2023 Municipal Market Outlook and GLWA Debt Management Considerations

March 24, 2023

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Agenda

I. Municipal Market Update

II. Status and Impacts of LIBOR Transition

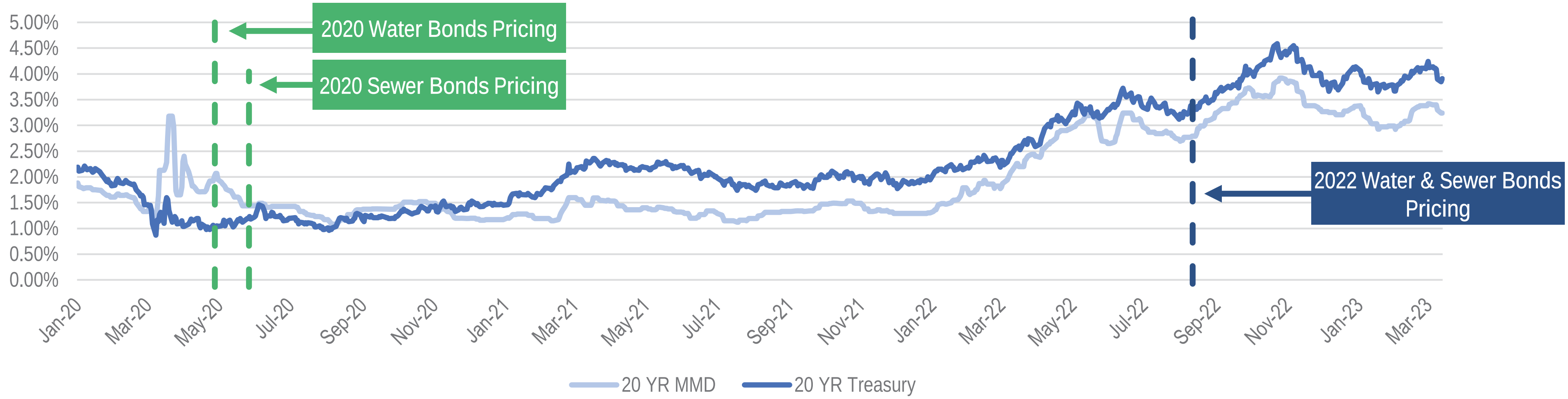
III. Update on Potential Refinancing Opportunities

IV. Rating Agency Update

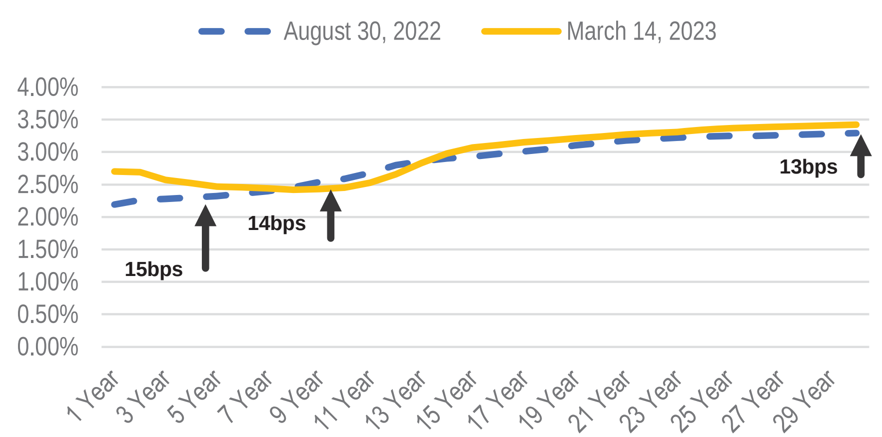
V. Appendix

I. Municipal Market Update

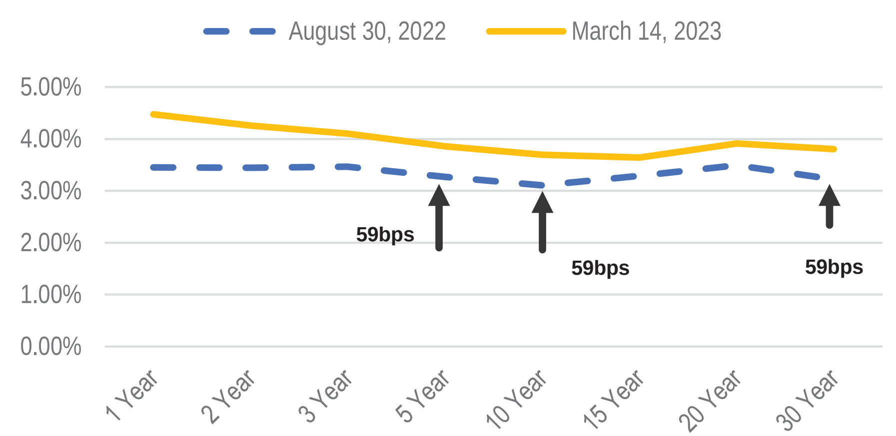
Interest Rates Rose Slightly Since Series 2022 Transaction, With a Flatter Yield Curve Developing



Tax-Exempt Yield Curve Comparison



Taxable Yield Curve Comparison



Source: Thomson Reuters; Federal Reserve Economic Database (FRED); Rates as of March 14, 2023

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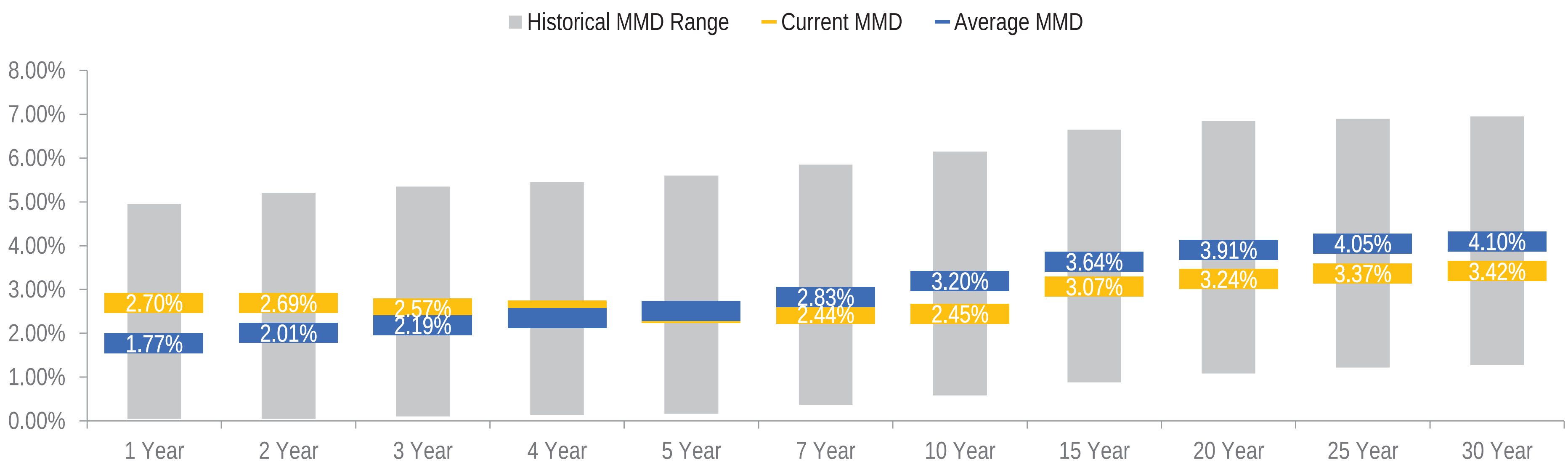
Inverted Yield Curve With Short-Term Rates Above Historical Averages and Long-Term Rates Moderately Below

30 Year History of AAA MMD Rate Position
(March 14, 1993 to March 14, 2023)



Statistic	1 Year	2 Year	3 Year	4 Year	5 Year	7 Year	10 Year	15 Year	20 Year	25 Year	30 Year
3/14/2023	2.70%	2.69%	2.57%	2.52%	2.47%	2.44%	2.45%	3.07%	3.24%	3.37%	3.42%
Average	1.77%	2.01%	2.19%	2.35%	2.52%	2.83%	3.20%	3.64%	3.91%	4.05%	4.10%
Spread to Avg.	0.93%	0.68%	0.38%	0.17%	-0.05%	-0.39%	-0.75%	-0.57%	-0.67%	-0.68%	-0.68%
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 Min.	2.65%	2.64%	2.47%	2.39%	2.31%	2.08%	1.87%	2.19%	2.16%	2.15%	2.15%
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 Max.	-2.25%	-2.51%	-2.78%	-2.93%	-3.13%	-3.41%	-3.70%	-3.58%	-3.61%	-3.53%	-3.53%
Percent of Market Days Lower	67.35%	63.32%	59.01%	55.72%	50.95%	45.49%	34.76%	37.87%	35.40%	35.03%	35.00%

Tax-exempt interest rates have been lower 35-38% of the time for long-term borrowings

Source: Thomson Reuters; Rates as of March 14, 2023

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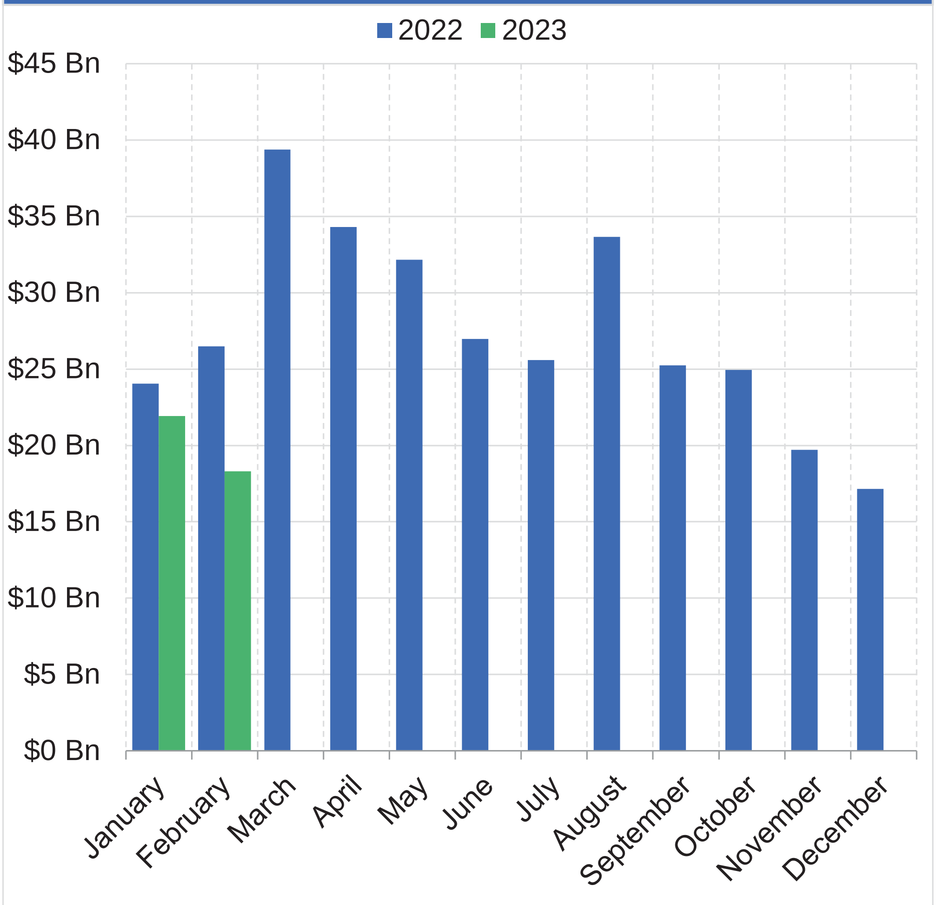
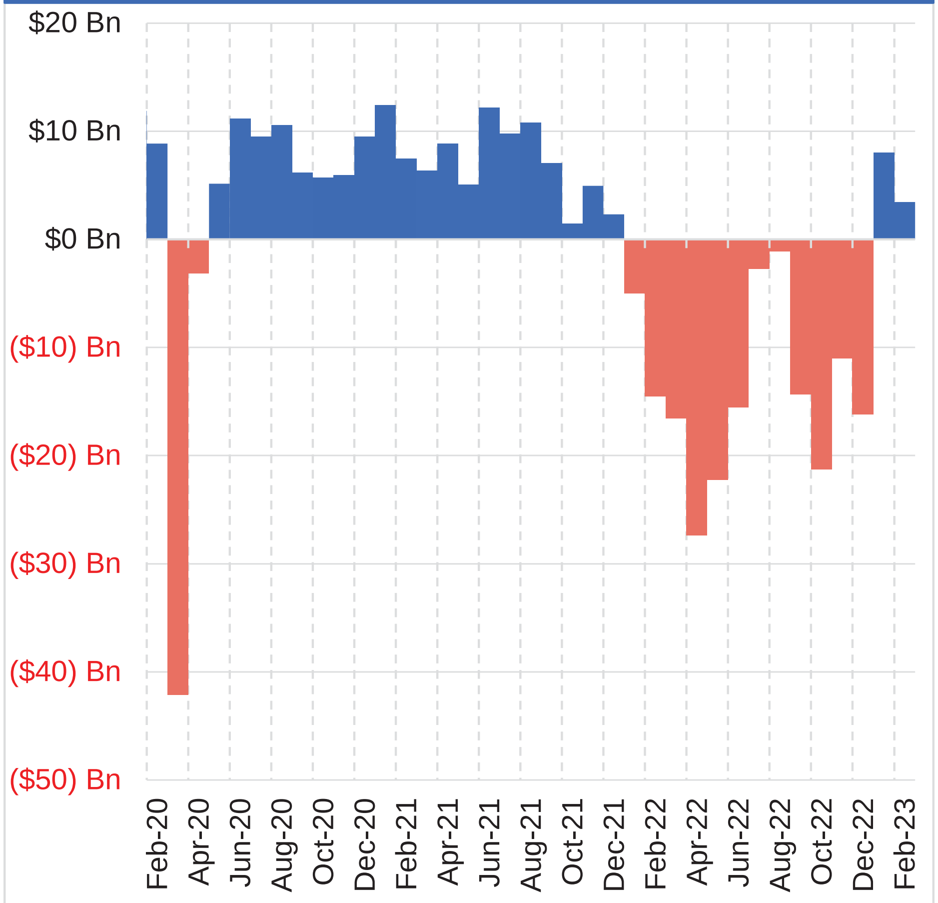
Municipal Market Funds Experienced Significant Outflows in 2022, but Rebound to Start 2023

- New issuance volume was down by 30% year-over-year in February, year-to-date new issuance volume was 20% lower than 2022 issuance through February.

Overall Municipal Market Volume (Supply)



Municipal Fund Flows (Demand)



Source: Bond Buyer, Investment Company Institute

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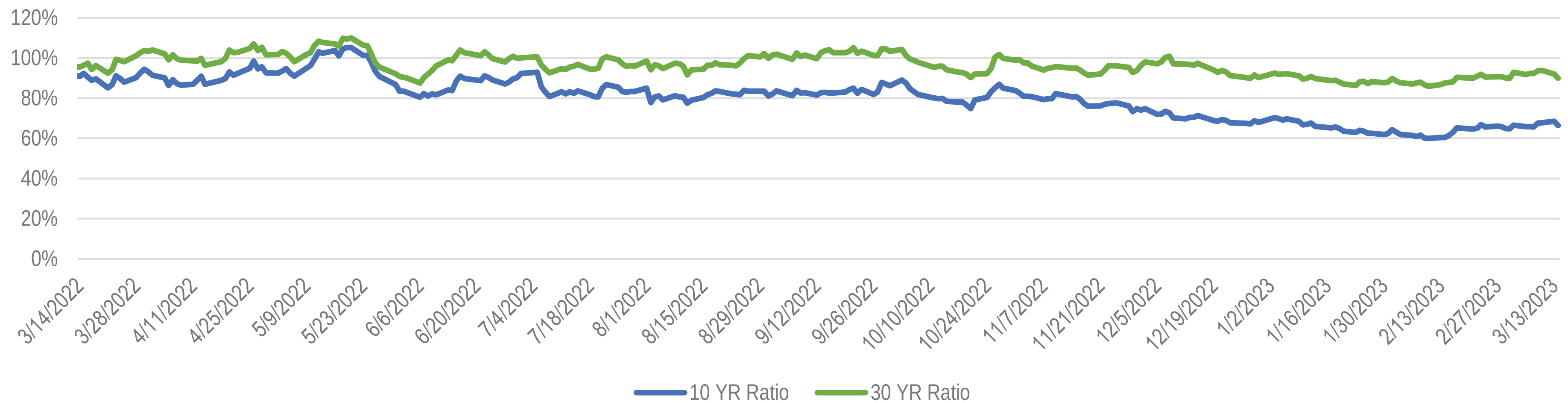
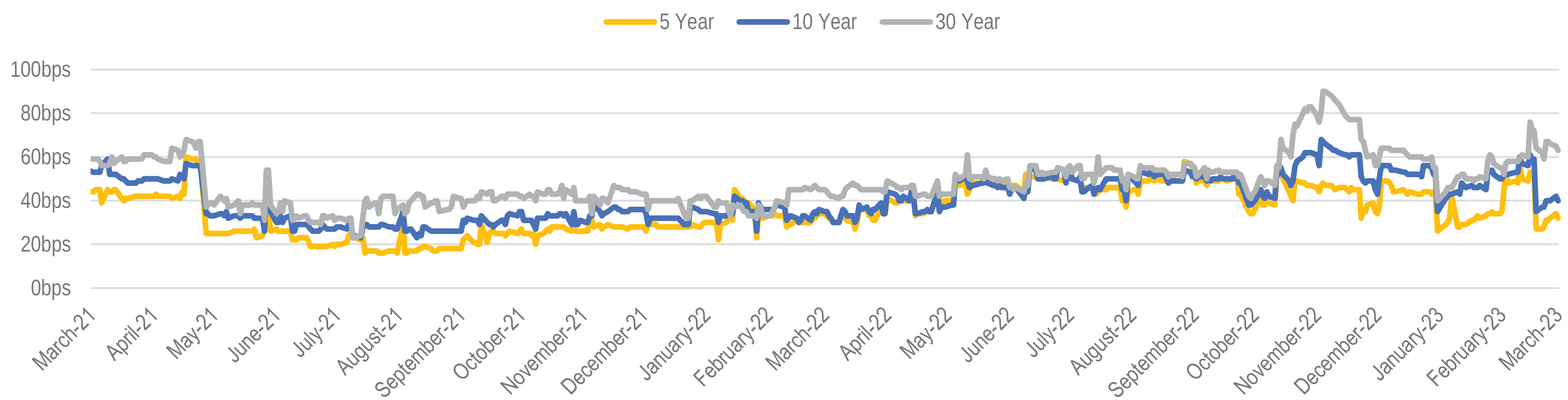
In 2022, Tax-Exempt Market Outperformed the Taxable Market; Volatility has impacted Credit Spreads

MMD/UST Ratios



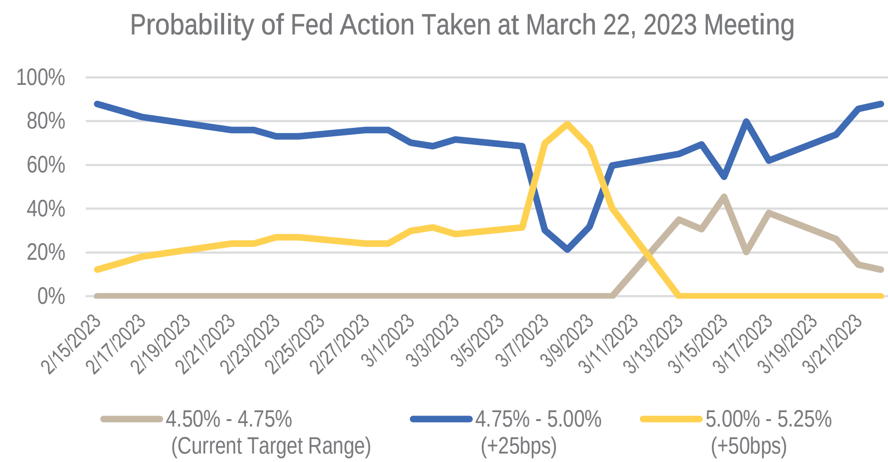
As Rates Have Increased, Long Term Credit Spreads Have Started To Follow (AAA vs. A Tax-Exempt Credit Spreads)



Source: Thomson Reuters; ; Rates as of March 14, 2023

Recent Events Made Future FOMC Action Less Clear; Weighing Inflation Battle vs. Banking Security

- At the Federal Reserve Open Market Committee meeting on February 1, the committee stated that it **"…anticipates that ongoing increases the target range will be appropriate…"**
- Despite this, recent events made future Fed actions less clear
  - Chair Powell's comments to Congress on March 7 indicated larger increases may be on the horizon
  - The failure of Silicon Valley Bank stoked a fear that future increases could pressure the stability of some smaller or struggling banks
- As of the morning of March 22, the market expectation is a +25bps increase to the target range



Bond Yield Forecast (As of March 22, 2023)											
Average Forecasts	Current	Q1 23	Q2 23	Q3 23	Q4 23	Q1 24	Q2 24	Q3 24	Q4 24	Q1 25	Q2 25
30-Year UST	3.66 %	3.79 %	3.82 %	3.78 %	3.69 %	3.61 %	3.54 %	3.51 %	3.49 %	3.54 %	3.49 %
10-Year UST	3.47 %	3.68 %	3.66 %	3.60 %	3.48 %	3.38 %	3.30 %	3.22 %	3.16 %	3.25 %	3.22 %
5-Year UST	3.55 %	3.89 %	3.85 %	3.73 %	3.56 %	3.42 %	3.30 %	3.18 %	3.11 %	3.19 %	3.17 %
2-Year UST	3.92 %	4.45 %	4.37 %	4.16 %	3.88 %	3.63 %	3.39 %	3.16 %	2.99 %	3.03 %	3.01 %
3M Term SOFR	4.82 %	4.90 %	5.11 %	5.04 %	4.85 %	4.48 %	4.01 %	3.63 %	3.31 %	3.10 %	3.02 %
Fed Funds Target Rate (Upper)	4.75 %	4.95 %	5.35 %	5.40 %	5.25 %	4.90 %	4.50 %	4.20 %	3.85 %	3.65 %	3.45 %
Fed Funds Target Rate (Lower)	4.50 %	4.72 %	5.10 %	5.13 %	5.01 %	4.67 %	4.27 %	3.93 %	3.62 %	3.42 %	3.22 %

Source: Bloomberg; Federal Reserve press release dated February 1, 2023; CME FedWatch Tool

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II. Status and Impacts of LIBOR Transition

Phase Out of LIBOR Index

- The London Interbank Offered Rate ("LIBOR") has been used as a benchmark short-term borrowing and lending rate for an estimated $400 trillion financial products globally, including over $220 trillion contracts referencing USD LIBOR
- LIBOR is used extensively across a range of industries and business processes, and often referenced in derivative (swaps and options), bond and loan documentation as well as in a range of consumer lending instruments
- The UK's Financial Conduct Authority, which regulates LIBOR, initially announced in July 2017 that it would no longer compel banks to make LIBOR submissions after the end of 2021
- Announcement followed intense scrutiny by numerous regulatory bodies and interested parties and determination by FCA that LIBOR is no longer compliant with sound international principles for interest rate benchmarks
- On March 5, 2021, the FCA issued a statement confirming the cessation of the publication of 1-week and 2-month USD LIBOR effective December 31, 2021 and extending the remaining USD LIBOR tenors through **June 30, 2023**
    - Tenors for other currencies were permanently discontinued on December 31, 2021
- Additional actions have been taken by various market participants and Congress to prepare for LIBOR index cessation

Transition Timetable	
Timing	Step
June 2017	ARRC nominates SOFR as preferred rate for USD market
July 2017	FCA announces it will no longer compel banks to make LIBOR submissions after December 31, 2021
April 2018	SOFR daily publication begins
May 2018	CME SOFR futures contracts launch
October 2018	Trading in cleared OIS referencing SOFR
October 2020	ISDA launches LIBOR Fallback Supplement to the 2006 ISDA Definitions and the ISDA 2020 LIBOR Fallback Protocol
January 2021	ISDA supplement and protocols take effect
March 2021	FCA announces Index Cessation Event and triggers establishment of fixed spread to SOFR for 1&3M USD LIBOR
December 2021	Banks no longer compelled to make LIBOR submissions after December 31, 2021 (non-USD LIBOR and 1-week / 2-month USD LIBOR)
June 2023	Banks no longer compelled to make submissions for remaining USD LIBOR tenors after June 30, 2023

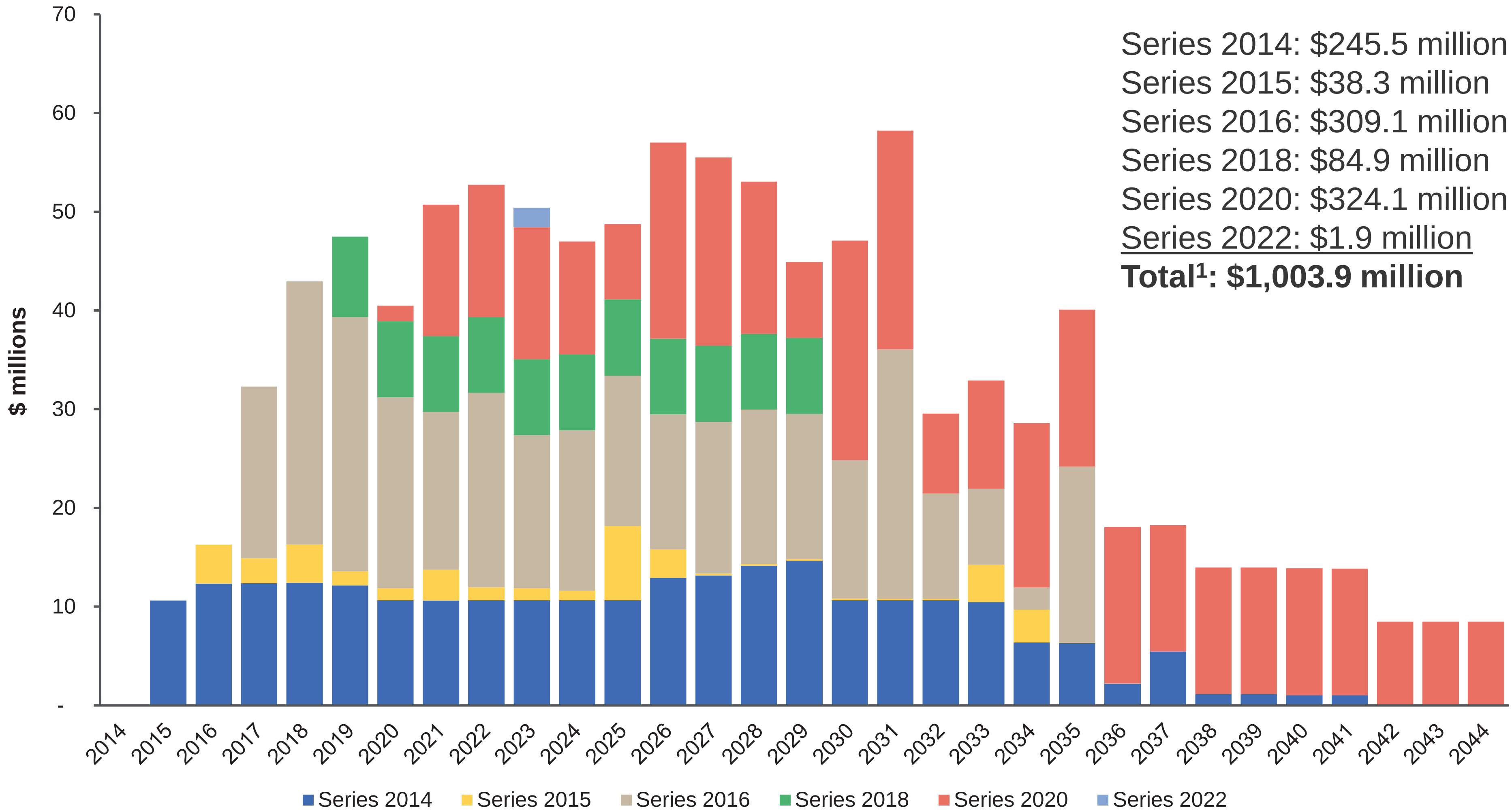
Congress has provided legislative solution that addresses lack of adequate fallback language in Sewer Series 2006D financing documents

- Sewer Series 2006D Bonds (outstanding in the amount of approximately $240 million), with a final maturity of 2032, are floating rate bonds with an interest rate currently calculated based on 3-month USD LIBOR (67% of 3-month USD LIBOR plus 0.60%)
- Existing Sewer Series 2006D LIBOR index structure provides a low-cost option with a favorable risk profile:
  - Low-cost funding option compared to other available variable rate options, and lowest cost of funding in portfolio for many years
  - Favorable risk allocation, not requiring third party credit support (as other variable rate options would) and/or renewal risk
  - Asset liability match that partially insulates GLWA from reduction in investment income on its cash balances
- 3-month USD LIBOR is scheduled for cessation on June 30, 2023
- Sewer Series 2006D bonds do not have interest rate fallback language that allows for substitution of a replacement index, and must be addressed prior to the index cessation date
- In March 2022, Congress enacted the Adjustable Interest Rate (LIBOR) Act (“AIRLA”), which addresses the permanent cessation of certain tenors of LIBOR and those contracts that either lack or contain insufficient LIBOR fallback provisions (tough legacy contracts)
  - Identifies benchmark rates based on the Secured Overnight Financing Rate (“SOFR”) to replace LIBOR benchmarks in tough legacy contracts
  - Guidance on implementation provided by final rule 12 C.F.R. Part 253, “Regulation Implementing the Adjustable Interest Rate (LIBOR) Act (Regulation ZZ)” (“Rule 253”) adopted by the Board of Governors of the Federal Reserve System in December 2022
- AIRLA and Rule 253 represent a favorable resolution for Sewer Series 2006D that maintains advantageous risk profile and economics without requiring costly and complex investor consent process or refunding
- Mechanics of GLWA indenture require GLWA to adopt a Resolution and execute Supplemental Sale Order implementing this change that is required by operation of law
- Transition to SOFR benchmark rate is not intended to impact economic position of either GLWA or investors and other debt terms are not impacted, with GLWA maintaining full flexibility to prepay debt prior to maturity

III. Update on Potential Refinancing Opportunities

History of Debt Service Savings Achieved Since 2014

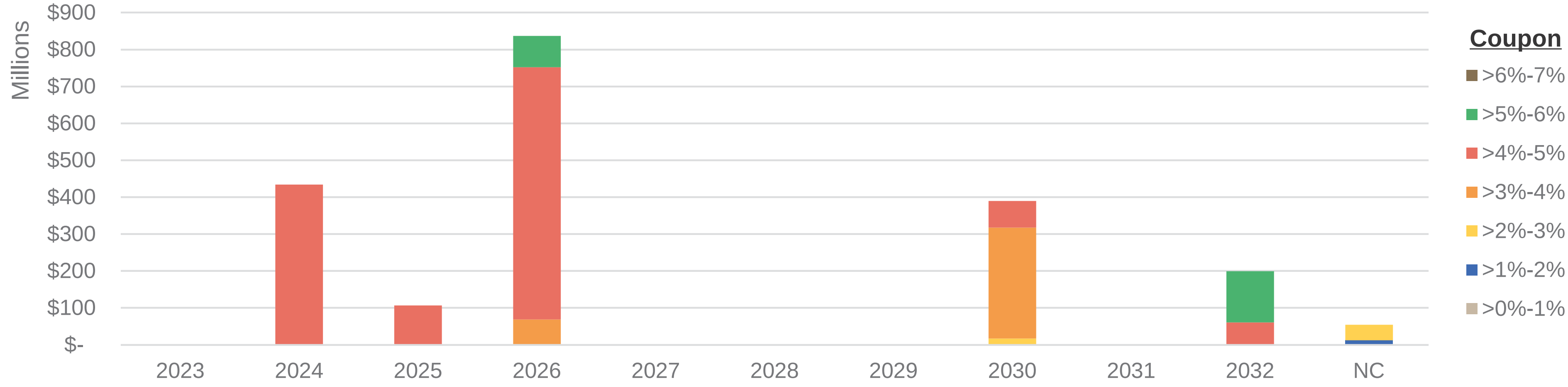
- Through the leadership of the Authority's management team, the financing team has been able to achieve over $1 billion of cash flow debt service savings for the systems since the tender and refunding transaction in 2014



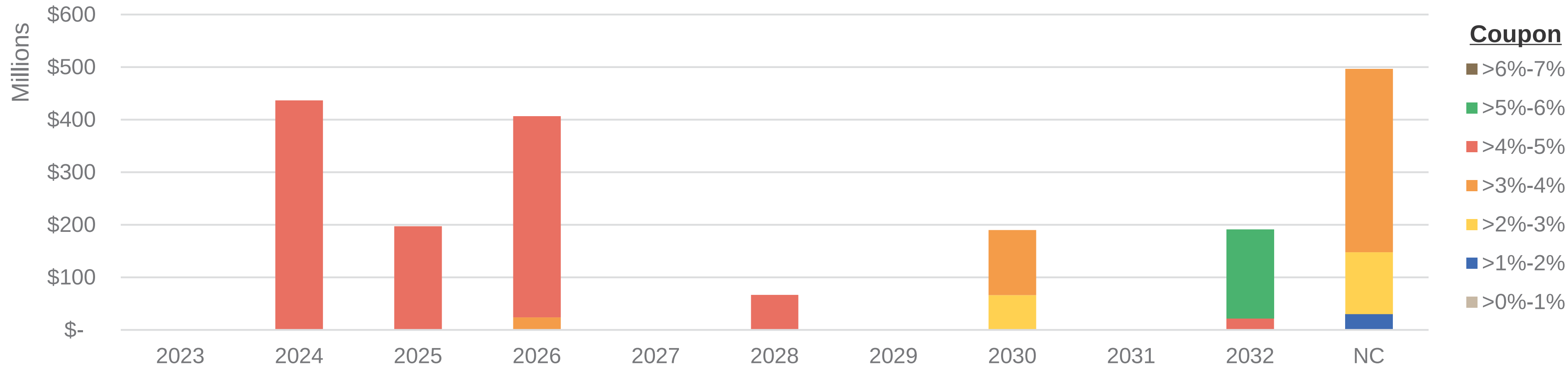
1: Totals may not add due to rounding
Note: Debt service savings is shown on a cash flow basis

GLWA Fixed Rate Par Call Options[1]

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



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



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Note: excludes variable rate debt

GLWA Upcoming Callable Par Through 2026

Series Name	Indenture	Lien	Tax Status	Coupons	Outstanding ($000s)	Next Call Date	Callable Par ($000s)
Water							
Senior Lien							
Series 2014D-1	Water	Senior	Tax-Exempt	5.00	71,225	7/1/2024	44,190
Series 2014D-2	Water	Senior	Tax-Exempt	5.00	188,455	7/1/2024	136,925
Series 2014D-4	Water	Senior	Tax-Exempt	5.00	209,360	7/1/2024	209,360
Series 2015D-1	Water	Senior	Tax-Exempt	5.00	69,275	7/1/2025	69,275
Series 2016A	Water	Senior	Tax-Exempt	5.00	87,990	7/1/2026	87,970
Series 2016C	Water	Senior	Tax-Exempt	5.00 - 5.25	439,065	7/1/2026	367,685
					1,065,370		**915,405**

Series Name	Indenture	Lien	Tax Status	Coupons	Outstanding ($000s)	Next Call Date	Callable Par ($000s)
Second Lien							
Series 2014D-6	Water	Second	Tax-Exempt	5.00	49,490	7/1/2024	43,690
Series 2015D-2	Water	Second	Tax-Exempt	5.00	37,235	7/1/2025	37,235
Series 2016B	Water	Second	Tax-Exempt	5.00	163,820	7/1/2026	163,800
Series 2016D	Water	Second	Tax-Exempt	4.00 - 5.00	222,045	7/1/2026	217,380
					472,590		**462,105**

Series Name	Indenture	Lien	Tax Status	Coupons	Outstanding ($000s)	Next Call Date	Callable Par ($000s)
Sewer							
Senior Lien							
Series 2014C-3	Sewer	Senior	Tax-Exempt	5.00	381,800	7/1/2024	303,570
Series 2014C-6	Sewer	Senior	Tax-Exempt	5.00	88,900	7/1/2024	88,900
Series 2016B	Sewer	Senior	Tax-Exempt	5.00	126,105	7/1/2026	111,660
					596,805		**504,130**

Series Name	Indenture	Lien	Tax Status	Coupons	Outstanding ($000s)	Next Call Date	Callable Par ($000s)
Second Lien							
Series 2014C-7	Sewer	Second	Tax-Exempt	5.00	50,000	7/1/2024	44,065
Series 2015C	Sewer	Second	Tax-Exempt	5.00	197,160	7/1/2025	197,160
Series 2016C	Sewer	Second	Tax-Exempt	4.00 - 5.00	295,190	7/1/2026	295,190
					542,350		**536,415**

Note: excludes variable rate debt

Refunding Opportunities in the Current Market

- GLWA has an opportunity in the current market to generate substantial present value savings through a tender refunding, a strategy that has become more common in the municipal market
  - Tender refunding would generate immediate savings and reduce GLWA's ongoing interest rate risk
- In a tender refunding, GLWA would offer to buy back outstanding bonds from investors at a premium to market value, funded with refunding bond proceeds
- Ability to generate savings is dependent on investor participation and market conditions, which cannot be assured, but risks of low participation can be reduced with inclusion of large number of candidates
- **Taxable-to-Tax-Exempt Tender of Taxable Series 2020 Bonds – up to $1B of candidates**
  - Taxable advance refunding bonds that refunded tax-exempt debt generally become eligible for tax-exempt within 90 days of redemption of the refunded bonds within the escrow[1]
  - Represents savings that GLWA would otherwise never realize, since optional redemption on taxable debt is largely not an economic one
- **Tax-Exempt Tender of Tax-Exempt Bonds Callable in 2024-2026 – up to $2B of candidates**
  - Generates savings superior to taxable advance refunding and with breakeven yield curve movements generally under 1.00% versus a current refunding at the call date
- Due to the rapid increase in rates, other more traditional refunding strategies, like a taxable advance refunding, are not economically viable

1. Subject to Tax Counsel review.

Comparison of Potential Tender Refunding Results (Assumes 20% Participation)

Water System

Candidate					Tender Refunding Taxable Only > 0%		Tender Refunding Taxable + TE > 10%		Tender Refunding Taxable + TE > 5%	
Series	**Lien**	**Tax Status**	**Callable Par**	**Call Date**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**
Series 2014D-1	Senior	Tax-Exempt	44,190	7/1/2024	-	-	-	-	658	7.45%
Series 2014D-2	Senior	Tax-Exempt	136,925	7/1/2024	-	-	-	-	-	-
Series 2014D-4	Senior	Tax-Exempt	209,360	7/1/2024	-	-	1,731	10.92%	3,902	9.32%
Series 2015D-1	Senior	Tax-Exempt	69,275	7/1/2025	-	-	130	10.16%	912	7.88%
Series 2016A	Senior	Tax-Exempt	87,970	7/1/2026	-	-	0	11.63%	1	8.59%
Series 2016C	Senior	Tax-Exempt	367,685	7/1/2026	-	-	630	10.19%	4,054	7.51%
Series 2020C	Senior	Taxable	321,765	7/1/2030	6,414	8.63%	6,414	8.63%	6,414	8.63%
Total Senior			**1,237,170**		**6,414**	**8.63%**	**8,905**	**9.12%**	**15,941**	**8.36%**
Series	**Lien**	**Tax Status**	**Callable Par**	**Call Date**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**
Series 2014D-6	Second	Tax-Exempt	43,690	7/1/2024	-	-	45	10.56%	515	7.04%
Series 2015D-2	Second	Tax-Exempt	37,235	7/1/2025	-	-	-	-	610	8.19%
Series 2016B	Second	Tax-Exempt	163,800	7/1/2026	-	-	1	11.24%	1	8.61%
Series 2016D	Second	Tax-Exempt	217,380	7/1/2026	-	-	-	-	579	5.33%
Total Second			**462,105**		**-**	**-**	**46**	**10.57%**	**1,705**	**6.65%**
Total Water			**1,699,275**		**6,414**	**8.63%**	**8,950**	**9.12%**	**17,646**	**8.16%**

Sewer System

Candidate					Tender Refunding Taxable Only > 0%		Tender Refunding Taxable + TE > 10%		Tender Refunding Taxable + TE > 5%	
Series	**Lien**	**Tax Status**	**Callable Par**	**Call Date**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**
Series 2014C-3	Senior	Tax-Exempt	303,570	7/1/2024	-	-	1,693	11.57%	2,981	10.20%
Series 2014C-6	Senior	Tax-Exempt	88,900	7/1/2024	-	-	2,161	12.16%	2,161	12.16%
Series 2016B	Senior	Tax-Exempt	111,660	7/1/2026	-	-	-	-	1,293	7.74%
Series 2020A	Senior	Taxable	108,540	7/1/2030	9,669	8.21%	9,669	8.21%	9,669	8.21%
Total Senior			**612,670**		**9,669**	**8.21%**	**13,523**	**9.00%**	**16,104**	**8.87%**
Series	**Lien**	**Tax Status**	**Callable Par**	**Call Date**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**	**PV Savings ($000s)**	**PV Savings (%)**
Series 2014C-7	Second	Tax-Exempt	44,065	7/1/2024	-	-	340	10.58%	438	9.37%
Series 2015C	Second	Tax-Exempt	197,160	7/1/2025	-	-	-	-	3,159	8.82%
Series 2016C	Second	Tax-Exempt	295,190	7/1/2026	-	-	-	-	2,759	5.78%
Series 2020B	Second	Taxable	81,850	7/1/2030	2,208	13.49%	2,208	13.49%	2,208	13.49%
Total Second			**618,265**		**2,208**	**13.49%**	**2,548**	**13.01%**	**8,564**	**8.19%**
Total Sewer			**1,230,935**		**11,877**	**8.85%**	**16,071**	**9.46%**	**24,668**	**8.62%**

Assumptions: Matched lien refunding with Delivery Date of July 1, 2023; Interest rates as of March 2, 2023; costs of issuance $4/bond; underwriter's discount $4/bond; All figures present valued at tax-exempt yields to July 1, 2023; Tender Refunding assumes a premium to BVAL valuation of 2.00%; Includes only bonds which generate positive savings for the tender refunding and tax-exempt series with call dates through 2026

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Tender Refinancing – Taxable Bonds > 0% & Tax-Exempt > 10%

Issuance Summary

- Tender transaction with wider scope of candidates can generate additional savings and increase likelihood of positive result
- Candidates are only taxable bonds eligible to be flipped to tax-exempt and callable tax-exempt bonds with NPV savings >10% on an individual basis
- Cashflows considerations do exist, and specific years of negative savings can occur due to low coupons on tendered bonds

Assumptions

- Uniform Savings Structure
- Underlying candidates tendered on a matched lien basis.
- Assumes a uniform 20% tender acceptance rate
- Interest rates as of March 2, 2023
- 5% coupon structure
- Assumes par call on 7/1/2033
- Excludes consideration of DSRF

	Water	Sewer
Delivery Date:	7/1/2023	7/1/2023
Call Date:	7/1/2033	7/1/2033
Final Maturity:	7/1/2041	7/1/2044
Bonds Offered for Tender:	490,175,000	848,675,000
Bonds Accepted for Tender:	98,035,000	169,735,000
Sources ($)		
Par Amount	80,330,000	132,450,000
Premium	9,419,339	16,782,255
Accrued Interest	1,802,308	2,844,427
Total Sources	**91,551,647**	**152,076,682**
Uses ($)		
Redemption of Bonds	90,650,946	150,586,939
COI / Underwriter's Discount	900,701	1,489,743
Total Uses	**91,551,647**	**152,076,682**
Statistics		
Arbitrage Yield (%):	3.73%	3.46%
True Interest Cost (%):	3.90%	3.81%
Weighted Average Life (yrs.):	13.74	13.54
NPV Savings ($):	7,169,277	13,923,921
NPV Savings (%):	7.31%	8.20%

DSIR Year	Water System Savings ($)	Sewer System Savings ($)
7/1/2024	633,115	2,453,645
7/1/2025	636,114	1,341,500
7/1/2026	(97,956)	754,272
7/1/2027	631,168	(567,805)
7/1/2028	644,636	888,533
7/1/2029	601,420	1,345,007
7/1/2030	452,219	(465,855)
7/1/2031	445,713	964,526
7/1/2032	664,966	1,255,795
7/1/2033	654,034	1,335,850
7/1/2034	670,787	1,314,531
7/1/2035	426,328	1,138,547
7/1/2036	657,293	1,259,214
7/1/2037	633,639	676,442
7/1/2038	586,350	636,079
7/1/2039	576,569	594,394
7/1/2040	569,952	1,250,123
7/1/2041	567,150	1,240,953
7/1/2042	-	1,239,056
7/1/2043	-	1,234,505
7/1/2044	-	1,228,278
Total	9,953,498	21,117,590

Preliminary, subject to change.

IV. Rating Agency Update

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
- Upgrades to “AA” category trigger ability to release existing Debt Service Reserve Fund (“DSRF”) and/or not require DSRF deposits or surety policies for borrowings going forward
  - Substantial risk reduction related to elimination of DSRF requirements at AA category rating level

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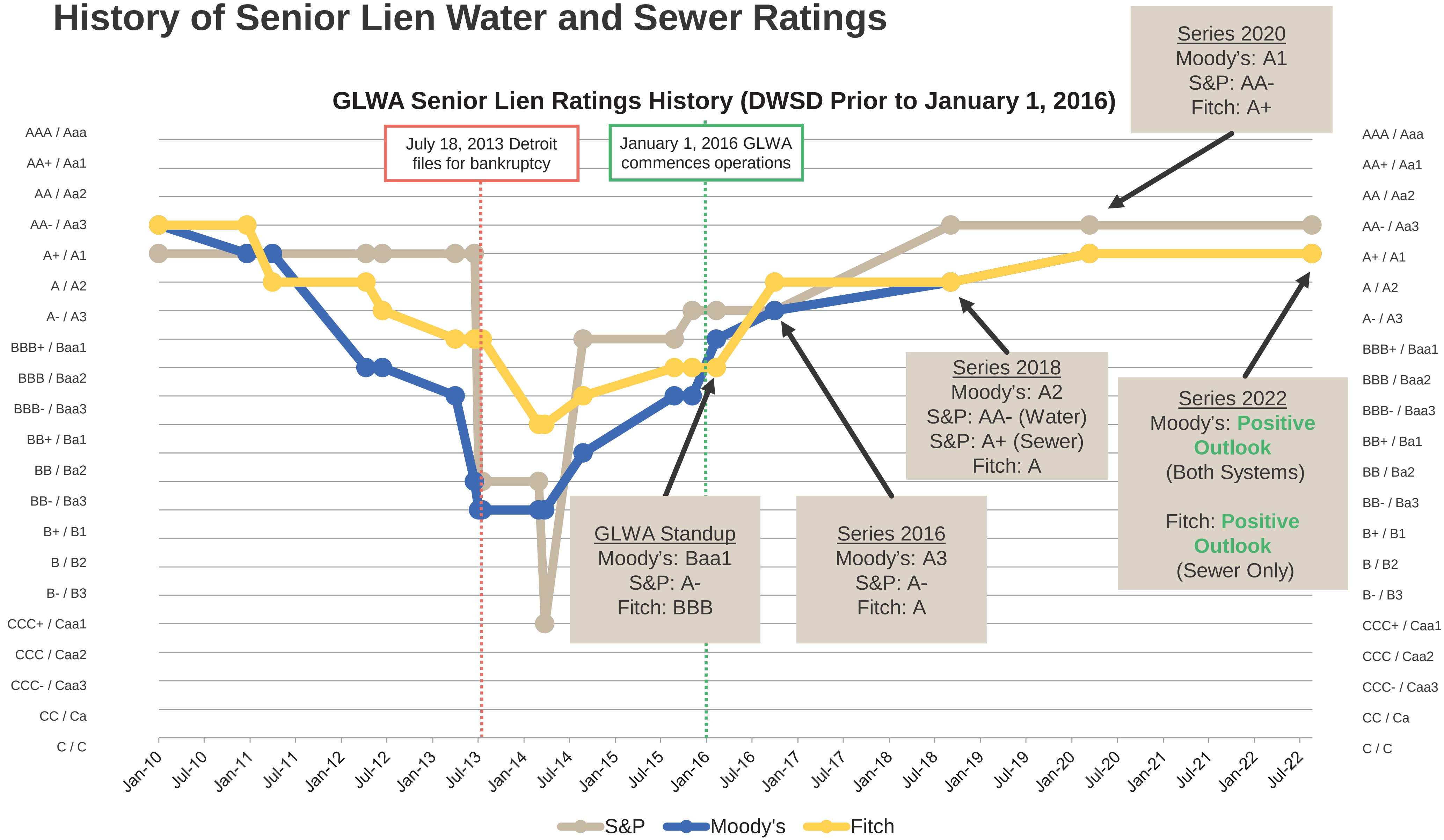
Current Water and Sewer Ratings

Water			
	Moody’s	S&P	Fitch
Senior Lien	A1	AA-	A+
Second Lien	A2	A+	A
Outlook	Positive	Stable	Stable

Sewer			
	Moody’s	S&P	Fitch
Senior Lien	A1	AA-	A+
Second Lien	A2	A+	A
Outlook	Positive	Stable	Positive

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

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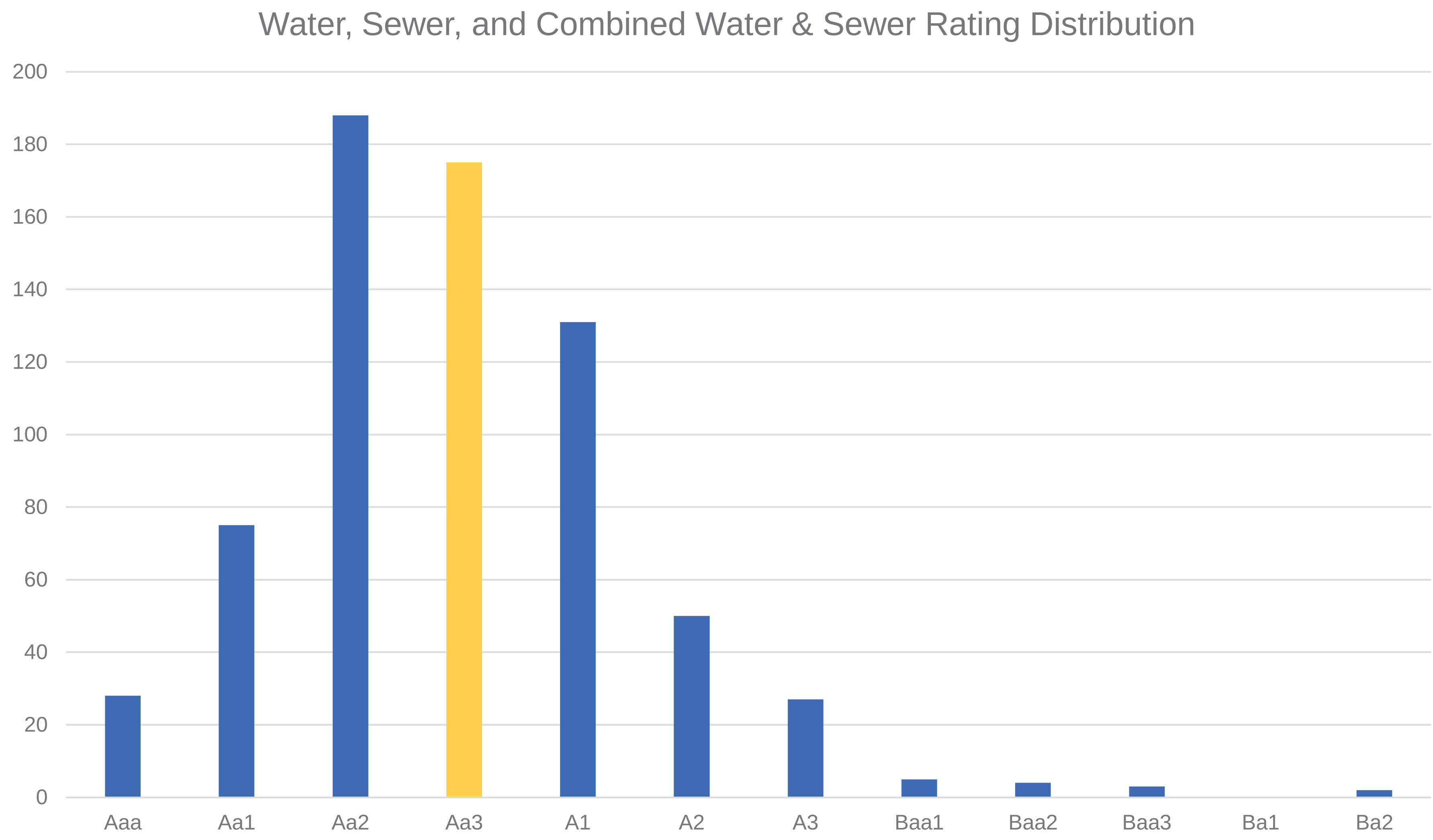
GLWA Approaching Median US Water and Sewer Credit Rating



Source: Moody's Report: "Water and Sewer Utilities – US Medians - Liquidity and debt service coverage remained strong in fiscal 2020", May 26, 2022.

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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

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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

Factors that Could Lead to An Upgrade to "AA" Rating from Moody's & Fitch

Moody's – Currently "A1"

- Moody's currently has ***positive outlooks*** on both the water and sewer systems and indicated the following items that could result in upgrade :

1. **"Sustained expansion & diversification of service area's economic base"[1]**
   - Limited ability for GLWA to impact service area economy
2. **"Growth in revenue that continues to outpace additional borrowing to moderate leverage"[1]**
   - Moody's measures leverage as the ratio of debt to operating revenues
   - Strong financial performance aimed at reducing leverage can be impacted directly by GLWA

Fitch – Currently "A+"

- Fitch currently has a ***positive outlook*** on the sewer system and a ***stable outlook*** on the water system; They indicated the following item that could result in upgrade:

1. **"Sustained improvements in leverage below 10.0x assuming stability in the current revenue defensibility and operating risks assessments"[2]**
   - Fitch Leverage calculation (Net Adjusted Debt to Adjusted FADS) is a single ratio that incorporates outstanding debt and other fixed obligations as well as net revenues after payment of operating expenses
   - Strong financial performance aimed at reducing leverage can be impacted directly by GLWA

Common theme is reduction in leverage metrics by increasing net revenue at a faster pace than borrowing, while maintaining the required level of capital investment in the system

1: Moody's GLWA Credit Opinion dated August 22, 2022
2: Fitch GLWA Rating Action Commentary dated August 22, 2022

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Appendix

Bond Reserve Release Contingent on AA-Category Ratings

GLWA has attained all necessary bondholder consents to effectuate the Reserve Fund Amendment and allow for the release of the Bond Reserve Funds once GLWA attains two AA category ratings

- Reserves are currently funded with a mixture of surety policies and cash / securities
- Cash and securities balances that remain in Bond Reserve Funds are modest given prior aggressive refunding program structured to maximize releases, but reduction of the Reserve Requirement would avoid potentially substantial future deposit requirements upon expiration of current surety policies ($29 million in 2027) and in concert with future debt issuance
- In order to reduce or eliminate the Reserve Requirements, GLWA must attain ratings of at least AA- or Aa3 on the Senior Lien from at least two of Moody's, S&P, and Fitch
  - S&P previously achieved for both Water and Sewer
  - Positive Outlooks from Moody's achieved with 2022 transactions
  - Positive Outlook on Sewer System from Fitch achieved with 2022 transactions
  - Also requires confirmation that ratings will not be reduced solely as a result of the change in the Reserve Requirement
  - Can be triggered separately for each of the Water System and the Sewer System
- Any releases from the Bond Reserve Funds would be restricted for certain purposes

Bond Reserve Funding Amounts by System and Lien

	Water System		Sewer System	
	Senior Lien	Second Lien	Senior Lien	Second Lien
Credit Facilities [1]	98,173,770	45,815,645	95,239,862	40,600,000
Cash and Investments [2]	4,821,850	3,287,286	11,645,859	798,142
Total	**102,995,620**	**49,102,931**	**106,885,722**	**41,398,142**

1. For series-specific policies, represents amount as of July 1, 2022 that is projected to be the lesser of (a) the maximum amount of the policy or (b) the amount of the Reserve Requirement specifically allocated to the specific series of Bonds covered by such policy.
2. Market value as of Series 2022 Close; Valuations will likely change in concert with the annual valuation in July of 2023

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

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Moody's Water & Sewer Utility Scorecard

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
			Scoring on Moody's Municipal Utility Methodology							
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	17 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	$165 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	96.8%	**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	920 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	5.5x	**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 August 22, 2022

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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	19 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	$256 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	96.8%	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	1.3x	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	512 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	5.2x	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 GLWA and DWSD FY2020 financial statements and Moody's reports associated with Series 2020 transaction.

Fitch – Indicated Scorecard Rating

Revenue Defensibility
(legal framework and service area economics)
GLWA = "aa"

Operating Risks
(cost risks and life cycle/capital renewal risks)
GLWA = "aa"

Financial Profile Assessment Leverage
(liquidity and leverage)
GLWA = 10.0x

Suggested Analytical Outcome
(assuming asymmetric risks and liquidity profile are neutral)
GLWA = A to AA
Asymmetric risks and liquidity profile = neutral

Peer Analysis

Analyst Judgement

Fitch Analytical Stress Test or "FAST" scenario analysis

Final 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.

Sources: Fitch Report dated August 22, 2022

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Fitch – Indicated Scorecard Rating

Revenue Defensibility
(legal framework and service area economics)
GLWA = "aa"

Operating Risks
(cost risks and life cycle/capital renewal risks)
GLWA = "aa"

Financial Profile Assessment Leverage
(liquidity and leverage)
GLWA = 9.5x

Suggested Analytical Outcome
(assuming asymmetric risks and liquidity profile are neutral)
GLWA = AA
Asymmetric risks and liquidity profile = neutral

Peer Analysis

Analyst Judgement

Fitch Analytical Stress Test or "FAST" scenario analysis

Final 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.

Sources: Fitch Report dated August 22, 2022

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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 it annual cash flows available to service those obligations

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

$$\frac{\text{Total Debt + Capitalized Fixed Charges + Adjusted Net Pension Liability - Available Cash - Funds Restricted for Debt Service}}{\text{FADS + Fixed Services Expense + Operating Leases + Pension Expense}}$$

GLWA = 10.0x	GLWA = 9.5x

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 August 22, 2022

Moody’s Water & Sewer Sector Outlook

- **Stable Outlook**, noting traditionally reliable revenue sources and healthy reserves will blunt the effects of a slower economy and high inflation
- Affordability will continue to affect utility rate-setting nationwide in 2023 and management will likely face public and political resistance to implementing sizable rate increases to meet escalating operating and capital spending challenges
- Water and sewer utilities also enter 2023 well positioned to navigate through a weaker economic environment as balance sheets are reinforced by robust levels of liquidity
- Increasing costs come at a time when the utilities have a 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
- Water and sewer enterprises face higher labor costs as employee compensation increases to attract and retain workers amid a tight labor market and private-sector competitions
- While the cost of cyberattacks have generally been manageable, management's focus on minimizing cyber risk will become increasingly important; water and sewer utilities have a “Very High” overall cyber risk exposure

Source: Moody’s Report, “2023 Outlook – Stable with reliable revenue sources and robust reserves” December 6, 2022.

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Standard & Poor's Water & Sewer Sector Outlook

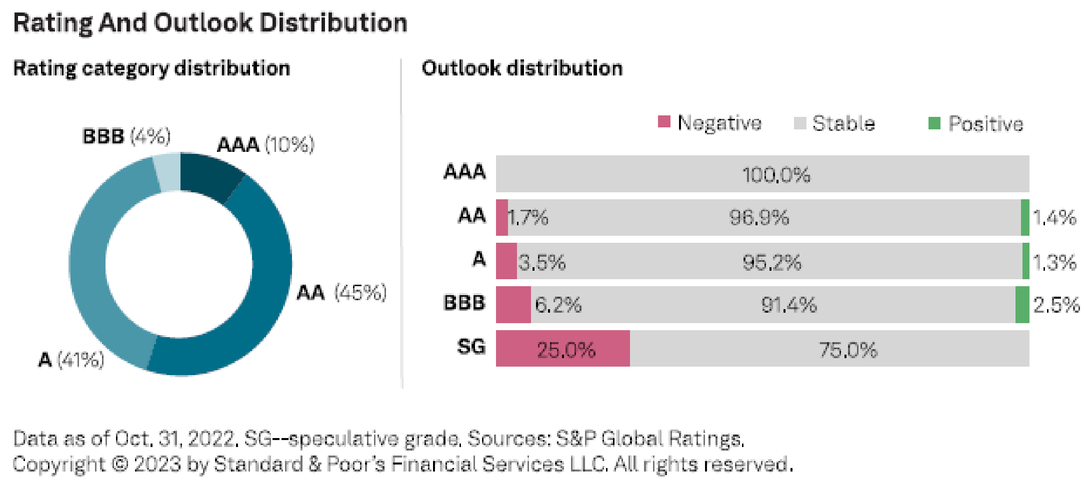
- **Stable outlook**, noting that there is credit pressure, but cash reserves have grown, and rate-setting flexibility is strong
- While materials costs may begin to stabilize, the shortage of skilled labor may be more enduring, which will keep labor costs elevated
- Utilities with marginal liquidity are more exposed to financial stress and covenant breeches if a climate-related event weakens demand due to population displacement or usage restrictions

- As utility cost of service increase rapidly, concerns over affordability are growing, which means that finding the right balance between how costs are allocated among customer classes is of critical importance, as is the overall demographics and purchasing power of the population served
- Balanced credits may fare better in the current environment; those who have been less balanced in their overall credit profile (i.e., reliant on strong financial performance) may experience more pressure

Source: S&P Report, "U.S. Municipal Water and Sewer Utilities 2023 Sector Outlook" January 12, 2023.

Standard & Poor's Water & Sewer Sector Outlook

- Positive rating actions outpaced negative in 2022, primarily driven by criteria implementation and sustained improvements in financial performance; does not expect the recent rate of upgrades to continue
- Negative rating actions were primarily driven by weak management and financial deterioration, generally reflecting rising operating expenses and delayed rate increases
- As 2022 demonstrated, inadequate infrastructure investment can result in catastrophic costs and resulted in several downgrades
- Escalating construction costs are also expected to contribute to weaker financial metrics
- While federal support is at historical levels, the benefit is being partly eroded by inflation and rising interest rates & they are not expected to be a panacea

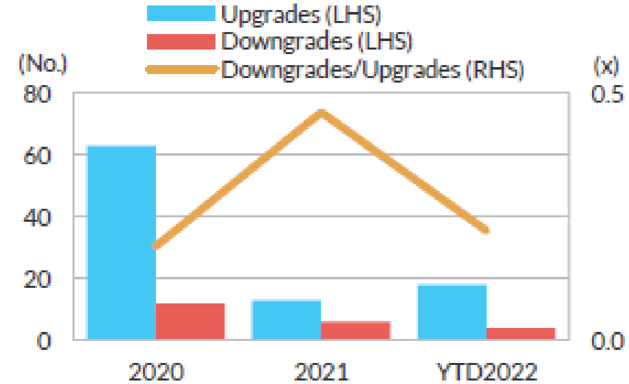


Source: S&P Report, "U.S. Municipal Water and Sewer Utilities 2023 Sector Outlook" January 12, 2023.

Fitch's Water & Sewer Sector Outlook

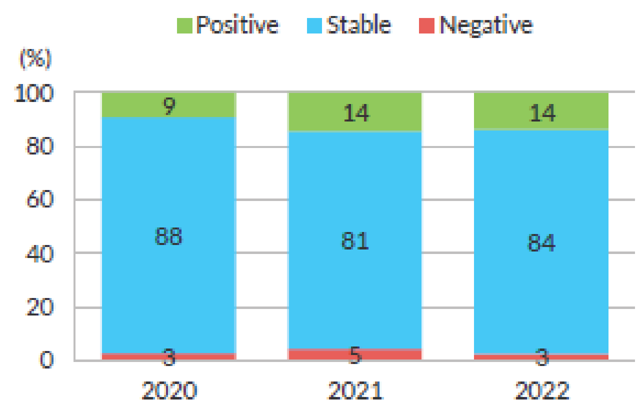
- **Deteriorating outlook**, with the key factors affecting the sector's performance being general inflationary pressures, notably higher chemical, labor and power costs, and weaker economic growth
- Fitch expects that economic and business conditions will create a more challenging operating environment in 2023 which could lead to a weakening in credit quality across the sector
- 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, an acceleration in rate adjustments sustained in 2023 is expected to weaken affordability
- 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

Water & Sewer– Rating Changes



Note: 2020 is a criteria change year.
Source: Fitch Ratings.

Water & Sewer – Rating Outlooks



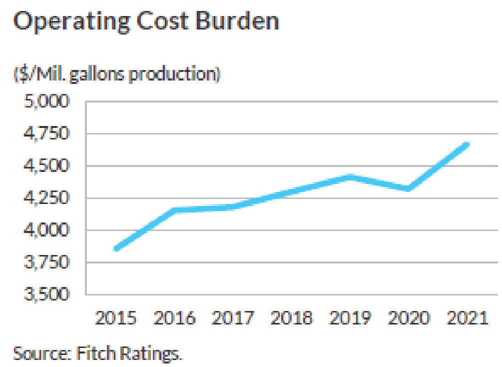
Source: Fitch Ratings.

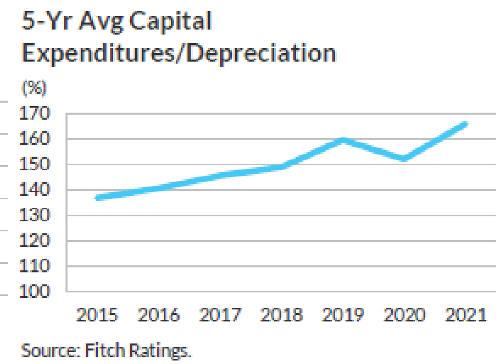
- Additional key sector issues include the increased frequency and severity of extreme weather events and breach of critical utility assets from cyberattacks

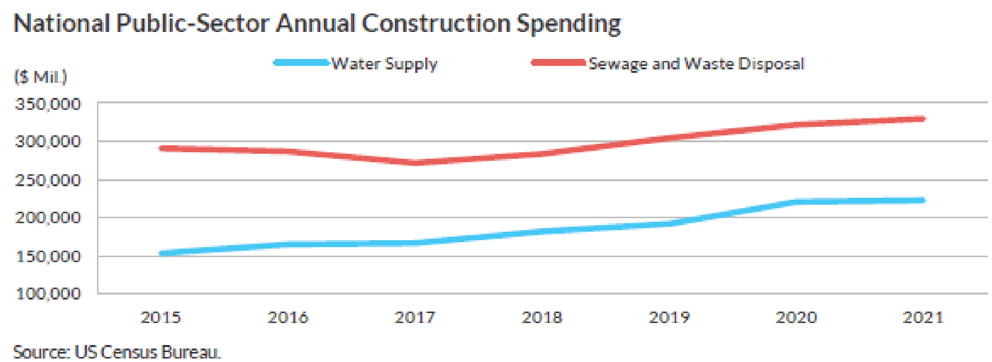
Source: Fitch "2023 Outlook: Water and Sewer Sector" December 6, 2022.

Fitch's Water & Sewer Sector Outlook

- Operating costs are expected to remain elevated over the new term as a result of inflationary pressures and the rising interest rate environment
- Increased capital spending levels will contribute to leverage pressures as debt is added to the balance sheet and cash levels are drawn down
- 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
- Utilities maintain flexibility within capital programs to defer projects, but this would only accelerate the rate at which the sector's life cycle ratio increases and contributes to weaker operating risk profiles







- 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

Source: Fitch "2023 Outlook: Water and Sewer Sector" December 6, 2022.

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