonable wastewater rate levels possible.

5 **II.B. New AA Bond Interest Rate**

6 **Q ARE THERE ANY OTHER ISSUES ASSOCIATED WITH MSD'S FORECAST**
7 **ABOUT WHICH YOU WOULD LIKE TO COMMENT?**

8 A Yes. I also believe that MSD's projected new bond funding interest rate projections
9 are unreasonable. MSD witness Tim Snoke outlines an overwhelming support by
10 MSD customers to mitigate rate increases by using a balanced funding of debt and
11 equity capital to support MSD's CIRP program. In projecting future debt issues, Mr.
12 Snoke has projected a 5% interest rate for a 30-year AA municipal water revenue
13 bond, and a 3% projected interest rate for state revolving fund loans.¹⁴

14 These projected interest rates simply are not reasonable. As shown in the
15 table below, AA-rated municipal debt for water and wastewater systems has been
16 consistently at 3% or less during 2018.

¹⁴Exhibit MSD 3F, Direct Testimony of Tim Snoke, at 7-9.

TABLE 4

Treasury and Water/Sewer Bond Yields

Description	Historical Range Last Six Months (Low-Max)¹	Current (4/17/19)²	Projected Range 2Q 2019-3Q 2020 (Low-Max)³
30-Year Treasury Securities	2.4% - 3.4%	3.0%	3.0%-3.2%
Water/Sewer AA Revenue Bonds	2.5% - 3.3%	2.5%	-

Sources:

¹ *The Value Line Investment Survey, Selection & Opinion*, Various Reports.

² *The Value Line Investment Survey, Selection & Opinion*, April 26, 2019.

³ *Blue Chip Financial Forecasts*, April 1, 2019.

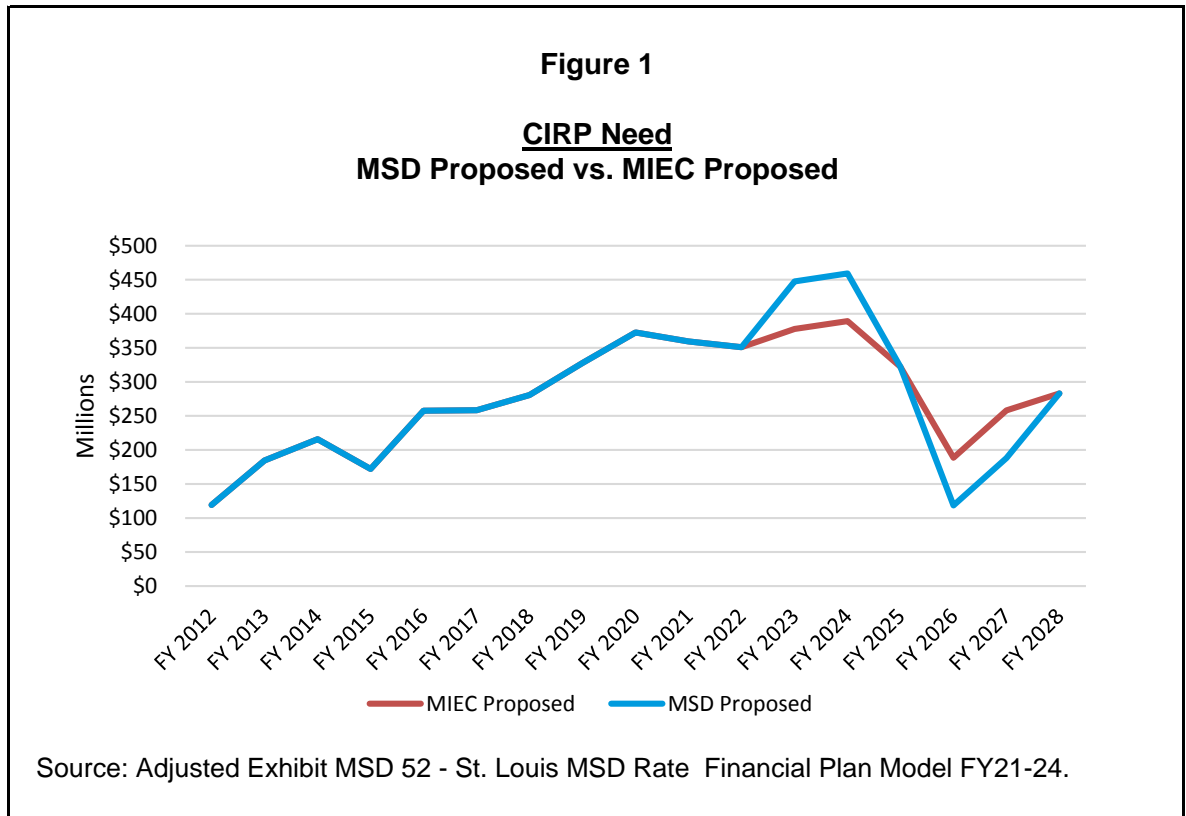
1 Also, historically AA municipal rated debt interest rates have tracked that of
2 30-year Treasury securities. However, as also shown in Table 3 above, independent
3 economists' projections of Treasury bond yields out over the next three years indicate
4 a relatively flat interest rate curve. Current 30-year Treasury bonds are around 3%,
5 and projections over the next several years are 3.0% to 3.2%. Current utility revenue
6 bonds with an AA rating are around 2.5%. It is possible that MSD may be able to
7 issue new debt at around a 2.5% interest rate. However, it could be as high as 3%.
8 Therefore, I recommend a more conservative estimate of the interest cost on new
9 bond issues to be 3%, rather than the 5% proposed by MSD.

10 I also believe that the state revolving fund loan rate of 3% may be overstated
11 because these loans typically are cheaper than that of AA-rated utility revenue bonds.
12 However, I will leave this interest rate alone simply to be conservative in trying to
13 capture what MSD's future interest rates will be on new bond issuances.

1 **II.C. CIRP Annual Spend**

2 **Q HAVE YOU REVIEWED MSD'S PROPOSED ANNUAL SPEND FOR CIRP OVER**
3 **THE FORECAST PERIOD?**

4 **A** Yes. I actually looked at its annual spend over the period FY 2020 through FY 2028.
5 This level of spend is outlined in Figure 1 below.



6
7 As shown in Figure 1 above, MSD's annual spend in most years is around
8 \$350 million to \$370 million. However, in FY 2023 and FY 2024 it increases to over
9 \$420 million. This temporary increase in annual CIRP spending has a significant
10 impact on MSD's estimated revenue requirement in FY 2023 and FY 2024.

11 The annual level of MSD's projected CIRP capital spending is outlined on my
12 Schedule MPG-2.

1 The proposed adjustment to the annual level of CIRP spending shown in
2 Figure 1, attempts to levelize MSD's annual CIRP spending over the FY 2021 through
3 FY 2024 period, and allow for an increased level of spending in FY 2025 through FY
4 2028. This is designed to mitigate impacts on MSD's wastewater revenue
5 requirement, and keep wastewater rates as competitive as possible. Further, MSD's
6 CIRP programs I believe include several projects which provide MSD the discretion to
7 defer these projects out beyond the FY 2021 through FY 2024 period, in order to
8 accomplish this more levelized level of annual CIRP capital spend.

9 **Q PLEASE DESCRIBE WHY YOU BELIEVE MSD'S CIRP CAPITAL BUDGET**
10 **SHOWS PROJECTS THAT PROVIDE MSD THE DISCRETION TO DEFER SOME**
11 **CAPITAL SPENDING CURRENTLY PLANNED FOR FY 2023 AND FY 2024 TO**
12 **PERIODS A FEW YEARS LATER.**

13 **A** No. certain major capital investments in FY 2023, and FY 2024 more specifically,
14 have not been shown to be needed for the EPA Consent Decree or any other way
15 that MSD does not have the discretion to levelize these over the entire forecast
16 period.

17 As shown on my Schedule MPG-3, I have outlined the District's CIRP
18 programs for the 2021 through 2024 period. While there are several programs that
19 have not been identified as critical to be made during this time period, it also
20 demonstrates that there are several very large capital programs that could be
21 deferred for a few years, in an effort to produce an annual level of CIRP spending
22 during the forecast period and several years immediately following it. Certain
23 examples include:

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- 1 1. Wastewater solids combustion boiler,
- 2 2. Wastewater plant repair, and
- 3 3. Capacity Expansion.

4 **Q PLEASE EXPLAIN WHY LEVELIZING THE ANNUAL CIRP CAPITAL SPEND CAN**
5 **MITIGATE THE IMPACT ON CUSTOMERS' RATES.**

6 A Customers are funding the CIRP program with a combination of debt funding and rate
7 revenue funding. Over time, customers' rates accomplish the dual objective of
8 providing approximately \$100 million per year of rate revenue funding, paying MSD's
9 debt service cost, which in turn reduces approximately \$50 million per year of
10 embedded debt principal payments.

11 By managing the level of CIRP spending to a levelized annual amount, MSD
12 can fund a large percentage of CIRP with rate revenue without unnecessary rate
13 increases, and still produce strong credit rating metrics, liquidity metrics, and
14 customer to debt affordability metrics.

15 **II.D. Estimated Adjustment to MSD's**
16 **Revenue Requirement with These Adjustments**

17 **Q HOW WOULD MSD'S REVENUE REQUIREMENT OVER THE FY 2021 THROUGH**
18 **FY 2024 PERIOD BE IMPACTED BY IMPLEMENTING ANY ADJUSTMENTS TO**
19 **ITS COST OF SERVICE AS YOU HAVE OUTLINED ABOVE?**

20 A MSD's proposed revenue requirement is shown on Schedule MPG-1, page 1. A
21 revised revenue requirement for wastewater operations reflecting these adjustments
22 to MSD's cost of service is summarized on my Schedule MPG-1, page 2. As shown
23 on this Schedule MPG-1, I modified the revenue requirement development by

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1 maintaining the existing financial policy setting rates to produce at least a DSC ratio
2 of 1.6x, while still meeting the other financial liquidity and customer debt parameters
3 to maintain MSD's credit standing, using a more realistic estimate of the interest costs
4 on new AA-rated utility revenue bond issues, and spreading the CIRP capital spend
5 to a more levelized amount in order to mitigate impact on customers' rates, needed to
6 allow MSD the opportunity to build this CIRP program in a more balanced and
7 responsible manner. The resulting revenue requirement indicated on this schedule is
8 summarized in Table 1 above. Schedule MPG-1, page 3, shows the remaining
9 Revenue Bond Authorization under each scenario.

10 **Q WHAT IS THE IMPACT OF THE REVISED REVENUE REQUIREMENT ON KEY**
11 **RATING AGENCY METRICS?**

12 A MSD includes a selection of Key Rating Agency Metrics in its Rate Model. My
13 Schedule MPG-4 summarizes several key metrics between MSD's proposal and my
14 adjusted revenue requirement. As shown on this schedule, the resulting DSC ratio,
15 liquidity measures (cash on hand), and debt to customer all are in line with credit
16 rating agency benchmarks that have previously supported MSD's current AA rated
17 investment bond rating.

18 **III. WASTEWATER RATE DESIGN**

19 **Q DID YOU REVIEW MSD'S PROPOSED NEW WASTEWATER RATES TO**
20 **RECOVER ITS CLAIMED WASTEWATER REVENUE REQUIREMENT?**

21 A Yes. The District's model included a tab which was titled "Revenue Proof." I
22 reviewed this tab to assess whether or not the District's proposed rates produce the
23 revenue requirement based on the billing unit tab (Demand Projection). This

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1 comparison is necessary to have confidence that MSD's proposed wastewater rates
2 produce the revenue requirement it asserts that it needs to recover its cost of service.

3 **Q WHAT DID YOU FIND?**

4 A The District's model includes an error. Specifically, the District's proposed rates are
5 different than the rates included in the revenue proof tab. Indeed, the District's
6 proposed rates appear to include reductions in certain rate elements rather than
7 increases in all the rates in order to recover the revenue requirement. The rates
8 included in the revenue proof do reflect increases in all these service rates, and
9 appear to more accurately reflect the rates MSD Staff is intending to implement in
10 order to recover its projected revenue requirement.

11 **Q DO YOU BELIEVE THAT THE RATES INCLUDED IN THE REVENUE PROOF TAB
12 ARE REASONABLE FOR RECOVERING MSD'S REVENUE REQUIREMENT
13 OVER THE FORECAST PERIOD?**

14 A I do not. As noted above, I believe MSD is overstating the revenue requirement
15 needed to fully recover its CIRP funding, and reasonable projections of operating
16 expenses over this time period. For this reason, I propose revisions to these rates.

17 **Q IN REVIEWING THE DISTRICT REVENUE PROOF, AND USING THE PROPOSED
18 RATES IN LIEU OF THE RATES IN THAT TAB, DID THE DISTRICT
19 ACCURATELY MEASURE THE AMOUNT OF REVENUE AT CURRENT RATES?**

20 A No. The District understated the amount of wastewater revenue it would receive
21 based on its proposed rates by approximately \$180,000 to \$300,000 per year.

1 **Q HOW DO YOU PROPOSE TO REVISE MSD'S WASTEWATER RATES TO**
2 **RECOVER THIS LOWER REVENUE REQUIREMENT?**

3 A I propose to adjust rates to produce a reasonable recovery of costs of providing
4 service to the various rate classes. Toward this objective, I will comment on one
5 aspect of MSD's cost of service study which I think places too much cost in the
6 volumetric charges. As outlined below, MSD proposes to allocate I/I costs as
7 approximately 60% volumetric and 40% customer related. I believe it is not
8 appropriate to allocate 60% of I/I costs on volume. Specifically, as noted by MSD, I/I
9 costs are incurred based on customer connections, and leaky collector systems,
10 manholes and pumping stations. As such, the actual collection system is driven by
11 both number and location of customers on the system and volumetric throughput. As
12 such, I recommend allocating I/I costs on the basis of 50% customer and 50%
13 volume.

14 Making these corrections to the District's cost of service study clearly shows
15 that an increase in the fixed charges for MSD wastewater service is justified.

16 **Q WILL THERE BE OTHER BENEFITS OF INCREASING FIXED CHARGES MORE**
17 **THAN VOLUMETRIC CHARGES IN DESIGNING MSD'S RATES?**

18 A Yes. Fixed charges are more stable than are volumetric charges. Hence, increasing
19 MSD's revenue collections through fixed charges will stabilize its revenue collection
20 and help support stronger predictable revenue stream, which will support its bond
21 rating. This rate design aspect to stabilize revenue collection will help support a
22 strong investment grade bond rating for MSD, while it increases its outstanding debt
23 used to support its CIRP program.

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1 I show the difference between the variability in number of customers and
2 volumetric charges on my Schedule MPG-5. As shown on this schedule, MSD's
3 number of customers simply has been increasing and relatively steady over the last
4 three years. However, volumetric charges can vary significantly from year to year.
5 Recovering significant amounts of revenue based on volumetric charges will create
6 more volatility in revenue collection, and weaken MSD's ability to fully recover its cost
7 of service. Again, this can have a detrimental impact on its bond rating.

8 **Q HOW DO YOU PROPOSE TO ADJUST MSD'S WASTEWATER RATES IN ORDER**
9 **TO RECOVER YOUR ESTIMATED REVENUE REQUIREMENT?**

10 A I develop this on my Schedule MPG-6. As shown on that schedule, I use MSD's
11 proposed meter charges, and system assessment charges. Because I am proposing
12 to collect less revenue, I have reduced MSD's projected volumetric charges and extra
13 strength surcharges. Both volume and extra strength surcharges can vary over time.

14 As shown on my Schedule MPG-6, a revised proof of revenue shows that
15 these revised rates will recover my estimate of MSD's revenue requirement over the
16 period FY 2021 through FY 2024.

17 **IV. WASTEWATER COST OF SERVICE STUDY**

18 **Q HAVE YOU REVIEWED MSD'S COST OF SERVICE STUDY?**

19 A Yes. Mr. Thomas Beckley sponsors MSD's cost of service study. MSD relied on the
20 cost of service allocation methodology recommended by the Water Environment
21 Federation ("WEF").

1 **Q IS MSD'S COST OF SERVICE STUDY REASONABLE?**

2 A I generally support the methodology used in MSD's class cost of service study in this
3 proceeding, but have concerns with the allocation of I/I costs, and the allocation of
4 capital costs to the Extra Strength Surcharges.

5 **IV.A. Allocation of I/I**

6 **Q WHAT ARE I/I COSTS?**

7 A At page 6 of his testimony, Mr. William Stannard explains that I/I is water entering the
8 wastewater system from illegal roof and foundation drains, groundwater infiltration
9 through sewer service pipe and main joints, and stormwater runoff or inflow from the
10 combined sewer system. Mr. Stannard notes that I/I occurs in all wastewater
11 collection and treatment systems. I/I is typically allocated across rate classes based
12 on number of customers and contributed volumes. MSD proposes to assume that
13 40% of I/I costs are related to number of customers and 60% of I/I costs are related to
14 contributed customer volumes.

15 **Q WHAT PORTION OF THE TOTAL WASTEWATER VOLUME TREATED BY MSD IS**
16 **I/I?**

17 A At page 7, Mr. Stannard notes that district-wide I/I is about 59% of the total
18 wastewater flow reaching the treatment plants each year. This is an increase from
19 the amount of I/I identified in MSD's 2015 rate filing, in which I/I represented 50% of
20 the total wastewater flow each year.¹⁵

¹⁵ Exhibit MSD 3H, page 7.

1 Q DOES THE WEF MANUAL DESCRIBE HOW I/I COSTS SHOULD BE TREATED IN
2 A COST OF SERVICE STUDY?

3 A Not specifically. However, the Manual does clearly describe that I/I costs are not
4 directly related to service volumes. Rather, the Manual recognizes that I/I costs are
5 more of a function of the length and age of the infrastructure, and the geographic
6 area served. At page 130, the Manual states as follows:

7 Infiltration and inflow costs pose a special challenge in wastewater
8 ratemaking because these costs are not a consequence of directly
9 measurable service demands by utility customers. Groundwater
10 levels, age of pipe, and soil conditions may influence the amount of I/I
11 that enters the system from different basins. Administering a system
12 of wastewater charges that differs by drainage basin, age of pipe, or
13 soil conditions would be difficult and costly. Therefore, cost allocation
14 approaches must be based on factors that estimate service
15 requirements to equitably distribute I/I cost responsibilities.¹⁶

16 The Manual goes on to identify allocation options including: contributed
17 wastewater volumes, number of customers, land area, and property valuations.

18 Q HOW DID MSD DETERMINE THAT 40% OF I/I COSTS ARE RELATED TO THE
19 NUMBER OF CUSTOMERS AND 60% OF I/I COSTS ARE RELATED TO
20 CONTRIBUTED VOLUMES?

21 A In May 2003, the Rate Commission recommended that MSD conduct a study to
22 determine the most accurate allocation and cost recovery method for I/I operation
23 costs, and requested that the results presented to the Rate Commission before any
24 future rate change submittals.¹⁷ In 2005, MSD hired CDM to conduct an independent
25 engineering study to determine an appropriate basis for the allocation of I/I. The
26 2005 CDM study was provided in response to data request MIEC 1-1, as Exhibit MSD
27 65B. As described in the study, CDM concluded that a 37% customer / 63% volume

¹⁶ *WEF Manual of Practice No. 27* at 130 (emphasis added).

¹⁷ Exhibit MSD 65B, 2005 CDM Study at page 1-1.

1 allocation was appropriate. MSD claims that there are no known changes in the
2 system that would significantly change this assumption.¹⁸

3 **Q DO YOU BELIEVE THAT MSD'S PROPOSED ALLOCATION OF I/I COSTS IS**
4 **REASONABLE?**

5 A No. This study utilized data from 2001 – 2003, and contrary to MSD's claim there
6 have been significant changes to MSD's system since this study was completed. In
7 particular, MSD has made substantial improvements to its wastewater system to
8 comply with the requirements of the Consent Decree.

9 Additionally, I/I costs are largely created through the collection infrastructure
10 and geographic area, length of pipe, number of lift stations and infrastructure age. It
11 would be more appropriate to utilize an I/I allocation that is more heavily weighted
12 toward the number of customers on the system.

13 **Q CAN YOU DESCRIBE HOW MSD'S INFRASTRUCTURE AND GEOGRAPHIC**
14 **REACH CONTRIBUTE TO I/I?**

15 A MSD provides wastewater collection and treatment service to over 1.3 million retail
16 customers in 520 square miles.¹⁹ As of August 2016, MSD owned and maintained
17 9,517 miles of collection and trunk sewers and force mains, sized from six inches to
18 29 feet in diameter.²⁰ Further, sewers maintained by MSD range in age from a couple
19 years old to more than 150 years old.²¹

20 The geographic diversity and the significant length of pipe are large factors in
21 determining the amounts of I/I costs that MSD incurs. As such, I/I costs have little to

¹⁸ Exhibit MSD 1, page 4-31.

¹⁹ MSD Website at <https://www.stlmsd.com/our-organization>

²⁰ *Id.*

²¹ *Id.*

1 do with customers' contributed volume, and are largely driven by MSD's geographic
2 footprint and substantial length of collector mains.

3 **Q ARE YOU AWARE OF ANY WASTEWATER UTILITIES THAT HAVE RECENTLY**
4 **STUDIED THE ALLOCATION OF I/I ON THEIR WASTEWATER SYSTEM?**

5 A Yes. Citizens Wastewater Authority ("CWA") in Indiana recently completed a study to
6 determine what portion of I/I costs are customer related, and what portion should be
7 allocated on the basis of volume. In the past, CWA has allocated I/I using a two-
8 thirds customer and one-third volume allocator. Prior to its most recent rate case,
9 CWA hired Black and Veatch to determine whether a modification to its allocation of
10 I/I was appropriate.

11 Black & Veatch calculated the I/I volumes that would be allocated to the
12 industrial class using six different methods that considered several elements such as
13 length and diameter of mains, number of connections, contributed volumes, land use,
14 and a system size differential. Black & Veatch then took an average of the I/I
15 volumes allocated to the Industrial class under each analysis, and determined that
16 the average was best approximated by a 75% customer / 25% volume allocation
17 factor. However, the methods contemplated by the study showed that the customer
18 related percentage of I/I could range from 55% to 88%.²²

²² Cause No. 45151, Direct Testimony of Prabha N. Kumar, Attachment PNK-7.

1 Q WAS CWA'S STUDY OF I/I CONDUCTED AFTER ITS INFRASTRUCTURE HAD
2 BEEN MODERNIZED AND IMPROVED TO COMPLY WITH ITS CONSENT
3 DECREE?

4 A Yes. Like MSD, CWA has made significant improvements to its wastewater collection
5 system and treatment plants to modernize its infrastructure and to comply with the
6 requirements of its Consent Decree.

7 Q HOW DO OTHER WASTEWATER UTILITIES ALLOCATE I/I?

8 A As part of its study for CWA, Black and Veatch queried its project managers to create
9 a summary of the I/I allocation basis used by some other wastewater utilities. The
10 table below has been reproduced from the CWA study.²³

<u>Line</u>	<u>Utility / Community</u>	<u>Customer</u>	<u>Volume</u>
1	St. Joseph, MO	60.0%	40.0%
2	Kansas City, MO	40.0%	60.0%
3	Metropolitan Sewerage District of Greater Cincinnati	75.0%	25.0%
4	Allegheny County Sanitary Authority (ALCOSAN)	66.7%	33.3%
5	Shreveport, LA	66.7%	33.3%
6	Charleston, SC	66.7%	33.3%
7	Columbus, OH	0.0%	100.0%
8	Washington Suburban Sanitary Commission	50.0%	50.0%
9	Philadelphia Water Department	15.0%	85.0%
10	Citizens Wastewater Authority	75.0%	25.0%

²³ *Id.* at Table 10.

1 As shown in Table 5 above, the majority (seven of the ten) utilities allocate at
2 least 50% of I/I on the basis of the number of the customers in each rate class.

3 **Q WHY WOULD ALLOCATING I/I COSTS ON 40% CUSTOMER AND 60% VOLUME**
4 **NOT PRODUCE A BALANCED ALLOCATION OF I/I COSTS?**

5 A MSD's wastewater collector system encompasses a large geographic area, and over
6 9,000 miles of collector mains, some in need of modernization or repair. I/I costs are
7 caused by the infrastructure size and material. The retail customers' contributions to
8 the wastewater water volumes have little to no impact on I/I costs. As such, 60% of
9 the allocation on volume is not balanced.

10 Furthermore, customers cannot reduce their amount of I/I collections by
11 reducing their wastewater flow. Indeed, I/I costs in the wastewater system are simply
12 unrelated to customers' wastewater flows, making a volume heavy allocation
13 inappropriate.

14 **Q DOES THE ALLOCATION OF I/I HAVE A SIGNIFICANT IMPACT ON MSD'S COST**
15 **OF SERVICE RESULTS?**

16 A Yes. Even a small change in the allocation of I/I can have a large impact on the cost
17 of service results. To illustrate this sensitivity, I have modified MSD's cost of service
18 study to reflect a 50% customer / 50% volume allocation of I/I as well as a 75%
19 customer /25% volume allocation, and compared those results to CWA's proposed
20 40% customer / 60% volume allocation. The results are presented below in Table 6.

TABLE 6

Cost of Service Results Under Various I/I Allocations

Line	Customer Class	Revenue at Approved FY20 Rates	40% Customer 60% Volume ¹		50% Customer 50% Volume ^{1,2}		75% Customer 25% Volume ^{1,2}	
			Increase / Decrease to Reach COS		Increase / Decrease to Reach COS		Increase / Decrease to Reach COS	
			Amount	Percent	Amount	Percent	Amount	Percent
1	Single Family	\$ 238,942,441	\$ 4,480,554	1.88%	\$ 15,985,249	6.7%	\$ 44,746,986	18.7%
2	Multi-Family	74,724,241	1,935,205	2.59%	(1,068,768)	-1.4%	(8,578,699)	-11.5%
3	Non-Residential	125,680,754	5,077,361	4.04%	(3,423,362)	-2.7%	(24,675,168)	-19.6%
4	Total System	\$ 439,347,436	\$ 11,493,119	2.62%	\$ 11,493,119	2.6%	\$ 11,493,119	2.6%

Source

¹ Exhibit MSD 52, COS-Results, Excel rows 96-98, column K - column L.

² Result of changing the allocation of I/I in rows 418 and 419 of Exhibit MSD 52, Demand-Input tab.

1 Q WHAT IS YOUR RECOMMENDED ALLOCATION OF I/I?

2 A I recommend an allocation of I/I using a 50% customer / 50% volume allocator. The
3 allocation of I/I costs should be heavily weighted on the number of customers, and
4 only minimally weighted on contributed volumes. The number and location of
5 customers is the best cost-causation factor which describes I/I costs.

6 **IV.B. Extra Strength Surcharges**

7 Q PLEASE DESCRIBE THE WASTEWATER EXTRA STRENGTH SURCHARGES.

8 A The extra strength surcharges are related to Biochemical Oxygen Demand ("BOD"),
9 Chemical Oxygen Demand ("COD"), and Total Suspended Solids ("TSS"). As
10 discussed at page 10 of Mr. Beckley's testimony, wastewater strengths in excess of
11 the normal wastewater strength threshold, which are contributed by non-residential
12 customers, are segregated into a separate surcharge customers group.

1 **Q DOES MSD’S COST OF SERVICE STUDY SHOW THAT AN ABOVE SYSTEM**
2 **AVERAGE INCREASE IS WARRANTED FOR THE EXTRA STRENGTH**
3 **SURCHARGES?**

4 A Yes. MSD’s cost of service shows that the BOD rate needs to increase by 26.7%,
5 and TSS needs to increase by 10.6% to reach cost of service in FY21. MSD states
6 that the increase is primarily due to the fact that the capital cost allocated to these
7 functional categories increased by approximately 70% from FY17 to the test year of
8 FY21, while the units of service for BOD and COD decreased by 7% and TSS
9 decreased by 5% over the same time period.²⁴

10 **Q IS THIS INCREASE REASONABLE?**

11 A No. MSD’s capital expenditures related to BOD and TSS are primarily associated
12 with the improvement of operating efficiency of wastewater treatment plants because
13 these improvements are expected to reduce the cost of waste disposal.²⁵ The capital
14 expenditures associated with these improvements are not directly related to an
15 increase in the cost of treating wastewater with BOD and TSS strengths in excess of
16 the normal loadings.

17 **Q DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?**

18 A Yes.

²⁴Direct Testimony of Thomas Beckley at 11.

²⁵Exhibit MSD 3C, Direct Testimony of Richard Unverferth, at 2.

Qualifications of Michael P. Gorman

1 **Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

2 A Michael P. Gorman. My business address is 16690 Swingley Ridge Road, Suite 140,
3 Chesterfield, MO 63017.

4 **Q PLEASE STATE YOUR OCCUPATION.**

5 A I am a consultant in the field of public utility regulation and a Managing Principal with
6 the firm of Brubaker & Associates, Inc. ("BAI"), energy, economic and regulatory
7 consultants.

8 **Q PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK
9 EXPERIENCE.**

10 A In 1983 I received a Bachelor of Science Degree in Electrical Engineering from
11 Southern Illinois University, and in 1986, I received a Master's Degree in Business
12 Administration with a concentration in Finance from the University of Illinois at
13 Springfield. I have also completed several graduate level economics courses.

14 In August of 1983, I accepted an analyst position with the Illinois Commerce
15 Commission ("ICC"). In this position, I performed a variety of analyses for both formal
16 and informal investigations before the ICC, including: marginal cost of energy, central
17 dispatch, avoided cost of energy, annual system production costs, and working
18 capital. In October of 1986, I was promoted to the position of Senior Analyst. In this
19 position, I assumed the additional responsibilities of technical leader on projects, and
20 my areas of responsibility were expanded to include utility financial modeling and
21 financial analyses.

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Appendix A
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1 In 1987, I was promoted to Director of the Financial Analysis Department. In
2 this position, I was responsible for all financial analyses conducted by the Staff.
3 Among other things, I conducted analyses and sponsored testimony before the ICC
4 on rate of return, financial integrity, financial modeling and related issues. I also
5 supervised the development of all Staff analyses and testimony on these same
6 issues. In addition, I supervised the Staff's review and recommendations to the
7 Commission concerning utility plans to issue debt and equity securities.

8 In August of 1989, I accepted a position with Merrill-Lynch as a financial
9 consultant. After receiving all required securities licenses, I worked with individual
10 investors and small businesses in evaluating and selecting investments suitable to
11 their requirements.

12 In September of 1990, I accepted a position with Drazen-Brubaker &
13 Associates, Inc. ("DBA"). In April 1995, the firm of Brubaker & Associates, Inc. was
14 formed. It includes most of the former DBA principals and Staff. Since 1990, I have
15 performed various analyses and sponsored testimony on cost of capital, cost/benefits
16 of utility mergers and acquisitions, utility reorganizations, level of operating expenses
17 and rate base, cost of service studies, and analyses relating to industrial jobs and
18 economic development. I also participated in a study used to revise the financial
19 policy for the municipal utility in Kansas City, Kansas.

20 At BAI, I also have extensive experience working with large energy users to
21 distribute and critically evaluate responses to requests for proposals ("RFPs") for
22 electric, steam, and gas energy supply from competitive energy suppliers. These
23 analyses include the evaluation of gas supply and delivery charges, cogeneration
24 and/or combined cycle unit feasibility studies, and the evaluation of third-party
25 asset/supply management agreements. I have participated in rate cases on rate

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1 design and class cost of service for electric, natural gas, water and wastewater
2 utilities. I have also analyzed commodity pricing indices and forward pricing methods
3 for third party supply agreements, and have also conducted regional electric market
4 price forecasts.

5 In addition to our main office in St. Louis, the firm also has branch offices in
6 Phoenix, Arizona and Corpus Christi, Texas.

7 **Q HAVE YOU EVER TESTIFIED BEFORE A REGULATORY BODY?**

8 A Yes. I have sponsored testimony on cost of capital, revenue requirements, cost of
9 service and other issues before the Federal Energy Regulatory Commission and
10 numerous state regulatory commissions including: Arkansas, Arizona, California,
11 Colorado, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas,
12 Louisiana, Michigan, Mississippi, Missouri, Montana, New Jersey, New Mexico, New
13 York, North Carolina, Ohio, Oklahoma, Oregon, South Carolina, Tennessee, Texas,
14 Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming, and before
15 the provincial regulatory boards in Alberta and Nova Scotia, Canada. I have also
16 sponsored testimony before the Board of Public Utilities in Kansas City, Kansas;
17 presented rate setting position reports to the regulatory board of the municipal utility
18 in Austin, Texas, and Salt River Project, Arizona, on behalf of industrial customers;
19 and negotiated rate disputes for industrial customers of the Municipal Electric
20 Authority of Georgia in the LaGrange, Georgia district.

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1 Q PLEASE DESCRIBE ANY PROFESSIONAL REGISTRATIONS OR
2 ORGANIZATIONS TO WHICH YOU BELONG.

3 A I earned the designation of Chartered Financial Analyst (“CFA”) from the CFA
4 Institute. The CFA charter was awarded after successfully completing three
5 examinations which covered the subject areas of financial accounting, economics,
6 fixed income and equity valuation and professional and ethical conduct. I am a
7 member of the CFA Institute’s Financial Analyst Society.

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Metropolitan St. Louis Sewer District

Revenue Requirement MSD Proposed

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Wastewater Revenue Requirements										
General Fund Operating Expenses										
Board of Trustees	\$ 6,100	\$ 6,168	\$ 6,241	\$ 6,315	\$ 6,391	\$ 6,469	\$ 6,548	\$ 6,629	\$ 6,711	\$ 6,795
Rate Commission	595,508	11,910	12,483	12,745	649,773	13,286	13,565	13,850	14,141	14,438
Civil Service Commission	10,000	10,200	10,414	10,633	10,856	11,084	11,317	11,555	11,797	12,045
Secretary - Treasurer	3,304,917	2,125,419	3,432,757	2,242,021	2,303,325	2,366,763	2,432,432	2,500,437	2,570,886	2,643,896
Executive Director	3,918,653	4,005,345	4,114,866	4,228,192	4,345,574	4,467,200	4,593,271	4,723,997	4,859,605	5,000,331
General Counsel	3,151,595	3,219,012	3,299,245	3,381,910	3,467,139	3,555,032	3,645,697	3,739,247	3,835,801	3,935,484
Office of Human Resources	8,386,447	8,573,158	8,962,983	9,376,205	9,814,565	10,279,839	10,773,936	11,298,912	11,856,979	12,450,517
Engineering	15,102,179	15,856,139	14,487,758	15,021,115	15,583,578	16,176,924	16,803,050	17,463,986	18,161,897	18,899,101
Finance	21,226,078	21,666,097	22,186,775	22,722,245	23,273,323	23,840,609	24,424,735	25,026,367	25,646,206	26,284,993
Information Systems	15,495,944	15,881,698	16,345,457	16,825,262	17,321,964	17,836,267	18,368,912	18,920,676	19,492,379	20,084,880
Operations										
Collection System	25,344,511	25,910,957	26,840,257	27,814,917	28,838,960	29,915,312	31,047,095	32,237,641	33,490,508	34,809,499
Pump Stations	12,198,324	12,405,110	12,757,148	13,121,895	13,500,102	13,892,391	14,299,426	14,721,903	15,160,562	15,616,187
Wastewater Treatment	44,878,243	45,701,793	46,993,748	48,331,879	49,719,067	51,157,612	52,649,951	54,198,664	55,806,486	57,476,316
Support	13,139,533	13,422,376	13,776,374	14,142,272	14,520,838	14,912,635	15,318,263	15,738,352	16,173,572	16,624,633
<i>Subtotal: Operations</i>	\$ 95,560,611	\$ 97,440,236	\$ 100,367,527	\$ 103,410,963	\$ 106,578,966	\$ 109,877,951	\$ 113,314,734	\$ 116,896,559	\$ 120,631,128	\$ 124,526,635
Subtotal: General Fund Operating Expenses	\$ 166,758,032	\$ 168,795,383	\$ 173,226,505	\$ 177,237,606	\$ 183,355,453	\$ 188,431,423	\$ 194,388,197	\$ 200,602,214	\$ 207,087,529	\$ 213,859,116
% Change	12.4%	1.2%	2.6%	2.3%	3.5%	2.8%	3.2%	3.2%	3.2%	3.3%
Other Operating Expenses										
Water Backup Program	\$ 4,425,300	\$ 4,513,806	\$ 4,608,596	\$ 4,705,376	\$ 4,804,189	\$ 4,905,077	\$ 5,008,084	\$ 5,113,254	\$ 5,220,632	\$ 5,330,265
General Insurance Fund	6,089,400	6,217,173	6,356,013	6,498,044	6,643,340	6,791,979	6,944,043	7,099,611	7,258,770	7,421,604
Capital Funded in O&M Budget	10,329,182	10,367,686	10,546,625	11,014,582	11,825,835	11,578,670	11,601,087	12,244,337	12,914,863	12,816,556
Capitalized Internal Labor	(9,903,814)	(10,200,928)	(8,758,000)	(9,020,740)	(9,291,362)	(9,570,103)	(9,857,206)	(10,152,922)	(10,457,510)	(10,771,235)
Additional O&M	-	1,011,603	5,451,900	1,617,068	1,480,080	1,536,790	1,596,375	1,659,012	1,724,892	1,794,215
Subtotal: Other Operating Expenses	\$ 10,940,068	\$ 11,909,340	\$ 18,205,135	\$ 14,814,330	\$ 15,462,081	\$ 15,242,414	\$ 15,292,383	\$ 15,963,293	\$ 16,661,647	\$ 16,591,405
% Change	-19.7%	8.9%	52.9%	-18.6%	4.4%	-1.4%	0.3%	4.4%	4.4%	-0.4%
Non-Operating Expenses										
Annual Debt Service										
Revenue Bond Debt Service (Accrued)										
Existing Bonds	\$ 77,962,008	\$ 78,123,917	\$ 78,198,040	\$ 77,923,075	\$ 78,185,172	\$ 78,085,875	\$ 78,646,087	\$ 81,717,837	\$ 84,009,170	\$ 84,635,795
Proposed Bonds	-	1,768,719	7,752,066	16,336,137	28,971,401	46,983,372	61,867,795	64,163,048	64,162,756	65,435,648
<i>Subtotal: Revenue Bond Debt Service</i>	\$ 77,962,008	\$ 79,892,637	\$ 85,950,106	\$ 94,259,211	\$ 107,156,573	\$ 125,069,246	\$ 140,513,881	\$ 145,880,885	\$ 148,171,927	\$ 150,071,443
SRF & Direct Loan Debt Service (Accrued)										
Existing Bonds	\$ 37,673,555	\$ 37,741,217	\$ 37,911,613	\$ 39,182,514	\$ 39,176,322	\$ 39,257,083	\$ 37,619,627	\$ 32,630,516	\$ 25,817,459	\$ 24,740,530
Proposed Bonds	-	4,037,431	6,550,664	8,600,935	10,644,268	12,688,281	14,267,544	15,519,470	15,508,077	15,496,555
<i>Subtotal: SRF & Direct Loan Debt Service</i>	\$ 37,673,555	\$ 41,778,648	\$ 44,462,277	\$ 47,783,449	\$ 49,820,590	\$ 51,945,363	\$ 51,887,171	\$ 48,149,986	\$ 41,325,536	\$ 40,237,085
Subtotal: Total Debt Service	\$ 115,635,563	\$ 121,671,285	\$ 130,412,383	\$ 142,042,661	\$ 156,977,164	\$ 177,014,609	\$ 192,401,052	\$ 194,030,871	\$ 189,497,462	\$ 190,308,528
% Change	10.1%	5.2%	7.2%	8.9%	10.5%	12.8%	8.7%	0.8%	-2.3%	0.4%
Routine Annual Capital Improvements	\$ 6,904,316	\$ 7,042,403	\$ 7,190,293	\$ 7,341,289	\$ 7,495,456	\$ 7,652,861	\$ 7,813,571	\$ 7,977,656	\$ 8,145,187	\$ 8,316,236
Cash Financing of Major Capital Improvements	120,000,000	121,366,038	160,289,651	149,123,366	119,588,335	121,390,975	146,601,316	93,730,933	164,082,056	257,155,186
Non-Recurring Projects & Studies	5,382,019	6,417,237	5,966,508	6,570,748	6,691,362	6,953,319	7,179,219	7,401,775	7,283,748	7,462,160
Transfer to/(from) WW Operating Reserve	-	-	-	-	-	-	-	-	-	-
Subtotal: Non-Operating Expenses	\$ 247,921,899	\$ 256,496,963	\$ 303,858,836	\$ 305,078,065	\$ 290,752,318	\$ 313,011,765	\$ 353,995,158	\$ 303,141,234	\$ 369,008,453	\$ 463,242,110
% Change	28.4%	3.5%	18.5%	0.4%	-4.7%	7.7%	13.1%	-14.4%	21.7%	25.5%
Total: Annual Wastewater Revenue Requirements	\$ 425,619,998	\$ 437,201,686	\$ 495,290,475	\$ 497,130,001	\$ 489,569,852	\$ 516,685,601	\$ 563,675,738	\$ 519,706,741	\$ 592,757,629	\$ 693,692,631
% Change	19.9%	2.7%	13.3%	0.4%	-1.5%	5.5%	9.1%	-7.8%	14.1%	17.0%
Debt Service Coverage										
Senior Revenue Bonds	3.00	3.39	3.19	3.09	2.86	2.57	2.50	2.50	2.58	2.68
Total Debt	2.03	2.23	2.10	2.05	1.94	1.81	1.82	1.85	1.98	2.10

Metropolitan St. Louis Sewer District

Revenue Requirement MIEC Adjusted

	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028
Wastewater Revenue Requirements										
General Fund Operating Expenses										
Board of Trustees	\$ 6,100	\$ 6,168	\$ 6,241	\$ 6,315	\$ 6,391	\$ 6,469	\$ 6,548	\$ 6,629	\$ 6,711	\$ 6,795
Rate Commission	595,508	11,910	12,483	12,745	649,773	13,286	13,565	13,850	14,141	14,438
Civil Service Commission	10,000	10,200	10,414	10,633	10,856	11,084	11,317	11,555	11,797	12,045
Secretary - Treasurer	3,304,917	2,125,419	3,432,757	2,242,021	2,303,325	2,366,763	2,432,432	2,500,437	2,570,886	2,643,896
Executive Director	3,918,653	4,005,345	4,114,866	4,228,192	4,345,574	4,467,200	4,593,271	4,723,997	4,859,605	5,000,331
General Counsel	3,151,595	3,219,012	3,299,245	3,381,910	3,467,139	3,555,032	3,645,697	3,739,247	3,835,801	3,935,484
Office of Human Resources	8,386,447	8,573,158	8,962,983	9,376,205	9,814,565	10,279,839	10,773,936	11,298,912	11,856,979	12,450,517
Engineering	15,102,179	15,856,139	14,487,758	15,021,115	15,583,578	16,176,924	16,803,050	17,463,986	18,161,897	18,899,101
Finance	21,226,078	21,666,097	22,186,775	22,722,245	23,273,323	23,840,609	24,424,735	25,026,367	25,646,206	26,284,993
Information Systems	15,495,944	15,881,698	16,345,457	16,825,262	17,321,964	17,836,267	18,368,912	18,920,676	19,492,379	20,084,880
Operations										
Collection System	25,344,511	25,910,957	26,840,257	27,814,917	28,838,960	29,915,312	31,047,095	32,237,641	33,490,508	34,809,499
Pump Stations	12,198,324	12,405,110	12,757,148	13,121,895	13,500,102	13,892,391	14,299,426	14,721,903	15,160,562	15,616,187
Wastewater Treatment	44,878,243	45,701,793	46,993,748	48,331,879	49,719,067	51,157,612	52,649,951	54,198,664	55,806,486	57,476,316
Support	13,139,533	13,422,376	13,776,374	14,142,272	14,520,838	14,912,635	15,318,263	15,738,352	16,173,572	16,624,633
<i>Subtotal: Operations</i>	\$ 95,560,611	\$ 97,440,236	\$ 100,367,527	\$ 103,410,963	\$ 106,578,966	\$ 109,877,951	\$ 113,314,734	\$ 116,896,559	\$ 120,631,128	\$ 124,526,635
Subtotal: General Fund Operating Expenses	\$ 166,758,032	\$ 168,795,383	\$ 173,226,505	\$ 177,237,606	\$ 183,355,453	\$ 188,431,423	\$ 194,388,197	\$ 200,602,214	\$ 207,087,529	\$ 213,859,116
% Change	12.4%	1.2%	2.6%	2.3%	3.5%	2.8%	3.2%	3.2%	3.2%	3.3%
Other Operating Expenses										
Water Backup Program	\$ 4,425,300	\$ 4,513,806	\$ 4,608,596	\$ 4,705,376	\$ 4,804,189	\$ 4,905,077	\$ 5,008,084	\$ 5,113,254	\$ 5,220,632	\$ 5,330,265
General Insurance Fund	6,089,400	6,217,173	6,356,013	6,498,044	6,643,340	6,791,979	6,944,043	7,099,611	7,258,770	7,421,604
Capital Funded in O&M Budget	10,329,182	10,367,686	10,546,625	11,014,582	11,825,835	11,578,670	11,601,087	12,244,337	12,914,863	12,816,556
Capitalized Internal Labor	(9,903,814)	(10,200,928)	(8,758,000)	(9,020,740)	(9,291,362)	(9,570,103)	(9,857,206)	(10,152,922)	(10,457,510)	(10,771,235)
Additional O&M	-	1,011,603	5,451,900	1,617,068	1,480,080	1,536,790	1,596,375	1,659,012	1,724,892	1,794,215
<i>Subtotal: Other Operating Expenses</i>	\$ 10,940,068	\$ 11,909,340	\$ 18,205,135	\$ 14,814,330	\$ 15,462,081	\$ 15,242,414	\$ 15,292,383	\$ 15,963,293	\$ 16,661,647	\$ 16,591,405
% Change	-19.7%	8.9%	52.9%	-18.6%	4.4%	-1.4%	0.3%	4.4%	4.4%	-0.4%
Non-Operating Expenses										
Annual Debt Service										
Revenue Bond Debt Service (Accrued)										
Existing Bonds	\$ 77,962,008	\$ 78,123,917	\$ 78,198,040	\$ 77,923,075	\$ 78,185,172	\$ 78,085,875	\$ 78,646,087	\$ 81,717,837	\$ 84,009,170	\$ 84,635,795
Proposed Bonds	-	2,014,921	8,725,314	17,083,799	26,334,781	36,583,020	44,718,336	47,036,119	47,036,119	48,305,218
<i>Subtotal: Revenue Bond Debt Service</i>	\$ 77,962,008	\$ 80,138,838	\$ 86,923,354	\$ 95,006,874	\$ 104,519,953	\$ 114,668,894	\$ 123,364,423	\$ 128,753,956	\$ 131,045,289	\$ 132,941,013
SRF & Direct Loan Debt Service (Accrued)										
Existing Bonds	\$ 37,673,555	\$ 37,741,217	\$ 37,911,613	\$ 39,182,514	\$ 39,176,322	\$ 39,257,083	\$ 37,619,627	\$ 32,630,516	\$ 25,817,459	\$ 24,740,530
Proposed Bonds	-	2,602,484	6,310,922	8,539,747	10,779,222	13,029,447	15,386,867	16,571,503	16,492,057	16,410,339
<i>Subtotal: SRF & Direct Loan Debt Service</i>	\$ 37,673,555	\$ 40,343,701	\$ 44,222,535	\$ 47,722,261	\$ 49,955,544	\$ 52,286,529	\$ 53,006,493	\$ 49,202,019	\$ 42,309,517	\$ 41,150,869
<i>Subtotal: Total Debt Service</i>	\$ 115,635,563	\$ 120,482,539	\$ 131,145,889	\$ 142,729,134	\$ 154,475,497	\$ 166,955,423	\$ 176,370,916	\$ 177,955,975	\$ 173,354,805	\$ 174,091,882
% Change	10.1%	4.2%	8.9%	8.8%	8.2%	8.1%	5.6%	0.9%	-2.6%	0.4%
Routine Annual Capital Improvements	\$ 6,904,316	\$ 7,042,403	\$ 7,190,293	\$ 7,341,289	\$ 7,495,456	\$ 7,652,861	\$ 7,813,571	\$ 7,977,656	\$ 8,145,187	\$ 8,316,236
Cash Financing of Major Capital Improvements	120,000,000	121,366,038	104,916,862	101,291,343	97,758,835	100,467,975	146,988,416	163,030,933	232,682,056	256,455,186
Non-Recurring Projects & Studies	5,382,019	6,417,237	5,966,508	6,570,748	6,691,362	6,953,319	7,179,219	7,401,775	7,283,748	7,462,160
Transfer to/(from) WW Operating Reserve	-	-	-	-	-	-	-	-	-	-
<i>Subtotal: Non-Operating Expenses</i>	\$ 247,921,899	\$ 255,308,217	\$ 249,219,552	\$ 257,932,515	\$ 266,421,151	\$ 282,029,579	\$ 338,352,122	\$ 356,366,338	\$ 421,465,796	\$ 446,325,464
% Change	28.4%	3.0%	-2.4%	3.5%	3.3%	5.9%	20.0%	5.3%	18.3%	5.9%
Total: Annual Wastewater Revenue Requirements	\$ 425,619,998	\$ 436,012,939	\$ 440,651,192	\$ 449,984,451	\$ 465,238,685	\$ 485,703,415	\$ 548,032,702	\$ 572,931,845	\$ 645,214,972	\$ 676,775,985
% Change	19.9%	2.4%	1.1%	2.1%	3.4%	4.4%	12.8%	4.5%	12.6%	4.9%
Debt Service Coverage										
Senior Revenue Bonds	3.00	3.37	2.91	2.84	2.70	2.58	2.66	2.65	2.71	2.81
Total Debt	2.03	2.29	1.94	1.91	1.83	1.78	1.85	1.88	2.01	2.13

Metropolitan St. Louis Sewer District

Revenue Bond Authorization

<u>Line</u>	<u>Description</u>	<u>MSD Proposed</u>			<u>MIEC Proposed</u>		
		<u>Bond Issues</u> (1)	<u>Remaining Authorization</u> (2)	<u>Additional Authorization</u> (3)	<u>Bond Issues</u> (1)	<u>Remaining Authorization</u> (2)	<u>Additional Authorization</u> (3)
1	FY2015	\$0.00	\$518.00		\$0.00	\$518.00	
2	FY2016	\$150.00	\$368.00	\$900.00	\$150.00	\$368.00	\$900.00
3	FY2017	\$150.00	\$1,118.00		\$150.00	\$1,118.00	
4	FY2018	\$0.00	\$747.50		\$0.00	\$747.50	
5	FY2019	\$72.65	\$674.85		\$72.65	\$674.85	
6	FY2020	\$135.09	\$539.76		\$133.75	\$541.10	
7	FY2021	\$158.33	\$381.43		\$197.48	\$343.63	
8	FY2022	\$158.30	\$223.14	\$500.00	\$191.72	\$151.91	\$500.00
9	FY2023	\$285.81	\$437.33		\$220.84	\$431.08	
10	FY2024	\$301.81	\$135.52		\$235.60	\$195.48	
11	FY2025	\$135.49	\$0.03		\$136.70	\$58.79	
12	FY2026	\$0.00	\$0.03		\$0.00	\$58.79	
13	FY2027	\$0.00	\$0.03		\$0.00	\$58.79	
14	FY2028	\$0.00	\$0.03		\$0.00	\$58.79	

Source:
Exhibit MSD 52 - St. Louis MSD Rate Financial Plan Model FY21-24, 'CIRP' tab.

Metropolitan St. Louis Sewer District

CIRP Annual Need (\$ Millions)

<u>Line</u>	<u>Year</u>	<u>MSD Proposed</u> (1)	<u>MIEC Proposed</u>		<u>4-Yr Rate Cycle</u> (4)
			<u>Adjustment</u> (2)	<u>Annual</u> (3)	
1	FY 2012	\$119.18		\$119.18	N/A
2	FY 2013	\$184.45		\$184.45	
3	FY 2014	\$215.86		\$215.86	
4	FY 2015	\$171.93		\$171.93	
5	FY 2016	\$257.72		\$257.72	\$829.96
6	FY 2017	\$258.33		\$258.33	
7	FY 2018	\$280.70		\$280.70	
8	FY 2019	\$327.46		\$327.46	
9	FY 2020	\$372.40		\$372.40	\$1,238.90
10	FY 2021	\$359.36		\$359.36	
11	FY 2022	\$350.84		\$350.84	
12	FY 2023	\$447.54	(\$70.00)	\$377.54	
13	FY 2024	\$459.12	(\$70.00)	\$389.12	\$1,476.87
14	FY 2025	\$322.13	\$0.00	\$322.13	
15	FY 2026	\$118.45	\$70.00	\$188.45	
16	FY 2027	\$188.04	\$70.00	\$258.04	
17	FY 2028	\$282.87		\$282.87	\$1,051.49
18	FY21 - FY24 Total	\$1,616.87		\$1,476.87	
19	FY21 - FY28 Total	\$2,168.99		\$2,168.99	

Source:

Exhibit MSD 52 - St. Louis MSD Rate Financial Plan Model FY21-24, 'CIRP-Input' tab.

Metropolitan St. Louis Sewer District

Capital Investment and Replacement Plan Need

MSD Proposed: Base Scenario

(\$ Millions)

<u>Line</u>	<u>Year</u>	<u>Asset Management - Capacity</u>	<u>Asset Management - Renewal</u>	<u>Cityshed</u>	<u>Combined Sewer Overflow</u>	<u>Districtwide</u>	<u>Other</u>	<u>Sanitary Sewer Overflow</u>	<u>Treatment Plants</u>	<u>Subtotal</u>
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	FY 2012	\$9.9	\$0.0	\$0.0	\$3.1	\$0.0	\$0.0	\$23.5	\$82.7	\$119.2
2	FY 2013	\$0.0	\$15.3	\$14.8	\$37.8	\$15.7	\$0.0	\$72.7	\$28.2	\$184.5
3	FY 2014	\$1.8	\$37.1	\$14.9	\$43.5	\$6.9	\$0.5	\$101.5	\$9.7	\$215.9
4	FY 2015	\$29.2	\$18.9	\$5.8	\$10.0	\$0.3	\$0.0	\$98.2	\$9.6	\$171.9
5	FY 2016	\$49.7	\$27.1	\$0.9	\$27.5	\$6.0	\$0.6	\$138.8	\$7.1	\$257.7
6	FY 2017	\$51.1	\$19.0	\$7.5	\$58.8	\$8.8	\$0.6	\$107.9	\$4.8	\$258.3
7	FY 2018	\$45.9	\$22.1	\$11.5	\$50.2	\$9.0	\$0.8	\$126.3	\$14.8	\$280.7
8	FY 2019	\$51.9	\$32.1	\$12.5	\$28.8	\$10.3	\$0.1	\$179.6	\$12.1	\$327.5
9	FY 2020	\$48.1	\$50.4	\$25.4	\$38.3	\$13.1	(\$0.0)	\$175.3	\$21.9	\$372.4
10	FY 2021	\$97.4	\$28.0	\$22.3	\$36.8	\$14.1	(\$0.1)	\$133.0	\$27.8	\$359.4
11	FY 2022	\$156.7	\$23.0	\$24.4	\$8.9	\$14.3	(\$0.0)	\$70.4	\$53.0	\$350.8
12	FY 2023	\$120.6	\$16.3	\$16.0	\$38.6	\$15.6	(\$0.0)	\$77.1	\$163.4	\$447.5
13	FY 2024	\$102.7	\$35.9	\$12.3	\$30.5	\$15.7	\$0.0	\$37.1	\$225.0	\$459.1
14	FY 2025	\$27.2	\$28.8	\$20.2	\$15.7	\$15.0	\$0.0	\$17.1	\$198.2	\$322.1
15	FY 2026	\$8.4	\$31.9	\$1.3	\$16.1	\$14.7	\$0.0	\$12.2	\$33.8	\$118.4
16	FY 2027	\$14.5	\$34.9	(\$1.2)	\$98.2	\$16.9	\$0.0	\$16.8	\$7.9	\$188.0
17	FY 2028	\$10.6	\$39.7	\$18.4	\$168.7	\$16.2	\$0.0	\$22.1	\$7.2	\$282.9
18	FY21 - FY24 Total	\$477.5	\$103.2	\$75.0	\$114.8	\$59.8	(\$0.1)	\$317.6	\$469.2	\$1,616.9
19	FY21 - FY28 Total	\$440.9	\$210.4	\$91.4	\$376.6	\$108.4	(\$0.0)	\$252.8	\$688.5	\$2,169.0

Source: Exhibit MSD 52 - St. Louis MSD Rate Financial Plan Model FY21-24.

Metropolitan St. Louis Sewer District

Wastewater Treatment Plant CIRP Projects - Proposed Budget

Project Number	Budget Amount					Scope of Work
	FY 21	FY 22	FY 23	FY 24	Total	
12170	\$2,324,000	\$0	\$0	\$7,138,000	\$9,462,000	Decommission and abandon existing Fenton WWTF.
12255	\$2,500,000	\$33,300,000	\$32,550,000	\$21,950,000	\$90,300,000	Expand the existing WWTF to increase capacity for additional flow, and upgrade the facility to enable accommodation of potential nutrient removal requirements.
12548	\$600,000	\$2,400,000	\$0	\$0	\$3,000,000	Repair sluice gates and components, and concrete.
12552	\$900,000	\$3,480,000	\$0	\$0	\$4,380,000	Replace aeration control piping, and construct improvements to boskers switch track.
12565	\$3,000,000	\$2,050,000	\$111,000,000	\$165,000,000	\$281,050,000	Construct fluidized bed incinerators at the Bissell and Lemay Wastewater Treatment Facilities, to include redundant sludge acceptance systems and solids handling system improvements.
12566	\$14,700,000	\$8,500,000	\$0	\$0	\$23,200,000	Replace trickling filter media on six filters at the Bissell Plant.
12826	\$1,300,000	\$0	\$0	\$0	\$1,300,000	Replace clarifier equipment at 4 clarifiers.
13153	\$910,000	\$0	\$3,628,000	\$0	\$4,538,000	Construct concrete repairs, replace secondary clarifier duct bank, and renew 4 grit tanks.
13185	\$0	\$0	\$7,200,000	\$0	\$7,200,000	Design sludge transfer forcemains and related pump stations from the Grand Glaize and Lower Meramec Plant Facilities, to enable incineration of waste at the Lemay WWTF without trucking.
13220	\$500,000	\$0	\$0	\$0	\$500,000	Rebuild fine screens.
13221	\$0	\$0	\$100,000	\$320,000	\$420,000	Repair spalled and cracked concrete.
13222	\$0	\$1,100,000	\$0	\$0	\$1,100,000	Replace two membrane gas storage covers for the anaerobic digesters.
13223	\$400,000	\$0	\$0	\$0	\$400,000	Replace the service water piping in the digester and secondary tunnels.
13224	\$0	\$0	\$0	\$350,000	\$350,000	Provide construction management and inspection services for the sludge transfer forcemains to be constructed from the Grand Glaize WWTF to the Fenton WWTF tunnel intake, and from the Lower Meramec WWTF to the Lemay WWTF.
Proposed Total	\$27,134,000	\$50,830,000	\$154,478,000	\$194,758,000	\$427,200,000	

Source: Exhibit MSD 56B - Wastewater CIRP Project List, FY21-24

Metropolitan St. Louis Sewer District

Key Rating Agency Metrics

Line	Description	Approved		Proposed				Benchmarks			
		FY2019 (1)	FY2020 (2)	FY2021 (3)	FY2022 (4)	FY2023 (5)	FY2024 (6)	Strong (7)	Mid (8)	Weak (9)	Source (10)
MSD Proposed											
	Debt Service Coverage ¹										
1	Senior Revenue Bonds	3.00	3.39	3.19	3.09	2.86	2.57	> 2.7x	2.2x	< 1.8x	Fitch Medians
2	Total Debt	2.03	2.23	2.10	2.05	1.94	1.81	> 2.4x	2.0x	< 1.6x	Fitch Medians
3	Debt to Plant (Equity) ²	70%	66%	64%	62%	64%	64%	23.5%	33.0%	44.0%	S&P Key Measures
4	Outstanding Debt per Customer ³	\$3,966	\$4,160	\$4,399	\$4,626	\$5,139	\$5,674	< \$1,500	\$1,800	> \$2,100	Fitch Criteria
5	Average Bill as % of MHI ⁴	1.10%	1.20%	1.22%	1.26%	1.29%	1.33%	< 0.6%	0.8%	> 1.0%	Fitch Criteria
	<u>CIRP Financing⁵</u>										
6	Percent Debt Financed	61%	63%	49%	50%	68%	70%	< 50%	75%	> 90%	Fitch Criteria
7	Percent Cash Financed	37%	33%	45%	43%	27%	27%				
8	Percent Other	2%	3%	6%	6%	4%	3%				
MIEC Adjusted											
	Debt Service Coverage ¹										
9	Senior Revenue Bonds	3.00	3.37	2.91	2.84	2.70	2.58	> 2.7x	2.2x	< 1.8x	Fitch Medians
10	Total Debt	2.03	2.29	1.94	1.91	1.83	1.78	> 2.4x	2.0x	< 1.6x	Fitch Medians
11	Debt to Plant (Equity) ²	70%	66%	65%	64%	64%	64%	23.5%	33.0%	44.0%	S&P Key Measures
12	Outstanding Debt per Customer ³	\$3,966	\$4,156	\$4,485	\$4,784	\$5,134	\$5,499	< \$1,500	\$1,800	> \$2,100	Fitch Criteria
13	Average Bill as % of MHI ⁴	1.10%	1.20%	1.16%	1.19%	1.23%	1.26%	< 0.6%	0.8%	> 1.0%	Fitch Criteria
	<u>CIRP Financing⁵</u>										
14	Percent Debt Financed	61%	63%	64%	64%	68%	71%	< 50%	75%	> 90%	Fitch Criteria
15	Percent Cash Financed	37%	33%	30%	30%	27%	26%				
16	Percent Other	2%	3%	6%	6%	5%	3%				

Sources:

Exhibit MSD 52 - St. Louis MSD Rate Financial Plan Model FY21-24.

¹ 'Financial Plan' tab.

² Total Debt ('Debt' tab) divided by Total Plant and CIRP CWIP ('Plant' tab).

³ Total Debt ('Debt' tab) divided by Total Customers ('Demand Projection' tab).

⁴ Average Residential Bill at 6 ccf per month ('Impacts' tab) times 12 divided by the Median Household Income (MHI).

⁵ 'CIRP' tab.

Metropolitan St. Louis Sewer District

Comparison of Number of Customer Accounts to the Annual Use Per Customer

<u>Line</u>	<u>Description</u>	<u>FY 2010 Actual</u>	<u>FY 2011 Actual</u>	<u>FY 2012 Actual</u>	<u>FY 2013 Actual</u>	<u>FY 2014 Actual</u>	<u>FY 2015 Actual</u>	<u>FY 2016 Actual</u>	<u>FY 2017 Actual</u>	<u>FY 2018 Actual</u>	<u>FY 2019 Projected</u>	<u>FY 2020 Projected</u>	<u>FY 2021 Projected</u>	<u>FY 2022 Projected</u>	<u>FY 2023 Projected</u>	<u>FY 2024 Projected</u>
1	Number of Customer Accounts ¹	427,020	425,600	423,900	423,100	424,500	423,000	424,700	425,000	426,600	427,077	427,555	428,035	428,517	429,000	429,483
2	Annual Percent Change		-0.3%	-0.4%	-0.2%	0.3%	-0.4%	0.4%	0.1%	0.4%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
3	Annual Use per Customer (CCF) ²	169.5	166.3	162.2	159.9	156.1	152.2	146.0	143.8	142.9	142.8	142.8	142.8	142.9	142.9	143.0
4	Annual Percent Change		-1.9%	-2.5%	-1.4%	-2.3%	-2.5%	-4.1%	-1.5%	-0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%

Sources

¹ Exhibit MSD 52, MSD Financial Plan Model, Demand Projection tab, Excel row 29, columns R - AE.

² Exhibit MSD 52, MSD Financial Plan Model, Demand Projection tab, Excel row 146, columns R - AE divided by Line 1.

Metropolitan St. Louis Sewer District
MIEC Proposed Rates

#	Type of Charge	Effective Date	Approved					Billing Units - Demand Projection Tab				Annual Revenues								
			FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024	FY 2021	FY 2022	FY 2023	FY 2024					
	<u>Base Charge (\$/Bill)</u>																			
1.	Billing & Collection Charge		\$ 7.38	\$ 5.11	\$ 5.31	\$ 5.51	\$ 5.72													
2.	System Availability Charge		\$ 18.97	\$ 21.40	\$ 22.21	\$ 23.05	\$ 23.92													
3.	Total: Base Charge		\$ 26.35	\$ 26.51	\$ 27.52	\$ 28.56	\$ 29.64	4,841,255	4,847,608	4,853,974	4,860,352	\$ 128,341,670	\$ 133,406,172	\$ 138,629,497	\$ 144,060,833					
	<u>Compliance Charge (\$/Bill) (a)</u>																			
4.	Tier 1		\$ 3.14	\$ 4.44	\$ 4.55	\$ 4.71	\$ 4.85	277,701	277,146	276,592	276,038	\$ 8,594,846	\$ 8,888,072	\$ 9,202,216	\$ 9,520,551					
5.	Tier 2		\$ 62.61	\$ 62.16	\$ 63.64	\$ 65.80	\$ 67.67	2,369	2,364	2,360	2,355	\$ 210,059	\$ 215,502	\$ 222,690	\$ 229,165					
6.	Tier 3		\$ 137.75	\$ 133.20	\$ 136.37	\$ 140.99	\$ 144.98	6,914	6,900	6,886	6,873	\$ 1,104,235	\$ 1,130,841	\$ 1,167,521	\$ 1,200,163					
7.	Tier 4		\$ 203.49	\$ 177.60	\$ 181.83	\$ 187.98	\$ 193.30	2,027	2,023	2,019	2,015	\$ 413,731	\$ 423,515	\$ 437,194	\$ 449,224					
8.	Tier 5		\$ 266.10	\$ 222.00	\$ 227.29	\$ 234.98	\$ 241.63	1,213	1,211	1,208	1,206	\$ 301,443	\$ 308,575	\$ 318,356	\$ 327,152					
9.	Total Non-Residential Service Charge (b)		\$ 29.49	\$ 30.95	\$ 32.07	\$ 33.27	\$ 34.49													
	<u>Volume Charge</u>																			
10.	Metered (\$/ccf)		\$ 4.87	\$ 4.70	\$ 4.75	\$ 4.90	\$ 5.11	51,223,740	51,331,265	51,451,311	51,583,892	\$ 240,754,594	\$ 243,871,655	\$ 251,897,015	\$ 263,649,002					
	<u>Unmetered (\$/Bill per fixture)</u>																			
11.	Per Room		\$ 2.89	\$ 2.79	\$ 2.83	\$ 2.93	\$ 3.07	6,271,843	6,258,233	6,244,667	6,231,143	\$ 17,474,486	\$ 17,700,966	\$ 18,283,717	\$ 19,136,979					
12.	Per Water Closet		\$ 10.72	\$ 10.41	\$ 10.57	\$ 10.94	\$ 11.48	1,585,462	1,582,017	1,578,583	1,575,160	\$ 16,511,873	\$ 16,725,830	\$ 17,276,426	\$ 18,082,632					
13.	Per Bath		\$ 8.93	\$ 8.69	\$ 8.82	\$ 9.13	\$ 9.57	1,320,941	1,317,899	1,314,867	1,311,845	\$ 11,472,632	\$ 11,619,777	\$ 12,000,724	\$ 12,559,103					
14.	Per Separate Shower		\$ 8.93	\$ 8.69	\$ 8.82	\$ 9.13	\$ 9.57	159,329	159,092	158,856	158,620	\$ 1,383,804	\$ 1,402,697	\$ 1,449,871	\$ 1,518,567					
	<u>Extra Strength Surcharges (\$/ton) (a)</u>																			
15.	Suspended Solids over 300 mg/l		\$ 283.87	\$ 277.81	\$ 284.81	\$ 297.73	\$ 315.43	5,602	5,535	5,469	5,403	\$ 1,556,264	\$ 1,576,413	\$ 1,628,289	\$ 1,704,256					
16.	Biochemical Oxygen Demand over 300 mg/l		\$ 708.56	\$ 693.41	\$ 710.89	\$ 743.16	\$ 787.34	5,017	4,957	4,898	4,839	\$ 3,478,858	\$ 3,523,903	\$ 3,639,992	\$ 3,809,945					
17.	Chemical Oxygen Demand over 600 mg/l		\$ 354.30	\$ 346.71	\$ 355.45	\$ 371.58	\$ 393.67	1,922	1,899	1,876	1,853	\$ 666,371	\$ 674,994	\$ 697,083	\$ 729,472					

ccf = hundred cubic feet (approx. 748 gallons)
mg/l = milligram per liter

- (a) Applicable only to non-residential customers.
- (b) Total for base service charge and Tier 1 compliance (line 3 + line 4)

Total Rate Revenues		\$ 432,264,866	\$ 441,468,914	\$ 456,850,592	\$ 476,977,044																
Low Income & Arnold WT						Held at MSD Proposed	\$ (688,255)	\$ (637,707)	\$ (578,146)	\$ (508,326)											
Adjustments to Revenue (Bad Deb/Billing Adj.)						Held at MSD Proposed	\$ 1,156,457	\$ 1,447,174	\$ 1,770,993	\$ 2,131,148											
Misc. Revenue						Held at MSD Proposed	\$ 7,918,125	\$ 7,706,071	\$ 7,195,247	\$ 7,103,549											
Total Revenues		\$ 440,651,192	\$ 449,984,451	\$ 465,238,685	\$ 485,703,415																
MIEC Revenue Requirement		\$ 440,651,192	\$ 449,984,451	\$ 465,238,685	\$ 485,703,415																
						Differ	\$ -	\$ -	\$ -	\$ -											

Wastewater Rate Change Proceeding - 2019

**BEFORE THE RATE COMMISSION OF THE
METROPOLITAN ST. LOUIS SEWER DISTRICT**


For Consideration of a Wastewater)
Rate Change Proposal By the Rate)
Commission of the Metropolitan)
St. Louis Sewer District)

REBUTTAL TESTIMONY SUBMITTED BY INTERVENOR
MISSOURI INDUSTRIAL ENERGY CONSUMERS

Pursuant to Section 3(8) of the Operational Rules, Regulations and Procedures of the Rate Commission of the Metropolitan St. Louis Sewer District, Intervenor Missouri Industrial Energy Consumers submits the attached written testimony prepared by Mr. Michael P. Gorman.

Respectfully submitted,

BRYAN CAVE LEIGHTON PAISNER LLP

By: _____

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ATTORNEY FOR THE MIEC

Dated: April 23, 2019

Wastewater Rate Change Proceeding - 2019

CERTIFICATE OF SERVICE

The undersigned certifies that a copy of the foregoing was sent by electronic transmission to the following on this 23rd day of April, 2019.

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