



Rating Agency Criteria and Peer Comparison for Financial Metrics

Presented by:
Dan Hartman, Managing Director

March 16, 2018

PFM Financial Advisors LLC

4350 N. Fairfax Drive
Suite 580
Arlington, VA 22203

703.741.0175
pfm.com



Key Financial Metrics for GLWA

The maintenance of key financial metrics is critically important to GLWA's ongoing positioning for rating upgrades and its objective of lowering GLWA's fixed costs for both the Water and Sewer enterprises.

- GLWA senior lien water and sewer ratings of A3/A-/A remain among the lower quartile of utility ratings nationally
- GLWA continues to push forward with efforts to improve its bond ratings up to AA category ratings for both the water and sewer sectors, recognizing that debt service (for planned new money and refinancing bonds) accounts for almost 50% of the annual budget
- With the improvement in senior lien bond ratings to the AA category for water and sewer, significant reductions in fixed cost could be achieved relative to the maintenance of current ratings
- GLWA has identified an initial group of peer utilities, against which it is benchmarking performance and establishing targets for key metric of debt service coverage and liquidity to improve bond ratings
- GLWA is also using rating agency medians on a broader range of variables to assess the progress for the upgrade of its senior lien bond ratings
- Ongoing benchmarking and continued progress in improving key financial metrics of GLWA are critical to the achievement of lower debt service cost and a path to higher credit quality



Current Water and Sewer Ratings

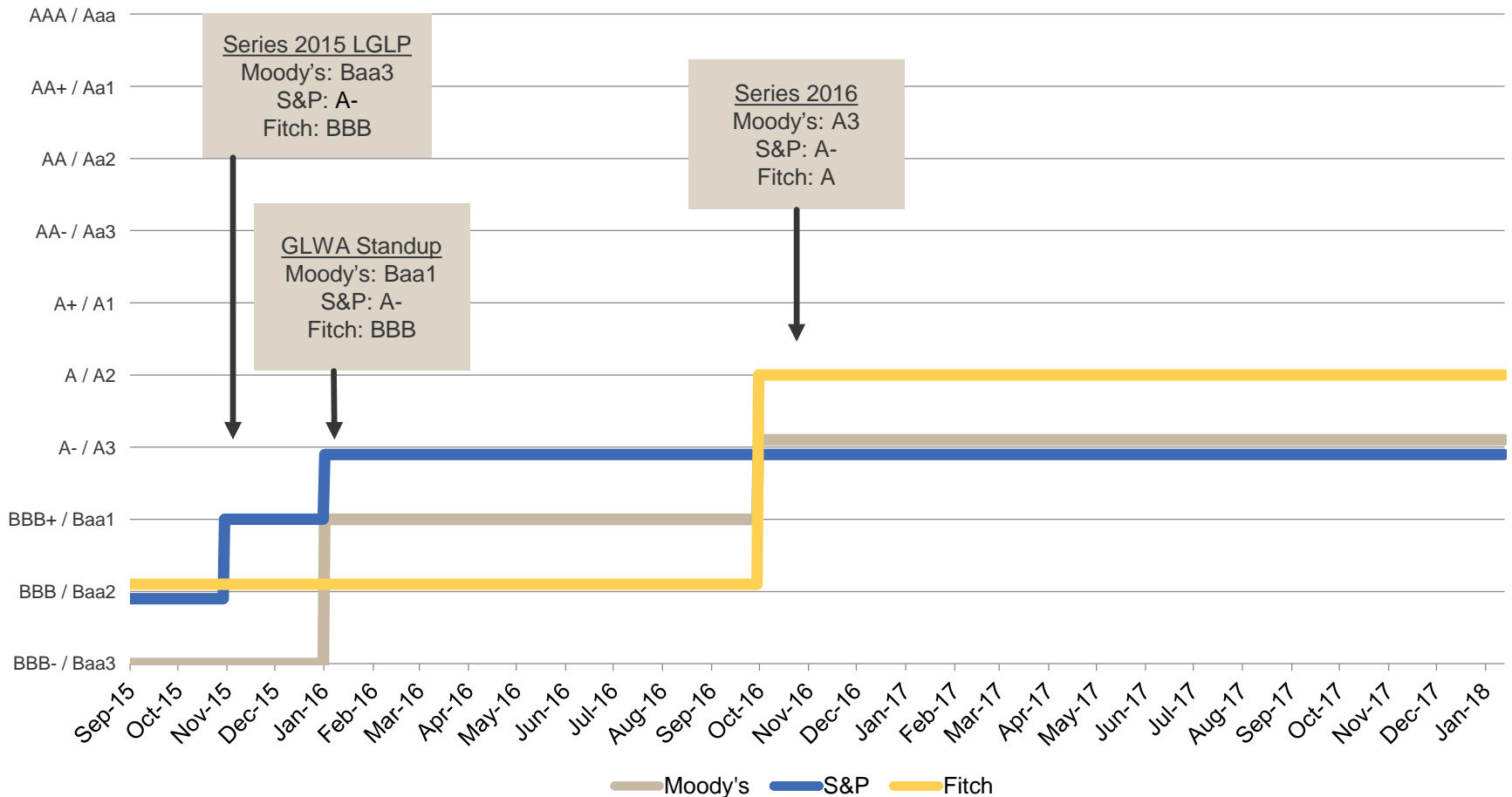
Water			
	Moody's	S&P	Fitch
Senior Lien	A3	A-	A
Second Lien	Baa1	BBB+	A-
Outlook	Stable	Positive	Stable

Sewer			
	Moody's	S&P	Fitch
Senior Lien	A3	A-	A
Second Lien	Baa1	BBB+	A-
Outlook	Stable	Positive	Stable



History of Senior Lien Water and Sewer Ratings

Senior Lien Ratings History (GLWA Standup to Present)





Current Rating Agency Views

Summary of Rating Agency Views		
Moody's Investors Service Matt Butler / Andrew Van Dyke Dobos	Standard & Poor's Scott Garrigan / Ted Chapman	Fitch Ratings Doug Scott / Major Parkhurst
A3 (Sr.) / Baa1 (2nd) Stable Outlook	A- (Sr.) / BBB+ (2nd) Positive Outlook	A (Sr.) / A- (2nd) Stable Outlook
Strengths		
<ul style="list-style-type: none"> — Very wide service area that includes a population of 3.8 million — Commitment to revenue enhancements will likely support sound debt service coverage and healthy liquidity — GLWA management team has implemented operating adjustments to cut costs and improve financial metrics, and is committed to continuing these efforts — Excess treatment capacity presents management with flexibility to repurpose facilities to achieve further operating efficiencies 	<ul style="list-style-type: none"> — Diverse revenue stream from a large number of wholesale customers — Adequate-to-good historical financial performance, with projections that indicate generally improving conditions — Generally affordable rates given income indicators for the Detroit metropolitan statistical area — Management policies and procedures that we generally consider strong 	<ul style="list-style-type: none"> — Essential service provider in expansive service territory — Strong rate adjustment history in support of financial and capital needs — Over 75% of operating revenues coming from suburban customers with higher wealth metrics — All system funds and accounts are separate and distinct Detroit funds including the city's general fund — Changes in rate setting practices and reserve accumulation should help to insulate GLWA from high city retail delinquencies
Challenges		
<ul style="list-style-type: none"> — Declining water consumption trend High leverage will moderate slowly given outstanding capital improvement needs and plans to issue debt — High combined operating needs and fixed costs leave little margin to miss revenue targets — Economic and demographic weaknesses in portions of the service area 	<ul style="list-style-type: none"> — Significant economic stress in Detroit, which could continue to place downward pressure on utility collection rates — Large amount of accounts receivable and high allowances for doubtful accounts — Significantly less affordable rates for customers living in Detroit compared to suburban residents — System leverage that is high and unlikely to abate significantly 	<ul style="list-style-type: none"> — Debt load is expected to remain elevated for the foreseeable future — Continued annual rate adjustments are needed to meet rising debt service obligations and sustain financial performance

Source: Moody's reports dated September 30, 2016; S&P report dated October 3, 2016; Fitch report dated September 30, 2016.



Value of Robust Credit Ratings

- Upgrades beyond current credit ratings unlock significant value given size and scope of new money capital plan and potential refinancings
- 20-year average life for \$2 billion of capital borrowing

Rating	Yield Differential vs. AA Rating	Individual Bond Sale (\$100 million)			Aggregate Capital Program (\$2 billion)		
		Annual Cost Differential (\$100 million)	Total Cost Differential (Through Maturity)	PV at 4%	Annual Cost (\$2 billion)	Total Cost Differential (Through Maturity)	PV at 4% (\$100MM Issued Annually)
AA	0.00%	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
AA-	0.05%	50,000	1,000,000	677,116	1,000,000	20,000,000	9,535,661
A+	0.20%	200,000	4,000,000	2,708,463	4,000,000	80,000,000	38,142,644
A	0.30%	300,000	6,000,000	4,062,695	6,000,000	120,000,000	57,213,966
A-	0.50%	500,000	10,000,000	6,771,158	10,000,000	200,000,000	95,356,610
BBB+	0.75%	750,000	15,000,000	10,156,737	15,000,000	300,000,000	143,034,916

Note: for demonstrative purposes only. Assumes 20-year average credit spreads as of February 2018. Each \$100 million issue assumed structured as a 20-year bullet maturity at par.



Comparable Utility Metrics



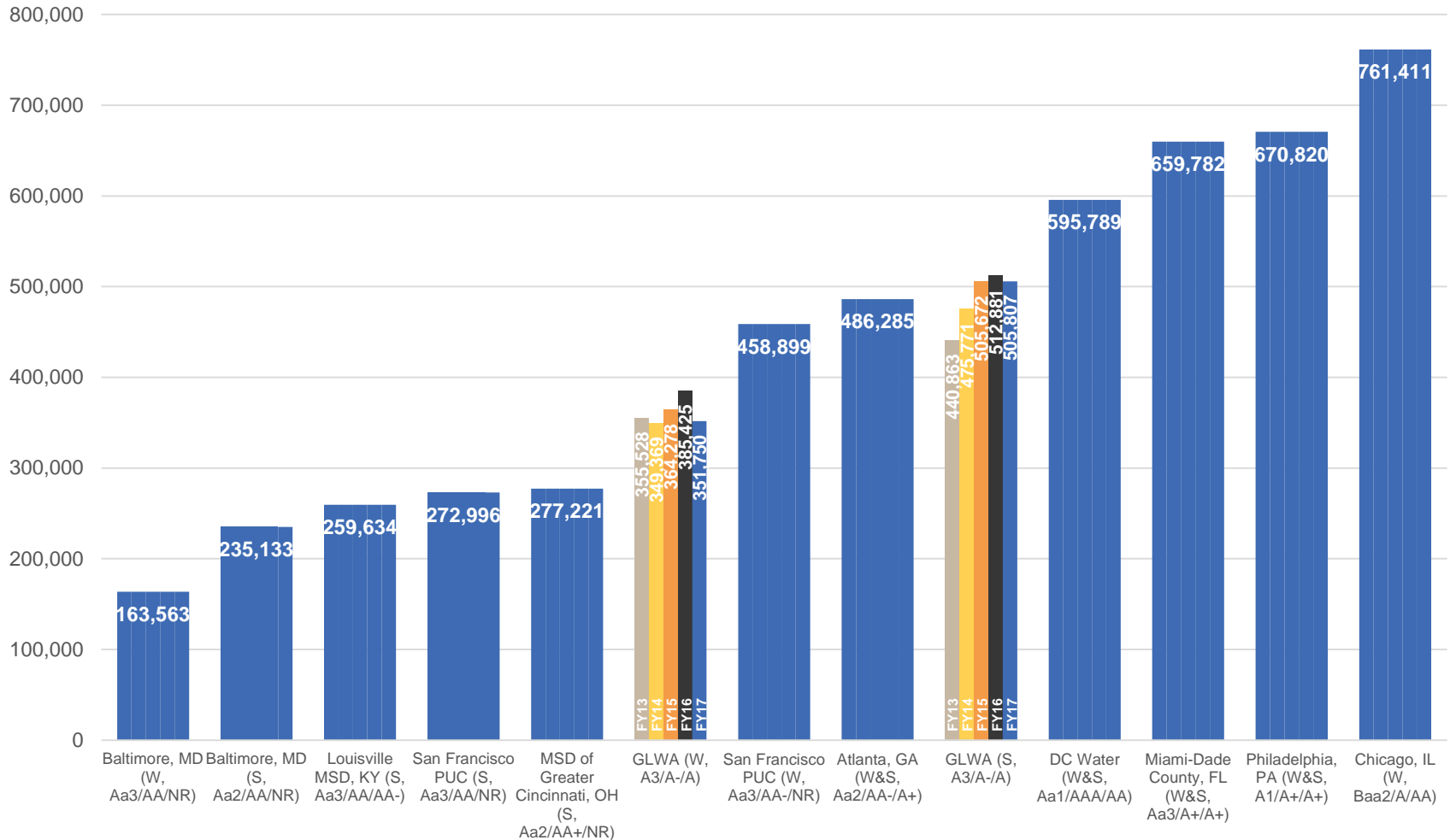
Select Peer Group

Selected Peer	Moody's Rating (Senior)	S&P Rating (Senior)	Fitch Rating (Senior)	Total Operating Revenues (\$000s)	Total O&M Expenses (\$000s)	Total Annual DS (\$000s)	Long Term Debt (\$000s)	DS as a % of Total Operating Revenues	Total Debt Service Coverage	Days Cash and Inv. (days)
Atlanta, GA (Water & Sewer)	Aa2	AA-	A+	486,285	222,664	213,856	2,924,317	44.0%	1.9x	1,364
Baltimore, MD (Water)	Aa3	AA	-	163,563	118,923	50,674	912,410	31.0%	0.9x	58
Baltimore, MD (Sewer)	Aa2	AA	-	235,133	133,964	51,838	1,065,638	22.0%	2.0x	329
Chicago, IL (Water)	Baa2	A	AA	761,411	310,741	171,003	2,655,931	22.5%	2.6x	591
DC Water (Water & Sewer)	Aa1	AAA	AA	595,789	278,128	152,081	2,900,329	25.5%	1.8x	262
GLWA (Water)	A3	A-	A	351,750	101,731	175,010	2,647,284	49.8%	1.4x	900
GLWA (Sewer)	A3	A-	A	505,807	150,216	234,554	3,341,132	46.4%	1.5x	528
Louisville MSD, KY (Sewer)	Aa3	AA	AA-	259,634	87,205	137,857	2,093,573	53.1%	1.4x	220
Miami-Dade County, FL (Water & Sewer)	Aa3	A+	A+	659,782	382,123	122,860	2,112,897	18.6%	2.6x	98
MSD of Greater Cincinnati, OH (Sewer)	Aa2	AA+	-	277,221	118,875	100,588	905,018	36.3%	1.7x	1,031
Philadelphia, PA (Water & Sewer)	A1	A+	A+	670,820	364,197	219,300	1,967,114	32.7%	1.4x	79
San Francisco PUC (Water)	Aa3	AA-	-	458,899	239,389	207,812	4,373,170	45.3%	1.3x	487
San Francisco PUC (Sewer)	Aa3	AA	-	272,996	157,243	49,956	986,111	18.3%	2.7x	454

Source: Peer data from Moody's Financial Ratio Analysis database, as of February 1, 2018. FY2017 GLWA data calculated based on draft FY2017 financial statements (unaudited). Chicago, DC Water, Miami-Dade County, MSD of Greater Cincinnati, and Philadelphia data as of FY2016. All other data as of FY2017.



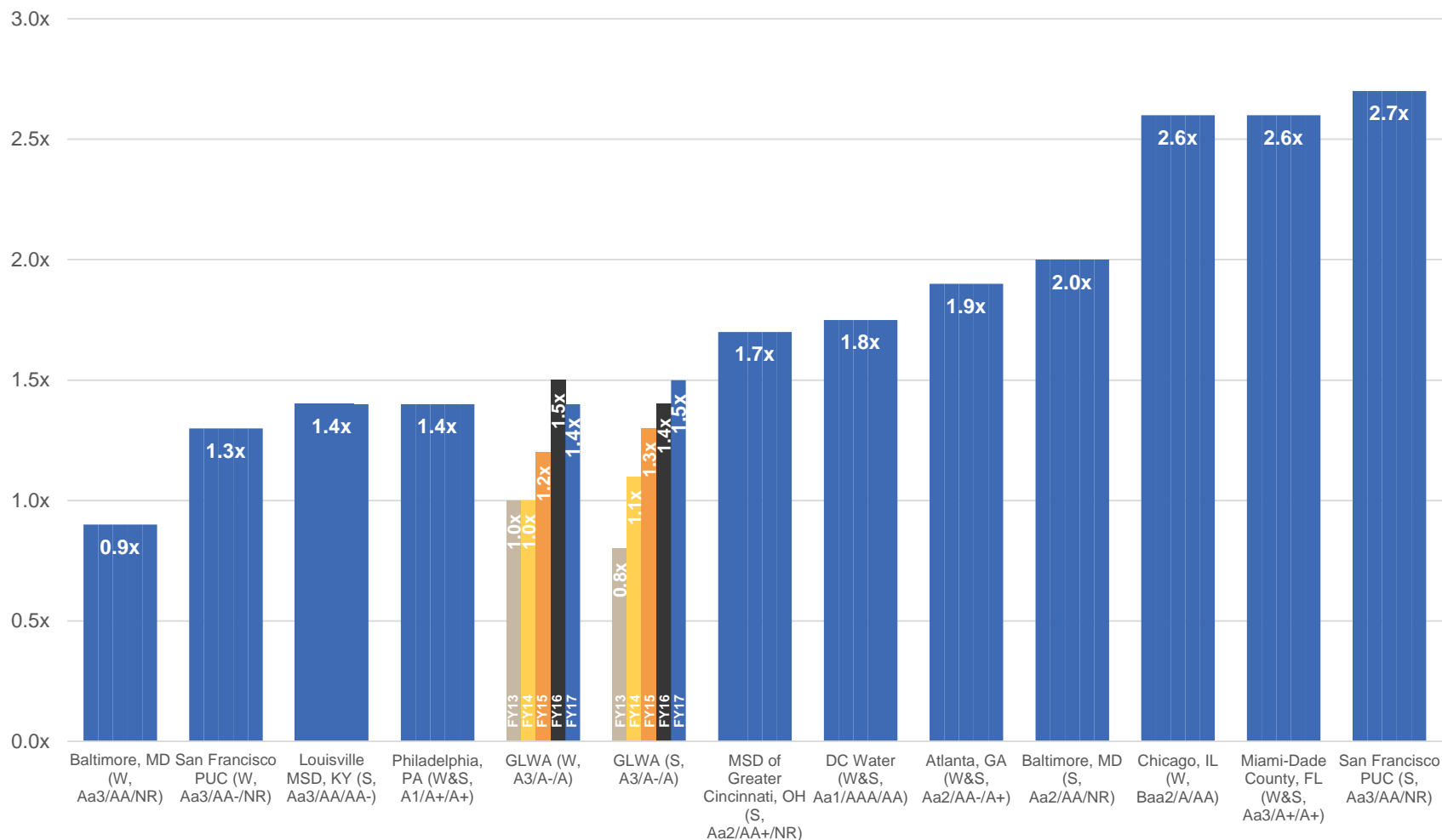
Peer Comparison of Total Operating Revenues



Source: Moody's Financial Ratio Analysis database, as of February 1, 2018. FY2017 GLWA data calculated based on draft FY2017 financial statements (unaudited). Chicago, DC Water, Miami-Dade County, MSD of Greater Cincinnati, and Philadelphia data as of FY2016. All other data as of FY2017. DWSD Data shown as GLWA for FY13-15. FY16 data includes combined data for GLWA and DWSD.



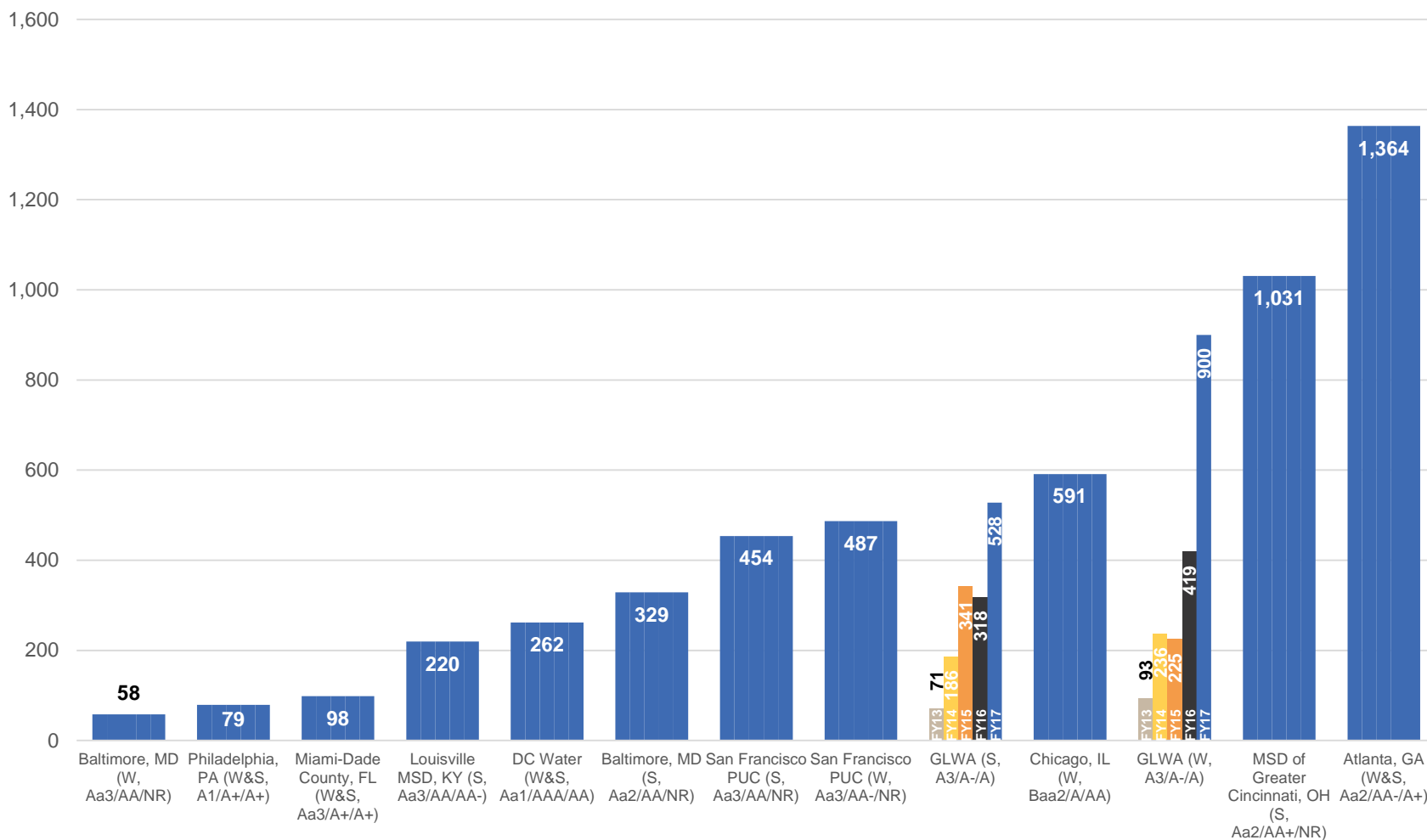
Peer Comparison of Total Debt Service Coverage



Source: Moody's Financial Ratio Analysis database, as of February 1, 2018. FY2017 GLWA data calculated based on draft FY2017 financial statements (unaudited). Chicago, DC Water, Miami-Dade County, MSD of Greater Cincinnati, and Philadelphia data as of FY2016. All other data as of FY2017. DWSD Data shown as GLWA for FY13-15. FY16 data includes combined data for GLWA and DWSD.



Peer Comparison of Unrestricted Days Cash and Investments



Source: Moody's Financial Ratio Analysis database, as of February 1, 2018. FY2017 GLWA data calculated based on draft FY2017 financial statements (unaudited). Chicago, DC Water, Miami-Dade County, MSD of Greater Cincinnati, and Philadelphia data as of FY2016. All other data as of FY2017. DWSD Data shown as GLWA for FY13-15.



Summary of GLWA Liquidity

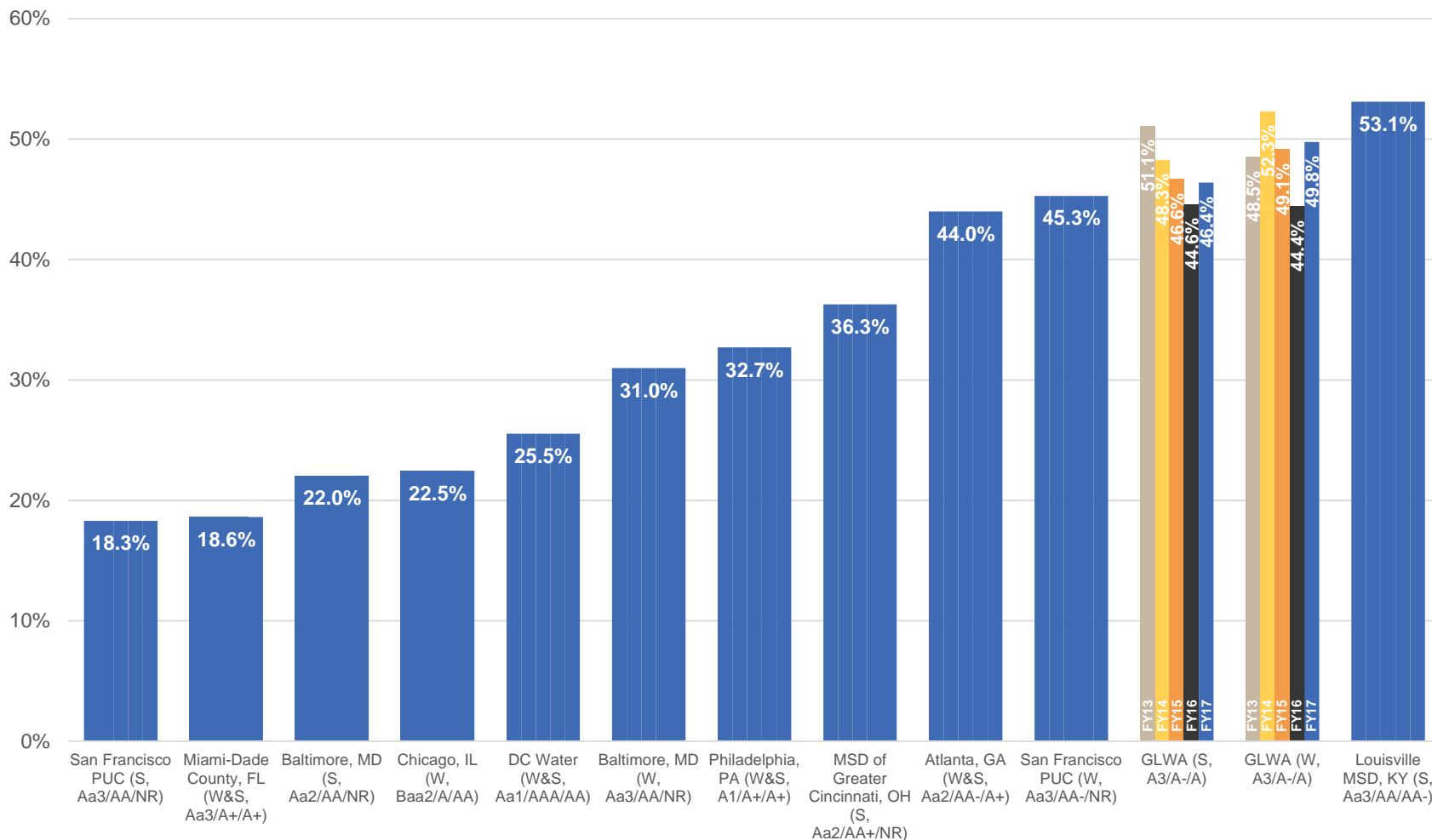
Water System		
Source	FY 2017 Amount	Days Cash & Investments (days)
Operation & Maintenance Fund	\$43.6 million	156
Extraordinary Repair & Replacement Reserve Fund	\$23.0 million	82
Improvement & Extension Account - Regional	\$184.3 million	661
Total	\$250.9 million	900

Sewer System		
Source	FY 2017 Amount	Days Cash & Investments (days)
Operation & Maintenance Fund	\$65.7 million	160
Extraordinary Repair & Replacement Reserve Fund	\$35.1 million	86
Improvement & Extension Account - Regional	\$116.1 million	282
Total	\$217.4 million	528

Source: Draft FY2017 financial statements (unaudited).



Peer Comparison of Debt Service as a % of Operating Revenues



Source: Moody's Financial Ratio Analysis database, as of February 1, 2018. FY2017 GLWA data calculated based on draft FY2017 financial statements (unaudited). Chicago, DC Water, Miami-Dade County, MSD of Greater Cincinnati, and Philadelphia data as of FY2016. All other data as of FY2017. DWSD Data shown as GLWA for FY13-15.



GLWA Relative to Fitch Rating Category Medians

	GLWA (Water)	GLWA (Sewer)	Fitch AAA Median	Fitch AA Median	Fitch A Median
Service Area Population	3.8 million	2.8 million	377,165	156,949	90,400
Median Household Income	56,142 ¹	56,142 ¹	65,943	51,818	50,418
Total Water Customers	Retail metric	Retail metric	69,999	41,633	33,690
Total Sewer Customers	Retail metric	Retail metric	99,676	35,233	33,125
Average Annual CIP per Customer	Retail metric	Retail metric	\$1,078	\$2,000	\$2,331
% CIP Debt Financed	80% ²	49% ²	26%	37%	47%
10 Year Principal Payout	32%	38%	55%	45%	39%
20 Year Principal Payout	78%	88%	95%	90%	75%
Combined Water/Sewer Average Monthly Residential Bill	Retail metric	Retail metric	\$33	\$41	\$45
Combined Water/Sewer Average Monthly Residential Bill as % of MHI	Retail metric	Retail metric	1.3%	1.7%	2.2%
All-in Annual Debt Service Coverage	1.5x	1.4x	2.8x	2.1x	1.7x
Operating Margin	30%	33%	39%	43%	46%
Days Cash on Hand	900	528	692	572	311
Free Cash as % of Depreciation	52%	65%	122%	105%	59%

Source: Fitch Ratings, "2018 Water & Sewer Medians," December 6, 2017. GLWA data from GLWA draft financial statements and PFM records. GLWA data unaudited, as of FY17 unless otherwise noted.

Notes:

1. US Census Bureau as of 2016. MHI represents Detroit-Windsor-Dearborn, MI MSA.
2. % CIP Debt Financed calculated based on Feasibility Consultant report prepared by The Foster Group as of October 14, 2016 and included in Series 2016 Official Statements. May differ from current GLWA projections.



Moody's and S&P Rating Scorecards



Moody's Water & Sewer Utility Scorecard (Water System)

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 Fixed 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	14 years	3	0.300
	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	\$101.7 million	1	0.075
	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	95%	2	0.250
Financial Strength and Liquidity (40%)	Annual Debt Service Coverage	15%	> 2.00x	2.00x ≥ n > 1.70x	1.70x ≥ n > 1.25x	1.25x ≥ n > 1.00x	1.00x ≥ n > 0.70x	1.4x	3	0.450
	Days Cash on Hand	15%	> 250 days	250 days ≥ n > 150 days	150 days ≥ n > 35 days	35 days ≥ n > 15 days	15 days ≥ n > 7 days	900 days	1	0.150
	Debt to Operating Revenues	10%	Less than 2.00x	2.00x < n ≤ 4.00x	4.00X < n ≤ 7.00X	7.00X < n ≤ 8.00X	8.00X < n ≤ 9.00X	7.5x	4	0.400
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	Average rate setting	3	0.300
	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	Addressing compliance Issues	3	0.300
Legal Provisions (10%)	Rate Covenant	5%	>1.30x	1.30x ≥ n > 1.20x	1.20x ≥ n > 1.10x	1.10x ≥ n > 1.00x	≤ 1.00x	1.20x	3	0.150
	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	Lesser of 3 test	2	0.100
(Aa3 = 2.17 to 2.50; A1 = 2.50 to 2.83)										2.475

Source: Moody's Municipal Utility Debt Methodology, December 2014. Data from Series 2016 Moody's Report and Moody's Financial Ratio Analysis database as of February 1, 2018, updated where available with GLWA FY17 draft results (unaudited)..



Moody's Water & Sewer Utility Scorecard (Sewer System)

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 Fixed 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	15 years	3	0.300
	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	\$150.2 million	1	0.075
	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	95%	2	0.250
Financial Strength and Liquidity (40%)	Annual Debt Service Coverage	15%	> 2.00x	2.00x ≥ n > 1.70x	1.70x ≥ n > 1.25x	1.25x ≥ n > 1.00x	1.00x ≥ n > 0.70x	1.5x	3	0.450
	Days Cash on Hand	15%	> 250 days	250 days ≥ n > 150 days	150 days ≥ n > 35 days	35 days ≥ n > 15 days	15 days ≥ n > 7 days	528 days	1	0.150
	Debt to Operating Revenues	10%	Less than 2.00x	2.00x < n ≤ 4.00x	4.00X < n ≤ 7.00X	7.00X < n ≤ 8.00X	8.00X < n ≤ 9.00X	6.6x	3	0.300
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	Average rate setting	3	0.300
	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	Addressing compliance Issues	3	0.300
Legal Provisions (10%)	Rate Covenant	5%	>1.30x	1.30x ≥ n > 1.20x	1.20x ≥ n > 1.10x	1.10x ≥ n > 1.00x	≤ 1.00x	1.20x	3	0.150
	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	Lesser of 3 test	2	0.100
(Aa3 = 2.17 to 2.50; A1 = 2.50 to 2.83)										2.375

Source: Moody's Municipal Utility Debt Methodology, December 2014. Data from Series 2016 Moody's Report and Moody's Financial Ratio Analysis database as of February 1, 2018, updated where available with GLWA FY17 draft results (unaudited).



S&P Retail Water & Sewer Utility Ratings Framework

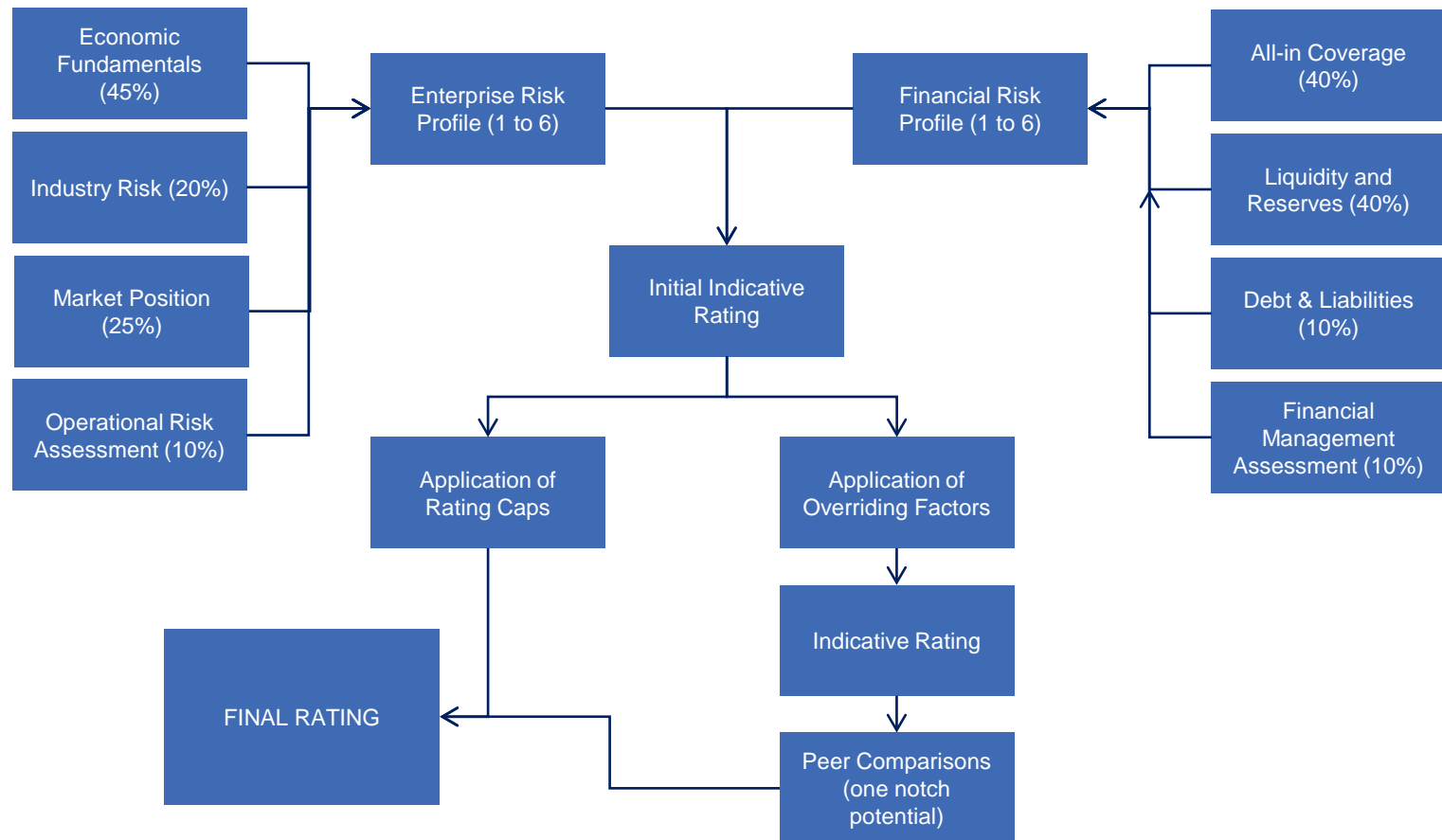
- S&P uses a hybrid approach to the rating process for GLWA, whereby retail metrics are considered but within the context of the Wholesale Utility Criteria
- Rating caps and overriding factors are applied after initial score calculated and can result in a substantially different final rating from initial indicative rating
- The weighted average of the two individual factors are rounded to the nearest whole number and the interaction between the Enterprise Risk Profile and the Financial Risk Profile determines the initial indicative rating for the Utility issuer (see table below)

		Financial Risk Profile					
		Extremely Strong 1	Very Strong 2	Strong 3	Adequate 4	Vulnerable 5	Highly Vulnerable 6
Enterprise Risk Profile	Extremely Strong 1	AAA	AA+	AA-	A	BBB+ / BBB	BB+ / BB
	Very Strong 2	AA+	AA / AA-	A+	A-	BBB / BBB-	BB / BB-
	Strong 3	AA-	A+	A	BBB+ / BBB	BBB- / BB+	BB-
	Adequate 4	A	A / A-	A- / BBB+	BBB / BBB-	BB	B+
	Vulnerable 5	BBB+	BBB / BBB-	BBB- / BB+	BB	BB-	B
	Highly Vulnerable 6	BBB-	BB	BB-	B+	B	B-

Source: S&P U.S. Public Finance Waterworks; Sanitary Sewer, And Drainage Utility Systems: Methodology & Assumptions" January 19, 2016.



S&P Retail Water & Sewer Utility Scorecard Calculation



Source: S&P U.S. Public Finance Waterworks; Sanitary Sewer, And Drainage Utility Systems: Methodology & Assumptions" January 19, 2016.



S&P Retail Water & Sewer Utility Scorecard

Enterprise Risk Profile									
Description	Weight	1	2	3	4	5	6	Pos / Neg	GLWA
Enterprise Risk Profile		Extremely Strong	Very Strong	Strong	Adequate	Vulnerable	Highly Vulnerable	Notching Factors	Score
Economic Fundamentals	45%	Stronger than US rate of GDP growth and/or >100%/125% of US median household effective buying income	Same/weaker rate than US rate of GDP growth and/or >100%/125% of US median household effective buying income	Same as US rate of GDP growth and 75-100% of US median household effective buying income	Same or weaker rate of US GDP growth and 50-75% of US median household effective buying income	Weaker rate of US GDP growth and 35-75% of US median household effective buying income	Weaker rate of US GDP growth and <35% of US median household effective buying income	Economies of scale	(3 – 1) = 2
Industry Risk	20%	Very low competitive risk of "1" applied to most utilities, given monopolies with autonomy over rates	-	-	-	-	-		1
Market Position	25%	Utility bill less than 2.25% of Median Household Effective Buying Income and less than 10% of service population living in poverty	Utility bill less than 2.25-4.50% of Median Household Effective Buying Income and less than 20% of service population living in poverty	Utility bill 4.50%+ of Median Household Effective Buying Income and less than 30% of service population living in poverty	Utility bill 4.50%+ of Median Household Effective Buying Income and less than 30% of service population living in poverty	Utility bill more than 2.00% of Median Household Effective Buying Income and more than 20-30%+ of service population living in poverty	Utility bill more than 2.00% of Median Household Effective Buying Income and more than 30% of service population living in poverty		Retail Metric
Operational Management Assessment	10%	Strong management, including secure water supply and system capacity. Mgmt communicates long term needs and strategic goals. Multi year, preapproved rate actions.	Strong management, with water supply and system capacity sufficient for existing customer base. Public out reach and transparency on planning. Rate actions done year to year.	Good management, with water supply and system capacity sufficient for existing customer base. Public out reach and transparency on planning. Rate actions done year to year.	Adequate management, with water supply and system capacity needs in 10-20 years. Management depth and breadth limited. Rate actions driven by legal covenants.	Management capabilities limited, with water supply and system capacity not sufficient current. Management depth limited, with reliance on outside parties. Rate actions only driven by weak condition.	-		2

Note: S&P uses a hybrid approach to the rating process for GLWA, whereby retail metrics are considered but within the context of the Wholesale Utility Criteria

Source: S&P U.S. Public Finance Waterworks; Sanitary Sewer, And Drainage Utility Systems: Methodology & Assumptions" January 19, 2016. Certain data from Series 2016 Rating Report. Indicative scores are PFM's interpretation of methodology; actual implementation may differ.



S&P Retail Water & Sewer Utility Scorecard (Cont'd)

Financial Risk Profile							
Description	Weight	1	2	3	4	5	GLWA
Financial Risk Profile		Extremely Strong	Very Strong	Strong	Adequate	Vulnerable	Highly Vulnerable
All-in Annual Debt Service Coverage	40%	Greater than 1.60X	1.40X to < 1.60X	1.20X to < 1.40X	1.10X to < 1.20X	1.00X to < 1.10X	<1.00X
Liquidity and Reserves	40%	Greater than 150 days and more than \$75 million	90- 150 days and between \$20-\$75 million	60-90 days and between \$5-\$20 million	30-60 days and between \$1-\$5 million	15-30 days and \$1 million	<15 days and \$500,000
Debt and Liabilities	10%	Up to 20%	20% to 35%	35% to 50%	50% to 65%	65% to 80%	>80%
Financial Management Assessment	10%	Strong revenue and expense tracking and budget monitoring. Good long-term financial planning and assessment. Formal financial, investment and debt policies.	Revenue and expense tracking and budget monitoring but less robust. Good financial planning but limited in term. Formal financial, investment and debt policies, but may be lacking in certain areas.	Revenue and expense tracking done but with optimistic assumptions. Financial planning but limited updates. Some formal finance policies, but may be lacking in certain areas.	Revenue and expense projections exist, but with optimistic assumptions and limited testing. Financial planning done, but may not be realistic. Finance and investments driven by state requirements.	Revenue and expense projections ignore shortfalls, with no formal review. No long term financial planning done. Absence of formal or informal policies with use of riskier structures.	-
							6
							1
							1

Note: S&P uses a hybrid approach to the rating process for GLWA, whereby retail metrics are considered but within the context of the Wholesale Utility Criteria

Source: S&P U.S. Public Finance Waterworks; Sanitary Sewer, And Drainage Utility Systems: Methodology & Assumptions" January 19, 2016. Certain data from Series 2016 Rating Report. Indicative scores are PFM's interpretation of methodology; actual implementation may differ.



Appendix



Moody's Water & Sewer Sector Outlook

- Anticipate **overall stability** in 2018 supported by strong rate management and liquidity
- Stable debt service coverage levels expected to remain in line with 2016 median of 2.1x represents solid rate management as utilities continue to proactively adjust rates accordingly
- Liquidity, pivotal to the sector's stability, will remain healthy as utilities accumulate reserves for future rate stabilization, unexpected system shocks and capital needs
- Managing the relationship between system investment, financial stability and rate affordability will be key to the sector's credit quality
- Incremental investment continues to lag system depreciation, evidenced by a declining trend in the median useful life of all systems
 - Sufficient funding of system investment is becoming an increasingly important factor within the sector
 - Declining asset conditions increases the risk of operating inefficiencies, as well as malfunctions that could lead to system interruptions and regulatory issues
- Continued extreme weather events will present operating and capital challenges for utilities, but they are largely mitigated by availability of state and federal funds

Source: Moody's Report, "2018 outlook stable as strong rate management and liquidity support sector" December 6, 2017.



Fitch's Water & Sewer Sector Outlook

- **Stable outlook**, with the key factors in the sector's performance stability being essentiality of the services, monopolistic nature, and local rate-setting authority
- Fitch expects revenues will climb between 2% and 4% in 2018 based on anticipated adjustments by rated credits, continued flat consumption patterns and improvements in economic conditions nationally, helping to offset rising operating and debt costs and preserve good coverage and robust reserves
- Fitch anticipates a slight decrease in capital spending in 2018 and the years thereafter but indicates sustained capital investment increases will be necessary to preserve service levels over the long term
- Growth in debt levels expected to be muted in 2018, rising 0%-3% based on planned borrowings, should preserve the sector's moderate debt profile
- With user charges continuing to outpace inflationary growth, the issue of affordability is becoming an increasing focus among sector stakeholders and could pressure finance and debt ratios beyond the outlook period
- Regulatory environment is expected to remain uncertain – the pace of new rules by the EPA is expected to be limited in 2018, although delayed revisions to the Lead & Copper Rule could have significant implications for water utilities



Standard & Poor's Water & Sewer Sector Outlook

- Anticipate **overall stability** with upgrades outpacing downgrades, and S&P believes that decisions on rates and charges will over the long term be the main determinant of whether the sector credit quality remains stable
- With nearly all operating revenues coming from local ratepayers, affordability of rates continues to be a localized risk in a sector that retains a large need for infrastructure investment
- With key assets largely out of sight and out of mind to the public (in contrast to competing priorities such as roads and airports) and mandated compliance projects often taking an outsized share of limited capital dollars, utility managers are increasingly extending replacement cycles and deferring maintenance of assets

S&P Credit Risks and Opportunities	
Risks	Opportunities
<ul style="list-style-type: none">Elimination of tax-exempt advance refunding transactions and the FOMC's stated intent for three hikes in the federal funds rate in 2018 could make borrowing costs higher for all and will almost surely lead to a steep decline in total bond issuance in 2018The gap between larger utilities (defined by the EPA as a service area population of over 10,000) and smaller ones is increasingly profoundAs many as half of all water sector employees will be of retirement age or will have retired by the end of this decade; succession planning and mentoring could move from risk to crisis (again, with disproportionate impacts on smaller and rural systems)Capital expenditure dollars are limited and projects must be prioritized. For some, the focus is on what they can afford rather than what they need, which, in our view, introduces the risk of deferred maintenance.	<ul style="list-style-type: none">The fiscal 2017 federal budget included appropriations for the first loans under the WIFIA; there are also several bills that focus on creating federal appropriations for drinking and clean water and stormwaterAs in 2017, we do not expect major new environmental regulations in 2018, only updates on those implemented or under developmentShould a new federal grant require a state match, given the relatively low debt loads across the state sector and increasing awareness of the need for more infrastructure investments, many states might consider leveraging the federal grant with bond proceeds.S&P Global Ratings' economic research states that even in a downside scenario, U.S. gross domestic product (GDP) should still grow in 2018, at 1.6%



Standard & Poor's Water & Sewer Sector Outlook

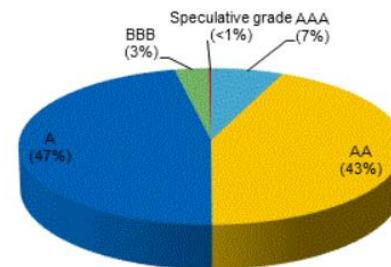
- Most common rating in the sector remains 'A+' and most of existing long-term ratings carry a stable outlook
- Rating transitions were modest in 2017 given that implementation of new criteria was substantially completed in 2016
- Given the lower number of non-stable outlooks, S&P anticipates fewer rating changes during 2018

S&P Rating Trends					
	2013	2014	2015	2016	2017
Ratings outstanding	1,509	1,568	1,638	1,650	1,578
% ratings that changed during the year	3.9	4.4	8.6	13.9	7.79
Upgrades to downgrades	2.9x	2.0x	2.1x	1.9x	1.8x
Positive outlooks	26	23	31	14	4
Non-stable outlooks	49	55	70	42	10

Municipal Utility Violations (Systems with One or More Safe Drinking Water Act Violations in 2017)

System Size	% Total Violations	Average population served
Very Large	0.59%	346,502
Large	6.80%	26,810
Medium	9.70%	5,883
Small	26.86%	1,575
Very Small	56.05%	237

Rating Distribution As Of Dec. 31, 2017



Copyright © 2018 by Standard & Poor's Financial Services LLC. All rights reserved.