



2024 Municipal Market Outlook and GLWA Debt Management Considerations

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Agenda

- I. Municipal Market Update
- II. Update on Potential Refinancing Opportunity
- III. Rating Agency Update
- IV. SRF Borrowing and Notice of Intent Status
- V. Appendix



Select Public Finance Acronyms

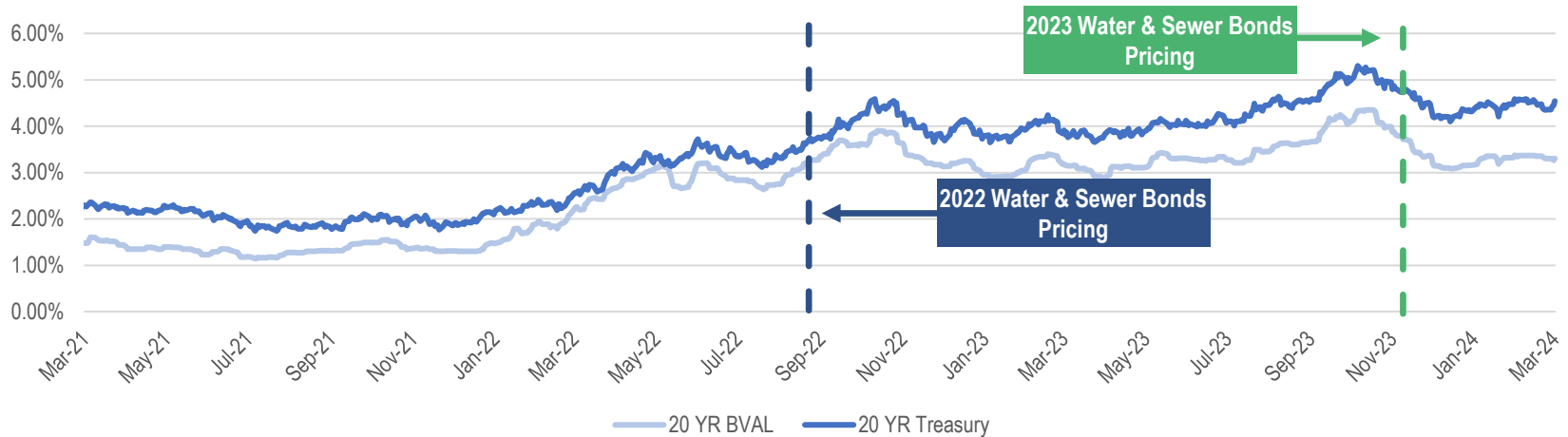
- **DS** – Debt Service. The amount of money necessary to pay interest on outstanding bonds, the principal of maturing or redeemed bonds and any required contributions to a sinking fund for term bonds.
- **DSRF** – Debt Service Reserve Fund. A fund in which funds are placed to be applied to pay debt service if pledged revenues are insufficient to satisfy the debt service requirements.
- **CWSRF** – Clean Water State Revolving Fund. Michigan's CWSRF program is a low-interest loan financing program that assists qualified municipalities with the construction of needed water pollution control facilities.
- **DWSRF** – Drinking Water State Revolving Fund. Michigan's DWSRF program is a low-interest loan financing program that assists eligible water suppliers in satisfying the requirements of the Safe Drinking Water Act.
- **FOMC** – Federal Open Market Committee. A key committee within the Federal Reserve System that oversees open market operations and makes key decisions about interest rates and the growth of the United States money supply.
- **NOI** – Notice of Intent. A notice of intent to issue revenue bonds funding new money projects is required under Michigan Public Act 94.
- **PV** – Present Value. The current value of a payment or stream of payments expected to be received in the future discounted at a given interest rate or rates.
- **SRF** – State Revolving Fund. A state revolving fund is a fund administered by a U.S. state for the purpose of providing low-interest loans to eligible borrowers for investments in water and sanitation infrastructure.
- **WAM** – Weighted Average Maturity. A reflection of the rapidity with which the principal of a bond issue is expected to be paid.



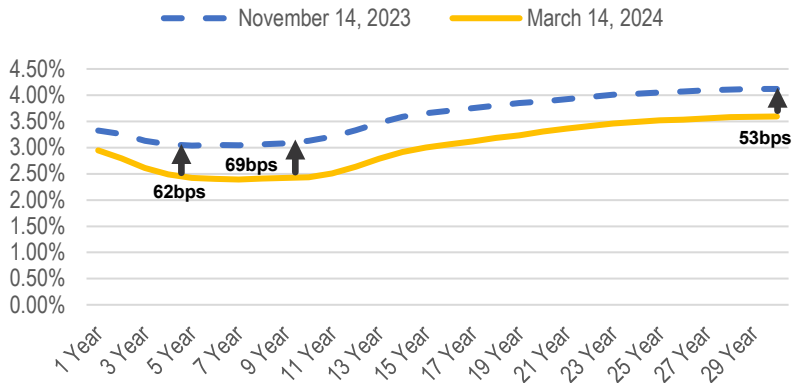
I. Municipal Market Update



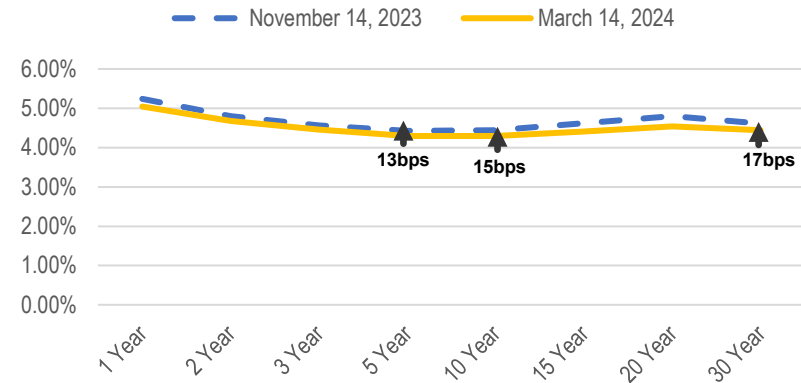
Despite Volatility Throughout 2023, Interest Rates are Similar to Last Year



Tax-Exempt Yield Curve Comparison



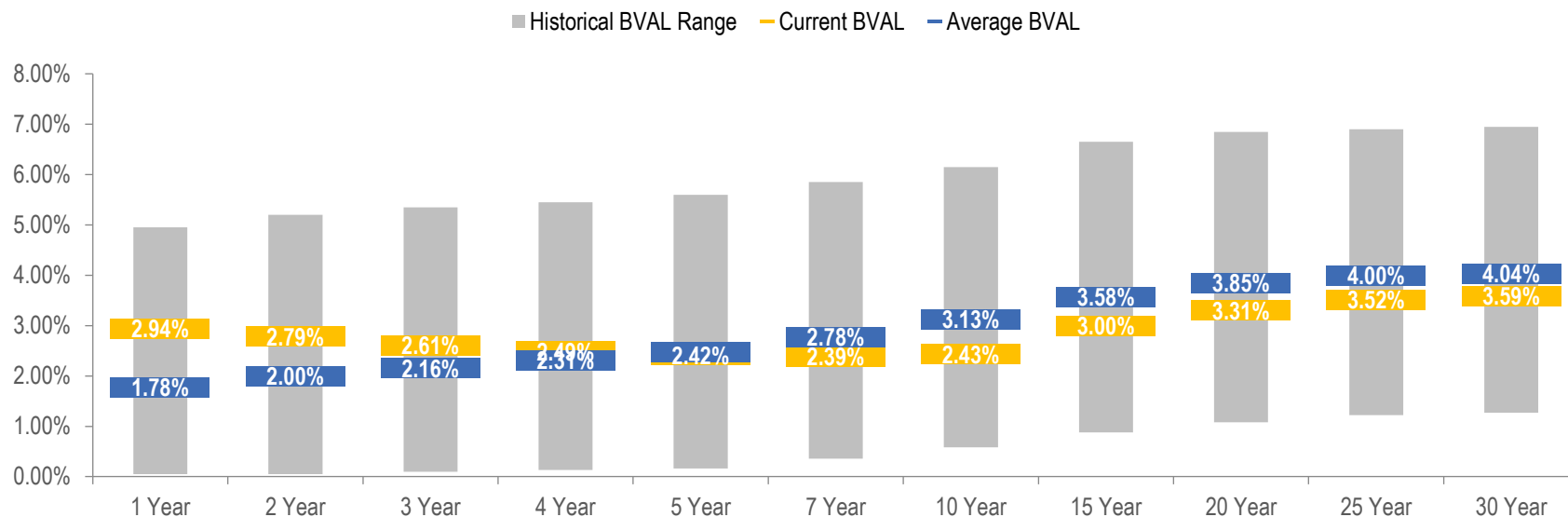
Taxable Yield Curve Comparison





Inverted Yield Curve With Short-Term Rates Above Historical Averages and Long-Term Rates Moderately Below

30 Year History of AAA BVAL Rate Position
(March 14, 1994 to March 14, 2024)

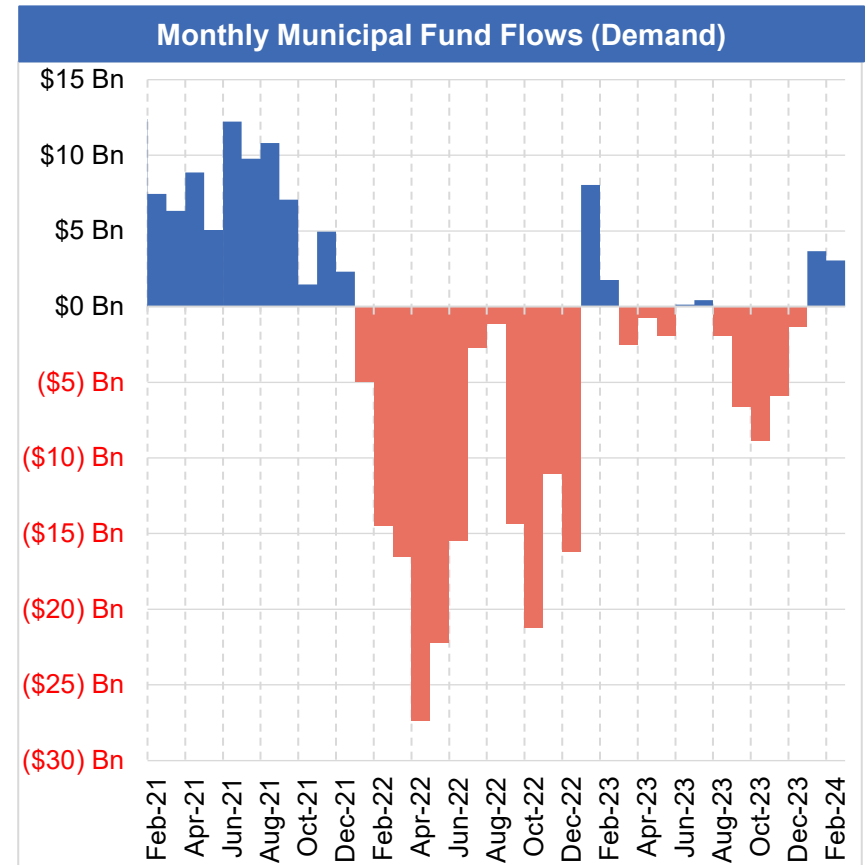
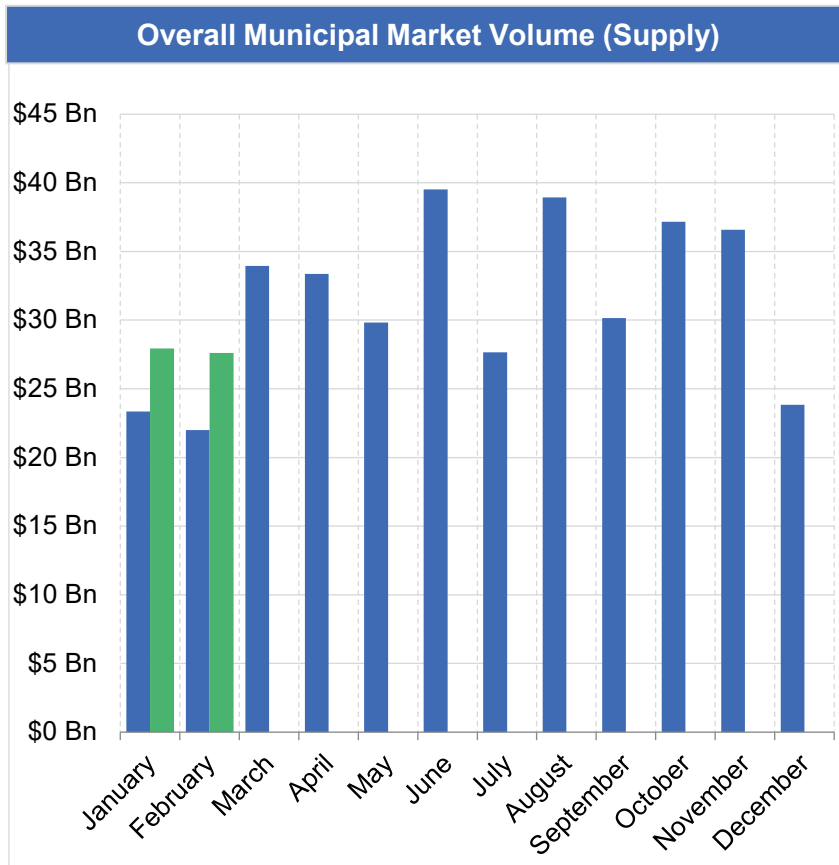


Statistic	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year	15 Year	20 Year	25 Year	30 Year
3/14/2024	2.94%	2.79%	2.61%	2.49%	2.42%	2.39%	2.43%	3.00%	3.31%	3.52%	3.59%
Average	1.78%	2.00%	2.16%	2.31%	2.47%	2.78%	3.13%	3.58%	3.85%	4.00%	4.04%
Spread to Average	1.16%	0.79%	0.45%	0.18%	-0.05%	-0.39%	-0.70%	-0.58%	-0.54%	-0.48%	-0.45%
Minimum	0.05%	0.05%	0.10%	0.13%	0.16%	0.36%	0.58%	0.88%	1.08%	1.22%	1.27%
Spread to Minimum	2.89%	2.74%	2.51%	2.36%	2.26%	2.03%	1.85%	2.12%	2.23%	2.30%	2.32%
Maximum	4.95%	5.20%	5.35%	5.45%	5.60%	5.85%	6.15%	6.65%	6.85%	6.90%	6.95%
Spread to Maximum	-2.01%	-2.41%	-2.74%	-2.96%	-3.18%	-3.46%	-3.72%	-3.65%	-3.54%	-3.38%	-3.36%
Percent of Market Days Lower	68.37%	65.81%	60.83%	56.53%	51.31%	45.70%	35.42%	37.87%	37.68%	37.97%	38.04%



Municipal Market Funds Experienced Significant Outflows in 2023, but Rebound to Start 2024

- New issuance volume was up by 25.6% year-over-year in February
- Last month, funds reported strong inflows of over \$3.0 billion





Tax-Exempt to Taxable Ratios are Historically Low as Tax-Exempt Bonds Have Outperformed





FOMC Signals Hesitation to Cut Rates

- At the Federal Reserve Open Market Committee meeting on January 31, the committee stated that it “... **does not expect it will be appropriate to reduce the target range until it has gained greater confidence that inflation is moving sustainably toward 2 percent.**”
- The current expectation for the March 20 FOMC meeting is that the fed funds rate will maintain at the current 5.25-5.50%
- The Fed has stated that it will reduce holdings of treasury and agency securities in accordance with previously outlined plans

CME FEDWATCH TOOL- Rate Probabilities by Meeting Date								
Meeting Date	3.50-3.75%	3.75-4.00%	4.00-4.25%	4.25-4.50%	4.50-4.75%	4.75-5.00%	5.00-5.25%	5.25-5.50%
3/20/2024	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	99.0%
5/1/2024	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.3%	94.6%
6/12/2024	0.0%	0.0%	0.0%	0.0%	0.0%	3.0%	55.5%	41.5%
7/31/2024	0.0%	0.0%	0.0%	0.0%	1.3%	25.8%	49.4%	23.5%
9/18/2024	0.0%	0.0%	0.0%	1.0%	19.4%	43.3%	30.2%	6.1%
11/7/2024	0.0%	0.0%	0.5%	9.7%	30.7%	37.1%	18.8%	3.2%
12/18/2024	0.0%	0.3%	6.5%	23.5%	34.9%	25.1%	8.6%	1.1%
1/29/2025	0.2%	3.6%	15.4%	29.4%	29.8%	16.5%	4.7%	0.5%

Bond Yield Forecast (As of March 11, 2024)											
Average Forecasts	Current	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25	Q3 25	Q4 25	Q1 26	Q2 26
30-Year UST	4.26 %	4.36 %	4.22 %	4.11 %	4.08 %	3.98 %	3.94 %	3.92 %	3.95 %	3.88 %	3.87 %
10-Year UST	4.10 %	4.14 %	3.98 %	3.87 %	3.83 %	3.74 %	3.67 %	3.64 %	3.63 %	3.59 %	3.57 %
5-Year UST	4.08 %	4.08 %	3.92 %	3.76 %	3.64 %	3.57 %	3.51 %	3.49 %	3.48 %	3.43 %	3.40 %
2-Year UST	4.52 %	4.41 %	4.17 %	3.89 %	3.66 %	3.50 %	3.36 %	3.27 %	3.20 %	3.20 %	3.14 %
3M Term SOFR	5.31 %	5.29 %	5.06 %	4.72 %	4.37 %	4.00 %	3.69 %	3.48 %	3.26 %	3.23 %	3.13 %
Fed Funds Target Rate (Upper)	5.50 %	5.50 %	5.25 %	4.90 %	4.50 %	4.10 %	3.80 %	3.55 %	3.35 %	3.20 %	3.10 %
Fed Funds Target Rate (Lower)	5.25 %	5.25 %	5.01 %	4.63 %	4.26 %	3.86 %	3.53 %	3.29 %	3.11 %	2.95 %	2.86 %

Source: Bloomberg; Federal Reserve press release dated January 31, 2024; CME FedWatch Tool as of March 14, 2024.

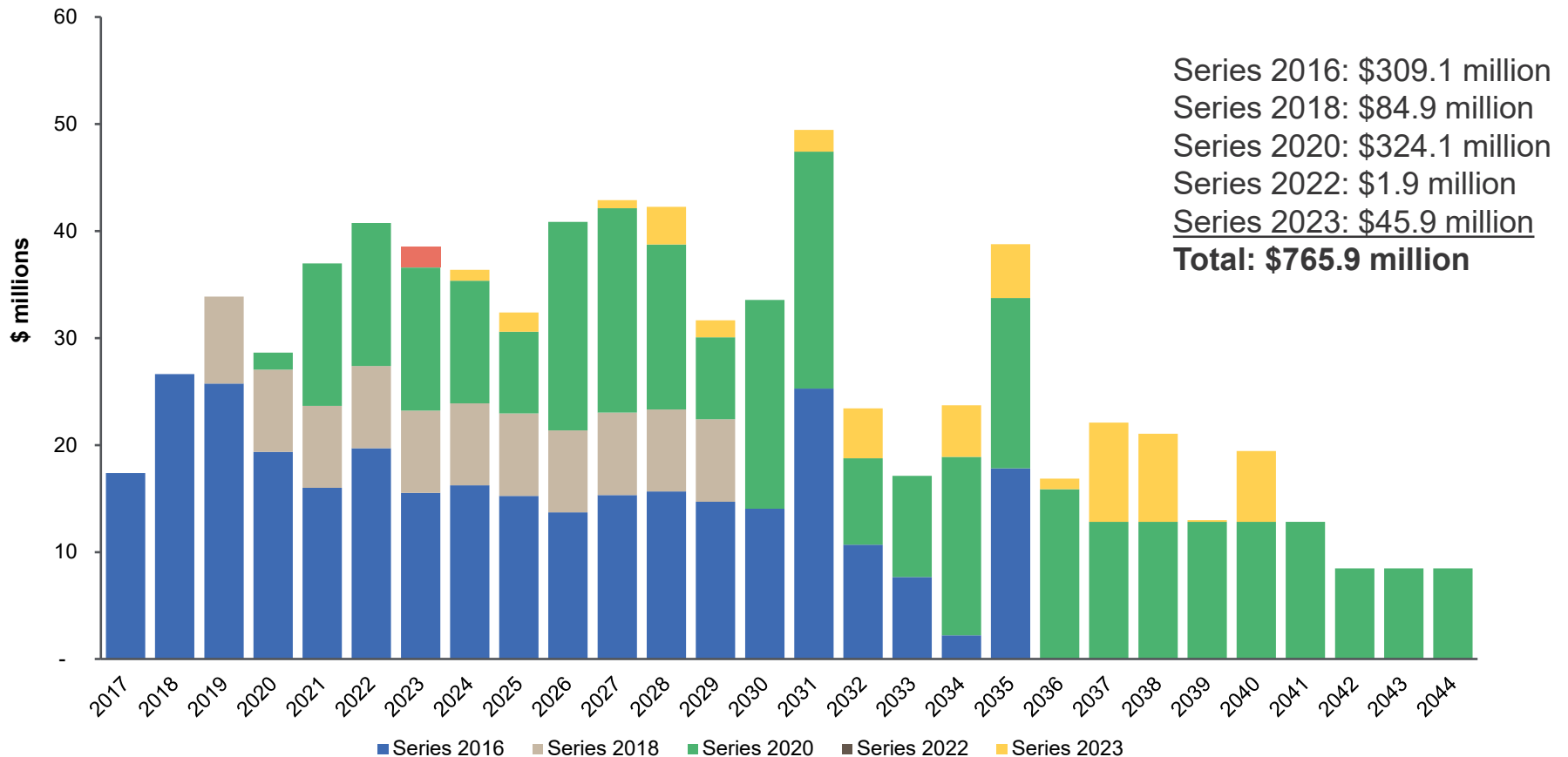


II. Update on Potential Refinancing Opportunity



History of Debt Service Savings Achieved Since 2016

- Through the leadership of the Authority's management team, the financing team has been able to achieve over \$765 million of cash flow debt service savings for the systems since the stand-up of GLWA



1: Totals may not add due to rounding
Note: Debt service savings is shown on a cash flow basis



Refunding Opportunities for GLWA in the Current Market

- GLWA has an opportunity in the current market to generate substantial present value savings through a tax-exempt current refunding executed as soon as April 2, 2024
 - Targeted bonds become eligible for a tax-exempt refunding 90 days in advance of July 1, 2024 call date
 - Although the finance team has monitored these bonds for refunding for some time, savings has been significantly enhanced by recent declines in interest rates
- Assuming current interest rates, refunding of targeted bonds generates present value savings that is greater than \$90 million, split between the Water System and Sewer System
 - Water System net present value savings of \$46 million (10.5% of \$434.2 million refunded principal)
 - Sewer System net present value savings of \$45 million (10.4% of \$436.6 million refunded principal)
- Debt Management Policy provides that GLWA will generally target a minimum net present value threshold of 2.5% of the refunded bond principal amount
- Targeted bonds were monitored for refunding opportunities in concert with Series 2023 transactions, but prohibition on tax-exempt advance refunding provided only limited refinancing options at that time
 - Available alternatives that include taxable advance refunding or tax-exempt forward refunding would generate significantly lower savings and are less favorable from a risk perspective
- Refunding transaction will build on recent disclosure documents and ratings process to make process as efficient as possible



GLWA Upcoming Callable Par in 2024 Targeted for Refunding

Water							
Senior Lien							
Series Name	Indenture	Lien	Tax Status	Coupons (%)	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2014D-1	Water	Senior	Tax-Exempt	5.00	44,190	7/1/2024	44,190
Series 2014D-2	Water	Senior	Tax-Exempt	5.00	182,480	7/1/2024	136,925
Series 2014D-4	Water	Senior	Tax-Exempt	5.00	209,360	7/1/2024	209,360
					436,030		390,475

Second Lien							
Series Name	Indenture	Lien	Tax Status	Coupons (%)	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2014D-6	Water	Second	Tax-Exempt	5.00	45,820	7/1/2024	43,690

Sewer							
Senior Lien							
Series Name	Indenture	Lien	Tax Status	Coupons (%)	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2014C-3	Sewer	Senior	Tax-Exempt	5.00	347,585	7/1/2024	303,570
Series 2014C-6	Sewer	Senior	Tax-Exempt	5.00	88,900	7/1/2024	88,900
					436,485		392,470

Second Lien							
Series Name	Indenture	Lien	Tax Status	Coupons (%)	Outstanding (\$000s)	Next Call Date	Callable Par (\$000s)
Series 2014C-7	Sewer	Second	Tax-Exempt	5.00	48,800	7/1/2024	44,065



Current Refunding – Water System

Savings Summary

- Greater than \$55 million in gross cash flow savings can be achieved (~\$45.8 million present value)

Refunding Candidates

- Includes all callable bonds with 2024 call dates that generate positive NPV savings

Assumptions

- Uninsured, matched lien refunding
- Interest rates as of March 14, 2024
- Conservatively assumes no DSRF release
- Contribution of accrued interest from DS fund
- SLGS escrow as of March 14, 2024
- Savings structured for level savings by lien
- Par coupon structure
- Assumes par call on 1/1/2034
- PV at Bond Yields to 5/30/2024

Senior Lien Refunding	
Delivery Date:	5/30/2024
Call Date:	1/1/2034
Refunding Par (\$):	354,675,000
Refunded Par (\$):	390,475,000
NPV Savings (\$):	40,608,695
NPV Savings as % :	10.40%
Negative Arbitrage (\$) ¹ :	(934,855)
Escrow Efficiency ¹ :	102.4%
TIC:	3.04%
WAM:	6.17 yrs
Refunded Bonds WAM:	6.07 yrs
PV of 0.01% Change in Interest Rates (\$)	194,320
Second Lien Refunding	
Delivery Date:	5/30/2024
Call Date:	1/1/2034
Refunding Par (\$):	38,985,000
Refunded Par (\$):	43,690,000
NPV Savings (\$):	5,185,150
NPV Savings as % :	11.87%
Negative Arbitrage (\$) ¹ :	(91,282)
Escrow Efficiency ¹ :	101.8%
TIC:	3.55%
WAM:	10.68 yrs
Refunded Bonds WAM:	10.07 yrs
PV of 0.01% Change in Interest Rates (\$)	30,697

DSIR Year	Senior Lien Savings (\$)	Second Lien Savings (\$)	Total Savings (\$)
7/1/2024	154,139	20,258	174,397
7/1/2025	4,040,000	580,250	4,620,250
7/1/2026	4,037,500	578,000	4,615,500
7/1/2027	4,039,500	580,000	4,619,500
7/1/2028	4,040,500	581,000	4,621,500
7/1/2029	4,040,250	581,000	4,621,250
7/1/2030	4,038,500	545,000	4,583,500
7/1/2031	4,040,000	539,750	4,579,750
7/1/2032	4,039,250	538,750	4,578,000
7/1/2033	4,036,000	531,750	4,567,750
1/1/2034	4,040,000	579,000	4,619,000
7/1/2035	4,040,500	27,750	4,068,250
7/1/2036	192,250	582,750	775,000
7/1/2037	4,037,250	-	4,037,250
Total	48,815,639	6,265,258	55,080,897

1. Negative arbitrage and escrow efficiency calculated for illustrative purposes assuming earnings cap on investments at refunding bond yield



Current Refunding – Sewer System

Savings Summary

- Greater than \$52 million in gross cash flow savings can be achieved (~\$45.3 million present value)

Refunding Candidates

- Includes all callable bonds with 2024 call dates that generate positive NPV savings

Assumptions

- Uninsured, matched lien refunding
- Interest rates as of March 14, 2024
- Conservatively assumes no DSRF release
- Contribution of accrued interest from DS fund
- SLGS escrow as of March 14, 2024
- Savings structured for level savings by lien
- Par coupon structure
- Assumes par call on 1/1/2034
- PV at Bond Yields to 5/30/2024

Senior Lien Refunding	
Delivery Date:	5/30/2024
Call Date:	1/1/2034
Refunding Par (\$):	355,185,000
Refunded Par (\$):	392,470,000
NPV Savings (\$):	41,235,424
NPV Savings as % :	10.51%
Negative Arbitrage (\$) ¹ :	(958,099)
Escrow Efficiency ¹ :	102.4%
TIC:	2.90%
WAM:	5.92 yrs
Refunded Bonds WAM:	5.65 yrs
PV of 0.01% Change in Interest Rates (\$)	197,954
Second Lien Refunding	
Delivery Date:	5/30/2024
Call Date:	1/1/2034
Refunding Par (\$):	40,465,000
Refunded Par (\$):	44,065,000
NPV Savings (\$):	4,045,853
NPV Savings as % :	9.18%
Negative Arbitrage (\$) ¹ :	(103,970)
Escrow Efficiency ¹ :	102.6%
TIC:	3.02%
WAM:	5.29 yrs
Refunded Bonds WAM:	5.25 yrs
PV of 0.01% Change in Interest Rates (\$)	19,951

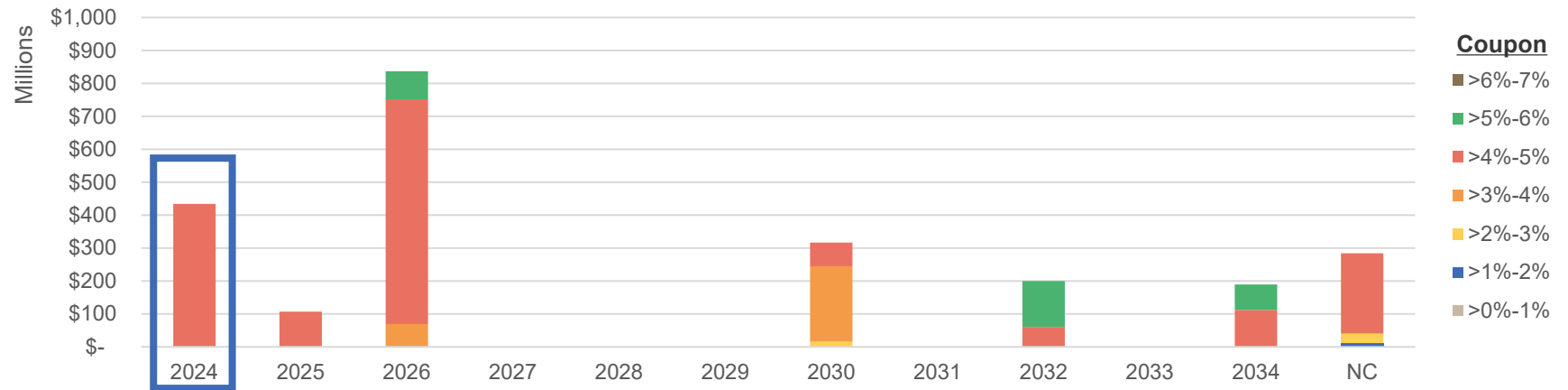
DSIR Year	Senior Lien Savings (\$)	Second Lien Savings (\$)	Total Savings (\$)
7/1/2024	160,533	15,500	176,033
7/1/2025	5,244,250	450,000	5,694,250
7/1/2026	5,245,250	451,500	5,696,750
7/1/2027	5,247,750	447,250	5,695,000
7/1/2028	5,246,250	447,500	5,693,750
7/1/2029	5,245,500	452,000	5,697,500
7/1/2030	5,245,000	380,500	5,625,500
7/1/2031	5,244,250	371,750	5,616,000
7/1/2032	5,247,750	447,750	5,695,500
7/1/2033	5,244,750	59,250	5,304,000
1/1/2034	-	449,250	449,250
7/1/2035	-	449,750	449,750
7/1/2036	-	404,250	404,250
Total	47,371,283	4,826,250	52,197,533

1. Negative arbitrage and escrow efficiency calculated for illustrative purposes assuming earnings cap on investments at refunding bond yield

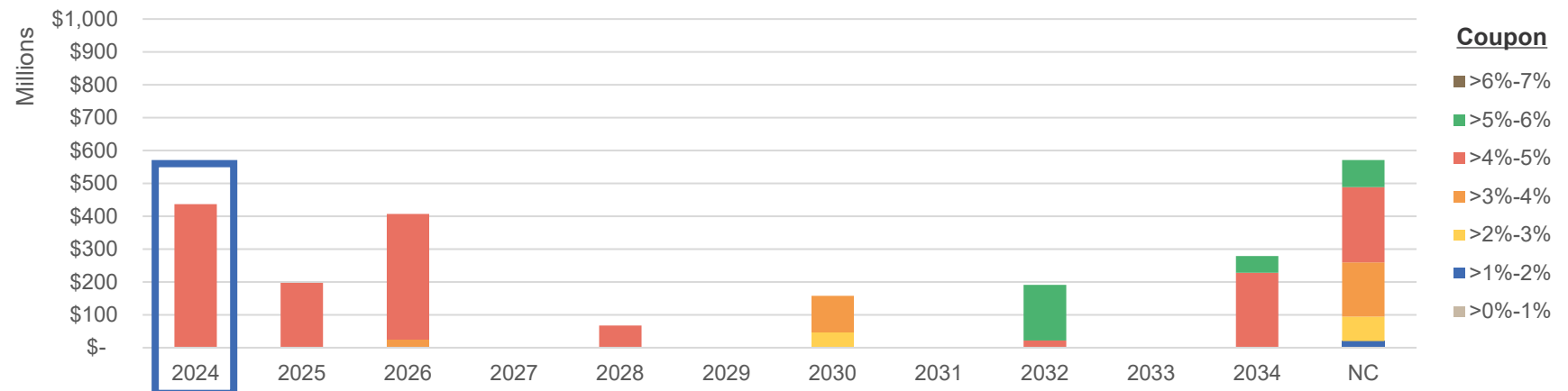


GLWA Fixed Rate Par Call Options¹

Distribution of Par Call Options on Water Debt (Senior & Second Lien)



Distribution of Par Call Options on Sewer Debt (Senior & Second Lien)

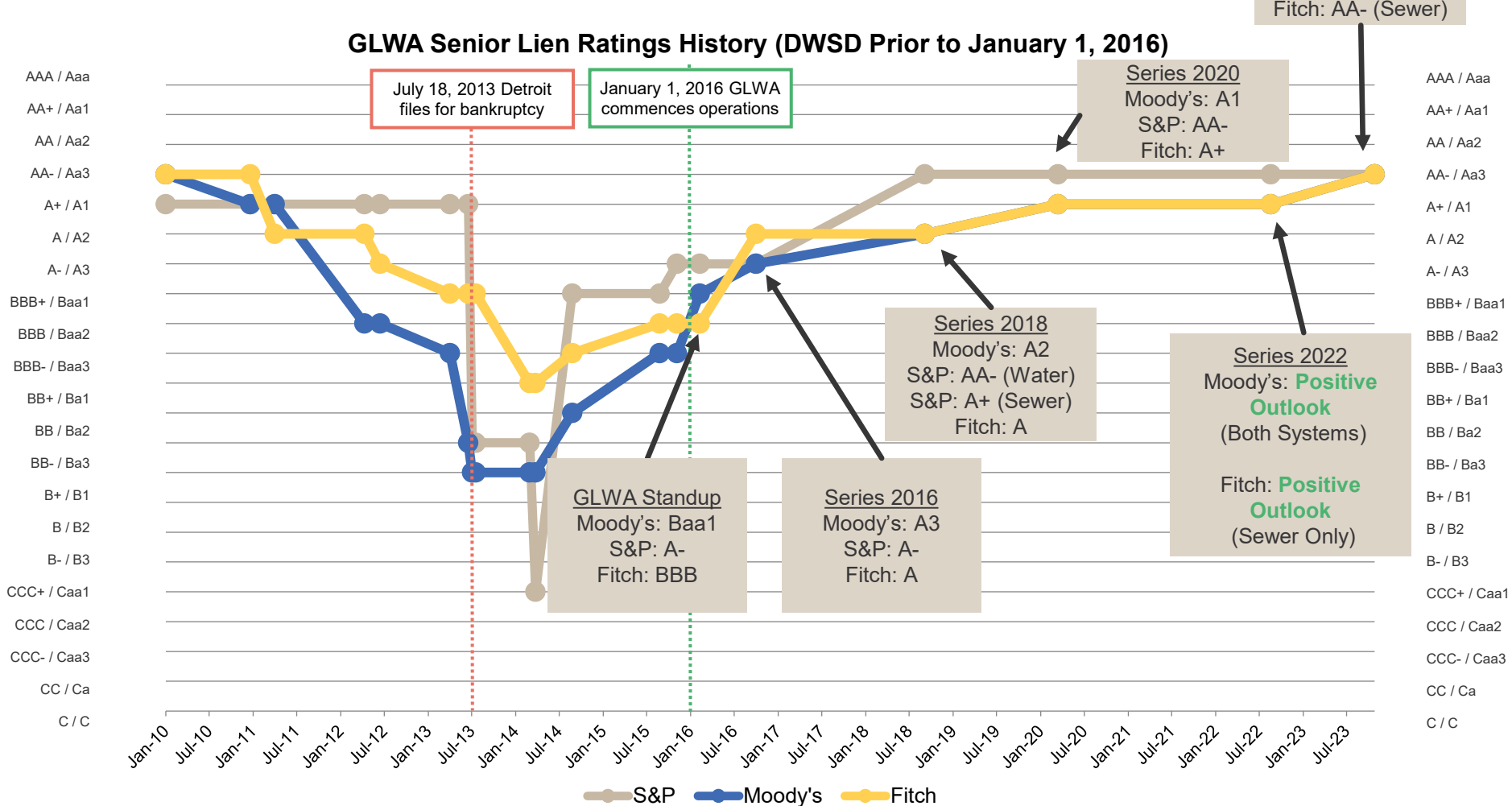




III. Rating Agency Update



History of Senior Lien Water and Sewer Ratings



Note: in cases where a rating agency rates Water Senior and Sewer Senior Lien differently, chart displays highest of the two ratings



Current Water and Sewer Ratings

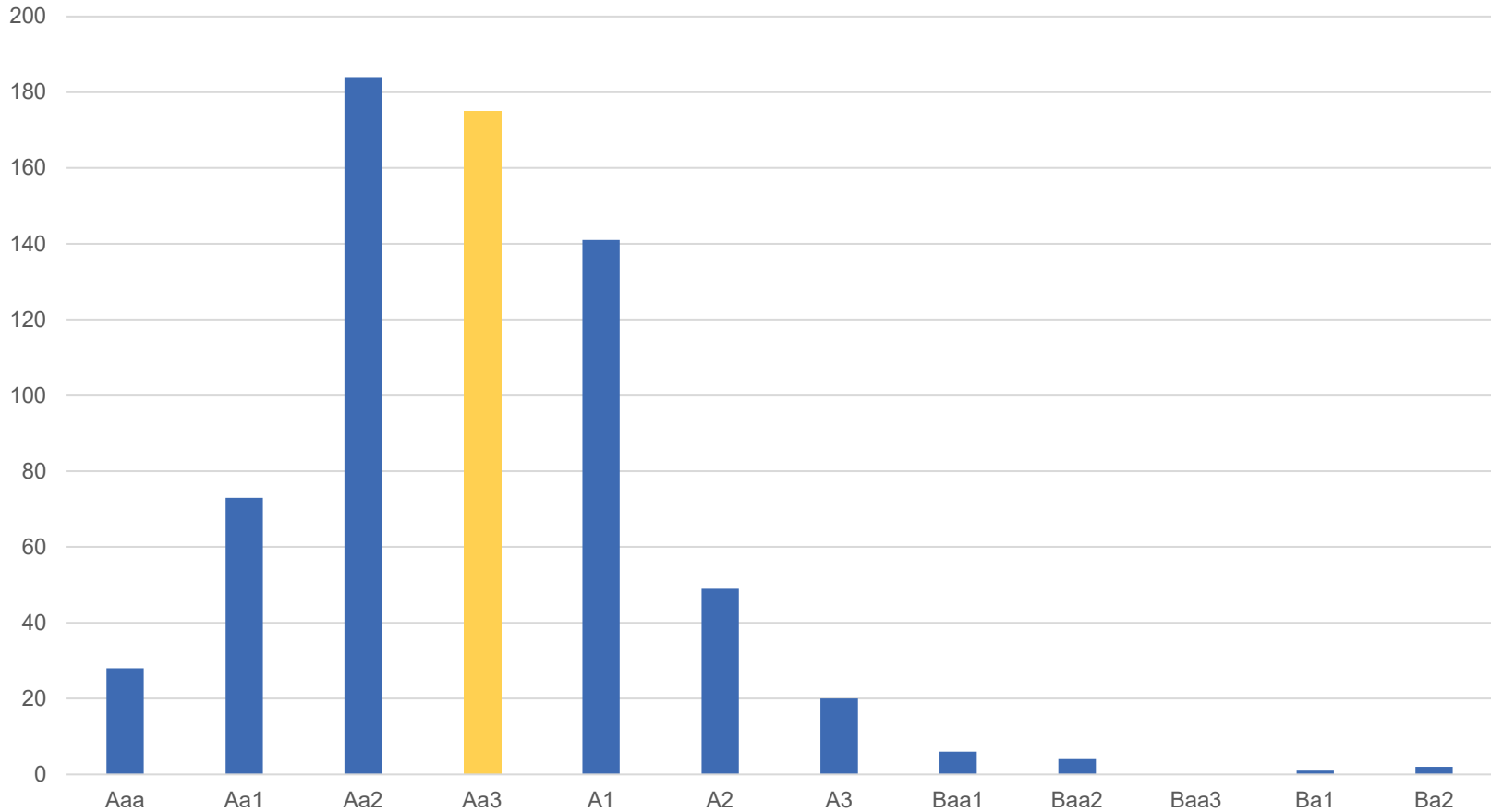
Water			
	Moody's	S&P	Fitch
Senior Lien	Aa3	AA-	A+
Second Lien	A1	A+	A
Outlook	Stable	Stable	Stable

Sewer			
	Moody's	S&P	Fitch
Senior Lien	Aa3	AA-	AA-
Second Lien	A1	A+	A+
Outlook	Stable	Stable	Positive



GLWA Rated at Median US Water and Sewer Credit Rating

Water, Sewer, and Combined Water & Sewer Rating Distribution



Source: Moody's Report: "Water and Sewer Utilities – US Medians - Steady revenue growth, strong coverage and robust liquidity boost sector", June 21, 2023.



Rating Agency Commentary on Factors that Could Change GLWA Ratings

Moody's Aa3	S&P AA-	Fitch A+ (Water); AA- / Positive (Sewer)
Factors that Could Lead to an Upgrade		
<ul style="list-style-type: none"> Sustained expansion and diversification of the service area's economic base Growth in revenue that continues to outpace borrowing and moderates leverage of pledged resources 	<ul style="list-style-type: none"> GLWA meaningfully outperforms its current financial forecast while still funding its CIP generally as planned, in a sustainable manner over a long-term horizon Sustainable, long-term economic recovery in Detroit continues and has meaningful positive effects on its economic fundamentals and utility collection rates 	<ul style="list-style-type: none"> Greater certainty that upcoming planned capital spending has fully accounted for inflationary pressures and keeps leverage within current expectations Sustained leverage below 11.0x (Water) or 10.0x (Sewer), assuming stability in the current revenue defensibility and operating risk assessments
Factors that Could Lead to a Downgrade		
<ul style="list-style-type: none"> Material reduction to the water or sewer system's liquidity or debt service coverage ratios Renewed economic stress that pressures consumption and revenue trends Growth in leverage of the water or sewer system's net revenue 	<ul style="list-style-type: none"> Actual financial performance falls below current projections Significant deferral of capital projects that artificially increases liquidity but causes deferred maintenance Erosion of processes that have evolved to help make the budget for both DWSD and GLWA more predictable while minimizing revenue fluctuations 	<ul style="list-style-type: none"> Sustained leverage approaching 13.0x (Water) or 12.0x (Sewer), assuming stability in the revenue defensibility and operating risk assessments Downward revisions to the system's overall Purchaser Credit Quality and/or revenue defensibility assessment (Sewer)¹ Material declines in liquidity that expose bondholders to timing risk

Sources: Moody's Report, "Great Lakes Water Auth, MI", October 26, 2023. S&P Reports, "Great Lakes Water Authority, Michigan; Water/Sewer", October 26, 2023. Fitch Reports, "Great Lakes Water Authority (Water System), Michigan" and "Great Lakes Water Authority (Sewer System), Michigan", dated November 9, 2023.

1. See appendix for further detail



2024 Rating Agency Sector Outlooks

- Rating agencies generally cite a **stable/neutral sector outlook**, with rate increases and growing customer bases supporting revenue growth and offsetting expenditure pressures
- Stabilizing business conditions are a positive factor that will allow for greater certainty with respect to capital and operating budgets
- Nevertheless, despite the easing of inflation and supply chain disruptions, the “new normal” operating environment is one with stable but higher costs
- Regulatory burden continues to grow, and expectation is for continued increase in mandated capital and operating expenses
- Expense pressures will generally require the implementation of larger rate adjustments, and utilities that have delayed the implementation of rate increases will face significant pressure
- Utilities facing higher costs may face a choice in the short term between narrowing financial margins and deteriorating asset condition
- Strong governance will continue to support utilities as the sector remains pressured by longer-term environmental risks including extreme storm events
- Key sector issues to watch include the increased frequency and severity of extreme weather events and potential breach of critical utility assets from cyberattacks



IV. SRF Borrowing and Notice of Intent Status



Sufficient Notice of Intent Capacity to Fund Upcoming SRF Loans

- ◆ GLWA seeks to maximize required borrowing through available State Revolving Fund (“SRF”) loan programs to the extent that subsidized interest rates provide significant debt service savings to GLWA
 - Interest rates for SRF loan programs are set annually, with current FY 2024 interest rates that are significantly below prevailing rates available in the bond markets
 - Interest rate for overburdened communities is 2.00% under both DWSRF and CWSRF
- ◆ SRF borrowing occurs at the Junior Lien level, without a Debt Service Reserve Requirement, and interest does not accrue until draws occur
- ◆ Remaining authorization under existing Notice of Intent authorization is expected to be sufficient to fund planned Regional System and Local System SRF financings

	Water System	Sewer System
Notice of Intent Capacity Remaining	286,327,500	541,692,280
Planned FY 2024 SRF Financings	-	375,900,000
Remaining Authorization After Planned FY 2024 SRF Financings	286,327,500	165,792,280



V. Appendix



Importance of Bond Ratings

- ◆ Credit ratings are a critical factor in determining the cost of capital for GLWA
 - Impacts both new capital project funding and refinancing of existing debt
 - One notch in ratings can translate to millions of dollars of debt service cost differential
- ◆ Ratings represent a public “scorecard” relating to management of the system, as well as public perception
- ◆ Financial strength important to wholesale customers, including potential additional members
- ◆ Bond ratings may also be referenced in various contractual documents, requiring minimum ratings with counterparties or creating a cost differential



Changes and Transparency in Rating Agency Criteria

Driven by the transparency required by Dodd-Frank legislation, the rating agencies have moved to a more formulaic approach to bond ratings

- ◆ After the passage of Dodd-Frank in 2010, all three rating agencies have implemented new rating methodologies for water and sewer credits
- ◆ The rating methodologies have each evolved to create more transparent and formulaic approaches to determining bond ratings, with clearer framework of rating variables
- ◆ While analysts retain significant discretion to influence ratings, based on subjective factors, new methodologies generally limit this discretion to one rating notch from a final “scorecard indicated” rating
 - Within each scorecard subfactor, there may be additional subjective factors can influence the subfactor score
- ◆ As a result, municipal issuers generally know the criteria that will impact their bond ratings and can appropriately set policies with this transparency in mind



Key Drivers of GLWA Credit Ratings

- ◆ Although scorecard methodology, metrics, and specifics of calculations differ between rating agencies, the fundamental financial factors driving evaluations of credit quality at each of the rating agencies are the same, and include:
 - **Debt Service Coverage** – *the magnitude by which net revenues are sufficient to cover debt service shows a utility's margin to tolerate business risks or declines in demand while still assuring repayment of debt*
 - **Liquidity** – *measure of a utility's resources to meet expenses, cope with emergencies, and navigate business interruptions*
 - **Leverage** – *measure of flexibility to reduce costs if demand shrinks and provide funding for future capital improvements*
- ◆ Because ratings are forward-looking, great emphasis is placed upon perception of willingness and ability to raise rates to maintain these financial metrics, and system management, governance, and planning
- ◆ Service area wealth and ratepayer capacity to pay higher rates is an additional credit consideration



Relationship of GLWA Ratings with DWSD

- Given the unique construction of the GLWA Master Bond Ordinance that includes revenues attributable to the DWSD system, GLWA credit quality is impacted by DWSD finances and planning
- Combination of retail and wholesale rating criteria are applied to the GLWA rating
- Various financial metrics (and rating variables) are calculated by the combination of GLWA and DWSD, including:
 - Debt Service Coverage
 - Days Cash on Hand
 - Leverage and Debt / Operating Revenues
 - Asset Condition
- Given forward-looking nature of ratings, rating agencies incorporate DWSD projections for borrowing, capital spending, and rate-setting into GLWA credit rating metrics
 - Rating agency evaluation of management, capital planning, and rate-setting extends to DWSD
- Continued communication and collaboration with DWSD will be critical to maintaining upward ratings trajectory



Indicated Rating Scorecard

- In October 2017, Moody's revised their existing ratings methodology for US municipal utility revenue debt, with the stated goal of providing more transparency into the ratings process
- The scorecard contains ten metrics which capture, according to Moody's, the most critical aspects of a utility's credit profile

Rating Factors, Subfactors and Weighting			
Broad Rating Factor		Rating Subfactor	Weighting
System Characteristics	30%	Asset Condition	10%
		Service Area Wealth	12.5%
		System Size (O&M)	7.5%
Financial Strength	40%	Annual Debt Service Coverage	15%
		Days Cash on Hand	15%
		Debt to Operating Revenues	10%
Management	20%	Rate Management	10%
		Regulatory Compliance & Capital Planning	10%
Legal Provisions	10%	Rate Covenant	5%
		Debt Service Reserve Requirement	5%
Total:			100%

Source: Moody's Rating Report, "US Municipal Utility Revenue Debt," October 19, 2017



Moody's Water & Sewer Utility Scorecard

Scoring on Moody's Municipal Utility Methodology										
Factor	Description	Weight	Aaa 0.50-1.49	Aa 1.50-2.49	A 2.50-3.49	Baa 3.50-4.49	Ba 4.50-5.49	GLWA Input	Category Score	GLWA Score
System Characteristics (30%)	Asset Condition - Remaining Useful Life (Net Assets / Annual Depreciation)	10%	> 75 Years	75 years > n > 25 years	25 years > n > 12 years	12 years > n > 9 years	9 years > n > 6 years	18 years	3	0.30
	System Size: (O&M in 000s)	7.5%	> \$65 million	\$65 M > n > \$30 M	\$30 M > n > \$10 M	\$10 M > n > \$3 M	\$3 M > n > \$1 M	\$179 million	1	0.08
	Service Area Wealth: MFI	12.5%	> 150% of US median	150% to 90% of US Median	90% to 75% of US Median	75% to 50% of US Median	50% to 40% of US Median	96%	2	0.25
Financial Strength and Liquidity (40%)	Annual Debt Service Coverage	15%	greater than 2.00X	1.70X to < 2.00X	1.25X to < 1.70X	1.00X to < 1.25X	1.00X to < 0.70X	1.4x	3	0.45
	Days Cash on Hand	15%	≥ 250 days	150 to < 250 days	35 to <150 days	15 to <35 days	7 to <15 days	602 days	1	0.15
	Debt to Operating Revenues	10%	Less than 2.00x	2.00x to < 4.00x	4.00X to < 7.00X	7.00X to < 8.00X	8.00X to < 9.00X	5.4x	3	0.30
Management of System (20%)	Rate Management	10%	Excellent rate setting; no material political, practical, or regulatory limit to rate increases	Strong rate setting; little material political, practical, or regulatory limit to rate increases	Average rate setting; some material political, practical, or regulatory limit to rate increases	Adequate rate setting; political, practical, or regulatory impediments place material limits to rate increases	Below average rate setting; political, practical, or regulatory impediments place material limits to rate increases	Strong rate setting	2	0.20
	Regulatory Compliance and Capital Planning	10%	Fully compliant OR proactively addressing compliance issues; Maintains sophisticated and manageable Capital Improvement Plan that addresses more than a 10-year period	Actively addressing minor compliance issues; Maintains comprehensive and manageable 10-year Capital Improvement Plan	Moderate violations with adopted plan to address issues; Maintains manageable 5-year Capital Improvement Plan	Significant compliance violations with limited solutions adopted; Maintains single year Capital Improvement Plan	Not fully addressing compliance issues; Limited or weak capital planning	Material compliance with existing permits; no comment on CIP	3	0.30
Legal Provisions (10%)	Rate Covenant	5%	greater than 1.30X	1.30X to < 1.20X	1.20X to < 1.10X	1.00X to < 1.10X	< 1.00x	1.20x	3	0.15
	Debt Service Reserve Requirement	5%	DSRF funded at MADS	DSRF funded at lesser of standard 3 prong test	DSRF funded at less than 3 prong test	No explicit DSRF	No explicit DSRF	DSRF: Lesser of 3 Test	2	0.10
(Aa3 = 2.17 to 2.50) (A1 = 2.50 to 2.83)										2.28

Source: Moody's Municipal Utility Debt Methodology, October 19, 2017; Data from Moody's Report dated October 26, 2023



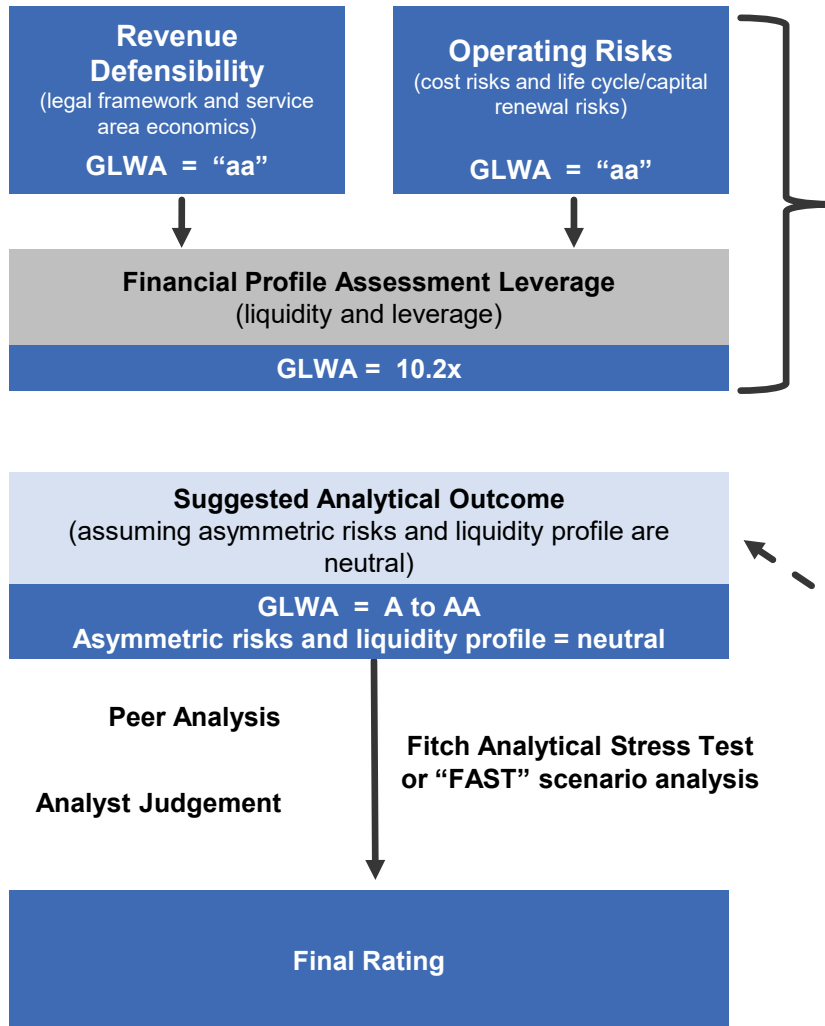
Moody's Water & Sewer Utility Scorecard

Scoring on Moody's Municipal Utility Methodology										
Factor	Description	Weight	Aaa 0.50-1.49	Aa 1.50-2.49	A 2.50-3.49	Baa 3.50-4.49	Ba 4.50-5.49	GLWA Input	Category Score	GLWA Score
System Characteristics (30%)	Asset Condition - Remaining Useful Life (Net Assets / Annual Depreciation)	10%	> 75 Years	75 years > n > 25 years	25 years > n > 12 years	12 years > n > 9 years	9 years > n > 6 years	18 years	3	0.30
	System Size: (O&M in 000s)	7.5%	> \$65 million	\$65 M > n > \$30 M	\$30 M > n > \$10 M	\$10 M > n > \$3 M	\$3 M > n > \$1 M	\$263 million	1	0.08
	Service Area Wealth: MFI	12.5%	> 150% of US median	150% to 90% of US Median	90% to 75% of US Median	75% to 50% of US Median	50% to 40% of US Median	96%	2	0.25
Financial Strength and Liquidity (40%)	Annual Debt Service Coverage	15%	greater than 2.00X	1.70X to < 2.00X	1.25X to < 1.70X	1.00X to < 1.25X	1.00X to < 0.70X	1.5x	3	0.45
	Days Cash on Hand	15%	≥ 250 days	150 to < 250 days	35 to <150 days	15 to <35 days	7 to <15 days	484 days	1	0.15
	Debt to Operating Revenues	10%	Less than 2.00x	2.00x to < 4.00x	4.00X to < 7.00X	7.00X to < 8.00X	8.00X to < 9.00X	4.6x	3	0.30
Management of System (20%)	Rate Management	10%	Excellent rate setting; no material political, practical, or regulatory limit to rate increases	Strong rate setting; little material political, practical, or regulatory limit to rate increases	Average rate setting; some material political, practical, or regulatory limit to rate increases	Adequate rate setting; political, practical, or regulatory impediments place material limits to rate increases	Below average rate setting; political, practical, or regulatory impediments place material limits to rate increases	Strong rate setting	2	0.20
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	Debt Service Reserve Requirement	5%	DSRF funded at MADS	DSRF funded at lesser of standard 3 prong test	DSRF funded at less than 3 prong test	No explicit DSRF	No explicit DSRF	DSRF: Lesser of 3 Test	2	0.10
(Aa3 = 2.17 to 2.50) (A1 = 2.50 to 2.83)										2.28

Source: Moody's Municipal Utility Debt Methodology, October 19, 2017; Data from Moody's Report dated October 26, 2023



Fitch – Indicated Scorecard Rating



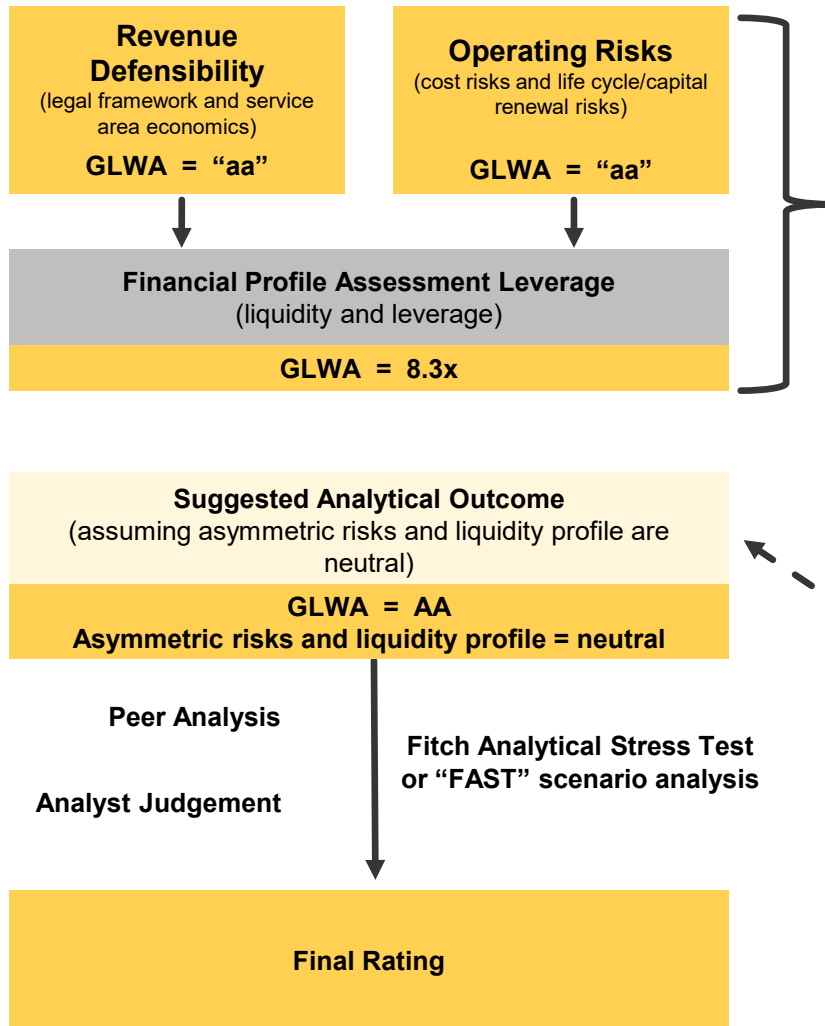
Rating Positioning

Revenue Defensibility Assessment	Operating Risks Assessment	Financial Profile Assessment Leverage (Net Adjusted Debt/Adjusted FADS) (x)				
		aaa	aa	a	bbb	bb
aa	aa	<5	5–10	10–14	14–16	>16
aa	a	<4	4–8	8–12	12–16	>16
a	aa	<4	4–8	8–12	12–16	>16
aa	bbb	—	<7	7–11	11–14	>14
a	a	—	<6	6–11	11–14	>14
a	bbb	—	<6	6–11	11–14	>14
aa	bb	—	<5	5–9	9–12	>12
a	bb	—	<4	4–7	7–12	>12
bbb	aa	—	<4	4–7	7–12	>12
bbb	a	—	<4	4–7	7–12	>12
bbb	bbb	—	<0	0–5	5–6	>6
bbb	bb	—	<0	0–1	1–4	>4
bb	aa	—	—	<1	1–4	>4
bb	a	—	—	<0	0–4	>4
bb	bbb	—	—	<0	0–2	>2
bb	bb	—	—	<(3)	(3)–0	>0
Suggested Analytical Outcome		AAA	AA	A	BBB	BB

FADS – Funds available for debt service.
Source: Fitch Ratings.



Fitch – Indicated Scorecard Rating



Rating Positioning

Revenue Defensibility Assessment	Operating Risks Assessment	Financial Profile Assessment Leverage (Net Adjusted Debt/Adjusted FADS) (x)				
		aaa	aa	a	bbb	bb
aa	aa	<5	5–10	10–14	14–16	>16
aa	a	<4	4–8	8–12	12–16	>16
a	aa	<4	4–8	8–12	12–16	>16
aa	bbb	—	<7	7–11	11–14	>14
a	a	—	<6	6–11	11–14	>14
a	bbb	—	<6	6–11	11–14	>14
aa	bb	—	<5	5–9	9–12	>12
a	bb	—	<4	4–7	7–12	>12
bbb	aa	—	<4	4–7	7–12	>12
bbb	a	—	<4	4–7	7–12	>12
bbb	bbb	—	<0	0–5	5–6	>6
bbb	bb	—	<0	0–1	1–4	>4
bb	aa	—	—	<1	1–4	>4
bb	a	—	—	<0	0–4	>4
bb	bbb	—	—	<0	0–2	>2
bb	bb	—	—	<(3)	(3)–0	>0
Suggested Analytical Outcome		AAA	AA	A	BBB	BB

FADS – Funds available for debt service.
Source: Fitch Ratings.



Fitch – Financial Profile Assessment Leverage

- Fitch measures financial leverage via a new ratio: Net Adjusted Debt to Adjusted FADS
- Measures a utility's debt and other fixed obligations (net of certain balance sheet resources) relative to its annual cash flows available to service those obligations

Financial Profile Assessment Leverage (Net Adjusted Debt to Adjusted FADS)

Total Debt + Capitalized Fixed Charges + Adjusted Net Pension Liability - Available Cash - Funds Restricted for Debt Service

FADS + Fixed Services Expense + Operating Leases + Pension Expense

GLWA = 10.2x

GLWA = 8.3x

Ratio	Definition
Total Debt	All long-term and short-term debt obligations including capital leases, outstanding commercial paper, notes payable and current maturities. Certain nonrecourse obligations and separately secured obligations may be excluded
Capitalized Fixed Charges	(Fixed services expense + operating leases) * 7
Adjusted Net Pension Liability	Equals the utility's reported annual pension liability adjusted upward to reflect Fitch's assumed 6% discount rate, if the plan uses a higher discount rate
Available Cash	Cash and investments available for short-term liquidity needs with no limitations on use, including funds restricted solely by board or management policy and/or available for general utility purposes (e.g., rate stabilization fund, operating reserve, and renewal and replacement reserve). Funds that are explicitly limited for construction or other capital investment such as bond proceeds are not included.
Funds Restricted for Debt Service	Includes amounts deposited in debt service and debt service reserve funds
FADS (Funds Available for Debt Service)	EBITDA plus interest income, taxes, other non-operating cash receipts not restricted as to spending and connection/availability fees. FADS may further reflect adjustments for noncash expenses, nonrecurring items and non-operating expenses paid ahead of debt service as appropriate.
Fixed Services Expense	Purchased water and/or sewer services * 35%
Net Transfers	Sum of transfers in less sum of transfers out
Pension Expense	Equals the utility's reported net pension liability adjusted upward to reflect Fitch's assumed 6% discount rate, if the plan uses a higher discount rate.

Sources: Fitch Report dated November 9, 2023



Moody's Water & Sewer Sector Outlook for 2024

- **Stable Outlook**, noting rate increases and growing customer bases help support strong revenue growth, offsetting inflation-driven expenditure pressures
- Affordability will continue to affect utility rate-setting nationwide in 2024 and management will likely face public and political resistance to implementing sizable rate increases
- Water and sewer utilities enter 2024 with increasing costs at a time when there are greater needs associated with aging infrastructure, including adverse effects tied to the increase in the frequency and severity of extreme weather events, and regulatory requirements to replace lead service lines
- Without continued and consistent increases in federal dollars, the burden of investing in water and sewer infrastructure will fall largely on ratepayers
- Deterioration in asset condition is likely as utilities delay or scale back capital projects due to higher borrowing costs, increased cost of construction materials, and supply-chain issues
- Increasing government regulations such as the EPA's policy to reduce per- and polyfluoroalkyl substances (PFAS) levels in drinking water will cause systems to begin allocating more reserves, start long-term capital planning for PFAS remediation, and consider rate increases for users
- Autonomous rate-setting authority remains a critical tool for utilities to effectively recover revenue and build reserves to pay for future capital needs
- Strong governance will continue to support the utility sector as the sector remains pressured by longer-term environmental risks

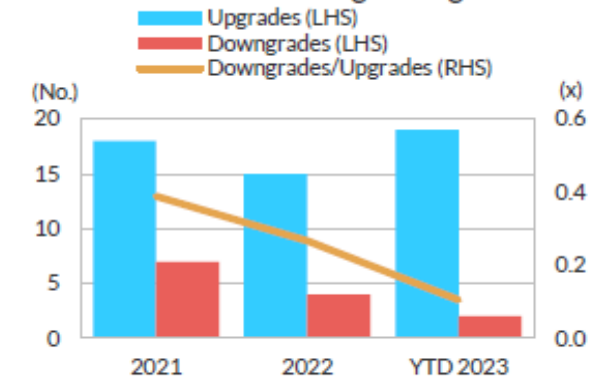
Source: Moody's Report, "2024 Outlook – Stable as strong revenue growth offsets rising expenses" December 5, 2023.



Fitch's Water & Sewer Sector Outlook for 2024

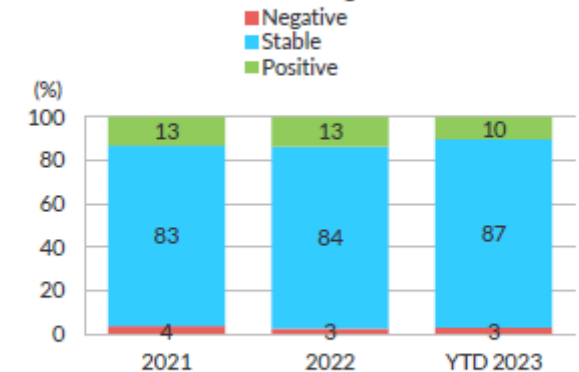
- **Neutral outlook**, with the key factors affecting the sector's performance being easing inflationary pressures, and stable increase in chemical, labor and power costs
- Fitch expects that improved revenue generation moving in line with cost increases should stabilize ratings across the sector in 2024
- Rating distribution remains stable across the portfolio as most utilities still have headroom for absorbing higher costs
- Although the Fitch-rated portfolio maintains sound rate flexibility, affordability remains a key concern for stakeholders in 2024
- The cost of complying with environmental regulations is expected to be meaningful but the full scope of new rules and effect on cost and capital remain undetermined
- Additional key sector issues include the increased frequency and severity of extreme weather events and breach of critical utility assets from cyberattacks

Water & Sewer — Rating Changes



Source: Fitch Ratings

Water & Sewer — Rating Outlooks



Source: Fitch Ratings

Source: Fitch "2024 Outlook: Water and Sewer Sector" December 6, 2023.

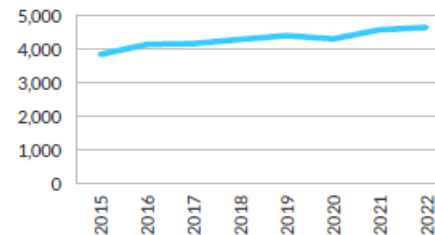


Fitch's Water & Sewer Sector Outlook for 2024

- Operating costs are expected to remain elevated over the new term as a result of moderately increasing inflationary pressures and high interest rate environment
- Increased capital spending levels will contribute to leverage pressures although strong liquidity and adequate debt capacity should ease pressure on credit quality
- Sustained high inflation has a dampening effect on how far federal and infrastructure funding will stretch but increased inflation could shift the outlook to deteriorating
- Utilities maintain flexibility within capital programs to defer projects
- Sustained high inflation has a dampening effect on how far federal and infrastructure funding will stretch but a rapid return to lower inflation could shift the outlook to neutral

Operating Cost Burden

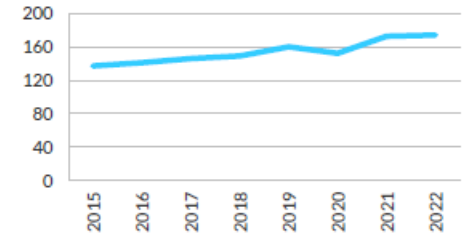
(\$ mil. gallons production)



Source: Fitch Ratings

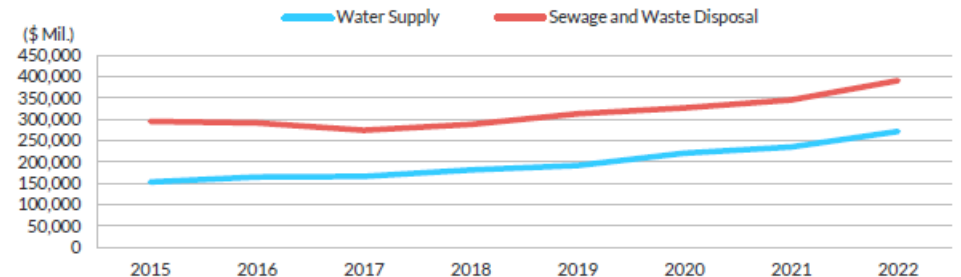
Five-Year Average Capex to Depreciation

(%)



Source: Fitch Ratings

National Public-Sector Annual Construction Spending



Source: U.S. Census Bureau

Source: Fitch "2024 Outlook: Water and Sewer Sector" December 6, 2023.



Standard & Poor's Water & Sewer Sector Outlook

- **Stable outlook**, supported by proven cost recovery and financial cushion but rising costs likely will increase rate pressures
- Expect challenges in the capital markets due to higher interest rates and the inability to defer projects
- While increases to operating and capital costs will slow in 2024, labor costs continue to rise though the impact to the income statement is masked by the persistent high vacancy rates
- With rate increases outpacing inflation and discretionary income growth remaining stagnant, rate-setting flexibility has diminished and delinquencies have increased
- Customer assistance programs will be increasingly important and utilities with state limitations on rate structure will be at a disadvantage

What We're Watching -- U.S. municipal water and sewer utilities



Regulations

The current regulatory docket is ambitious, especially with respect to emerging contaminants and nutrient removal. We expect an increase in mandated capital costs and operating expenses.



Expense pressures

Operating costs have been rising rapidly due to inflation and supply chain issues, causing weakened margins as management defers rate increases.



Rate affordability

Rising costs will pressure affordability, especially for service areas with weaker demographic characteristics, increasing the importance of rate structure.



Weather

Variability in hydrology stresses water supply, operations, and flood control, while greater frequency of severe storms and wildfires also influences the operating and financial landscape.



Labor

Labor shortages in all areas of utility organizations pose critical operating, financial, and compliance challenges, although these are somewhat masked by high vacancy rates.



Planning

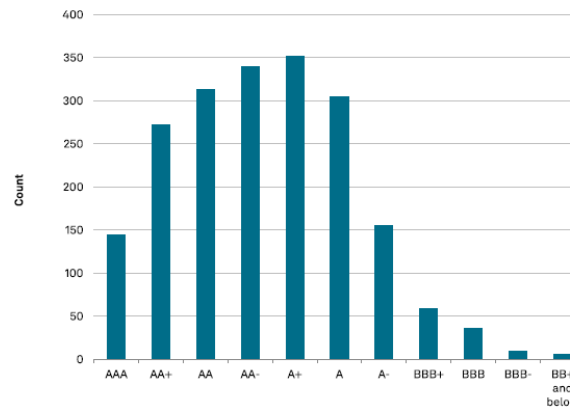
Emerging risks in the sector require sophisticated planning and management, exposing weaker management teams to substantial vulnerabilities.



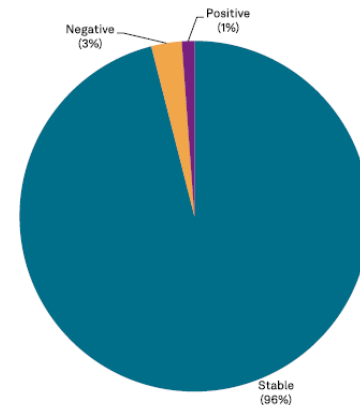
Standard & Poor's Water & Sewer Sector Outlook

- Expect greater focus on surface and aquifer-specific water rights, as population growth and climate change have led to groundwater overdraft and subsidence, particularly in regions that rely on agriculture
- Higher leverage and increased costs of regulatory mandates could pressure financial performance but positively influence community health and human safety
- Failure to maintain assets by deferring capital spending is viewed as a significant vulnerability to credit quality and will likely result in a downgrade
- Smaller systems remain more vulnerable to negative rating pressure given their lower nominal liquidity and limited ability to access economies of scale which exposes them to acute credit deterioration

Rating distribution
As of Jan. 1, 2024



Outlook distribution
As of Jan. 1, 2024





pfm