MOODY'S INVESTORS SERVICE

SECTOR PROFILE

19 May 2020

Rate this Research

Contacts

Steven Goodman-Leibof +1.415.274.1723
Analyst
steven.goodman-leibof@moodys.com

Jennifer Card Bernhardt +1.312.706.9983
Analyst
jennifer.card@moodys.com

Eva Bogaty +1.415.274.1765
VP-Sr Credit Officer/Manager
eva.bogaty@moodys.com

Leonard Jones +1.212.553.3806
MD-Public Finance
leonard.jones@moodys.com

Alexandra S. Parker +1.212.553.4889
MD-Public Finance
alexandra.parker@moodys.com

Naomi Richman +1.212.553.0014
Senior Vice President
naomi.richman@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Water and sewer utilities – US

Medians - Solid financial performance, ability to increase rates underpin stability

Municipal water and sewer utilities continued to demonstrate stable to modestly improving financial metrics, according to our 2018 medians, primarily driven by systems' willingness and ability to raise rates to support operations and debt service coverage. However, declining asset conditions across the sector indicate underinvestment in capital infrastructure, auguring additional leverage or reserve spend-down in future years. These trends are reflected in our stable outlook for the sector. Improving credit metrics over the last several years will enable systems to mitigate negative impacts from the coronavirus pandemic.

» **Revenue growth supplies solid base to cover operations and debt service.** Revenue rose in the three subsectors – water, sewer and combined enterprises – indicating growing customer bases and rate increases reflecting the sector's independent rate-setting ability.

» **Operating and maintenance (O&M) expenses rise.** O&M expenses grew modestly across the entire sector as systems expanded and added customers. The increase in system size creates financial stability for systems through economies of scale. Growth was most rapid among large combined water and sewer systems that often serve urban areas.

» **Net revenue continued to improve, indicating continued financial strength and flexibility.** Higher net revenue supplies ample cushion for systems to either increase debt or weather the impact of resource availability issues, increases in delinquencies and nonpayment, or other unforeseen future needs.

» **Liquidity improves to 475 days cash on hand in 2018.** Sewer entities maintained the healthiest cash positions, though all three system types retained over a year's worth of operating expenditures. Improved liquidity supports systems in cases of service disruption.

» **Debt burden begins to rise driven by combined water and sewer systems.** A slight rise in leverage sectorwide in 2018 was driven by an increase in debt issuances by combined water and sewer systems. Before 2018, however, years of rate increases and falling debt burdens have left capacity to add debt without overburdening customers.

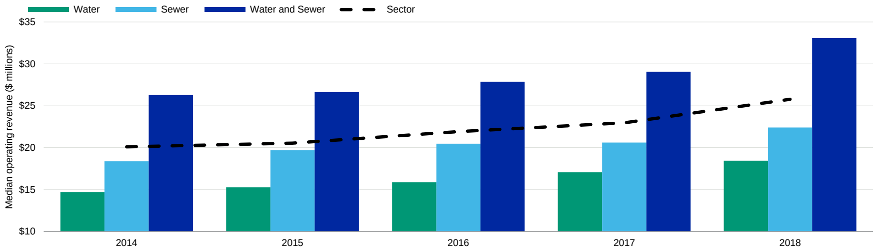
» **Debt service coverage is healthy for all system types.** Coverage rose to just over 2.2 times, indicating a healthy cushion to absorb fluctuations in revenues or expenses.

» **Asset condition decline continues, signaling underinvestment in capital projects.** Deferral of capital projects drove a decline in the remaining useful life of assets sectorwide as depreciation outpaced investment in infrastructure. Some systems are investing in capital to reduce environmental risks and meet regulatory requirements.

Revenue

Exhibit 1

Revenue continues to grow across the sector



Source: Moody's Investors Service

Strong revenue growth highlights strength of independent rate-raising authority

» Revenue grew in all three sectors, driven by growth in customer base and by rate increases to address higher operating expenses and debt service.

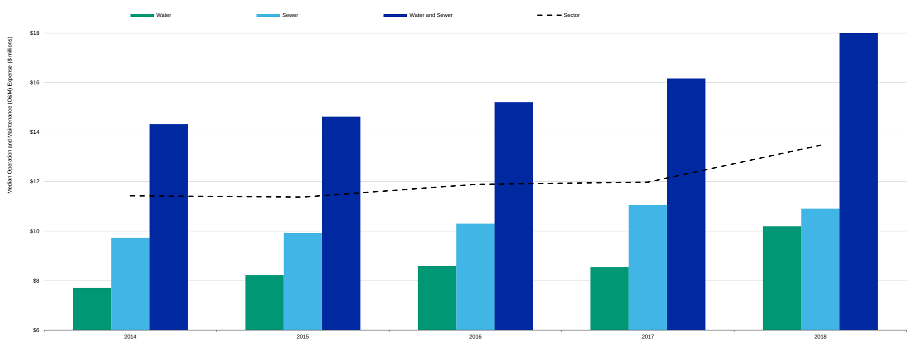
» Combined water and sewer systems led the increases. They are larger, more complex and more expensive to run, requiring larger revenue increases to support additional customers.

» System growth and revenue diversity can reduce the need for systems to drastically raise rates, allowing them to instead implement smaller increases spread across more customers to pay debt or address capital needs.

Expenses

Exhibit 2

Operation and maintenance expenditures continue to grow



Source: Moody's Investors Service

Operation and maintenance (O&M) expenditures increased as systems expanded; growth in service for larger utilities creates greater economies of scale

» Sectorwide O&M expenses increased, with the largest rise coming in combined utilities. O&M growth sectorwide was largely due to service area growth, offset somewhat by energy-efficient upgrades to facilities and flat-to-declining water usage driven by increased conservation.

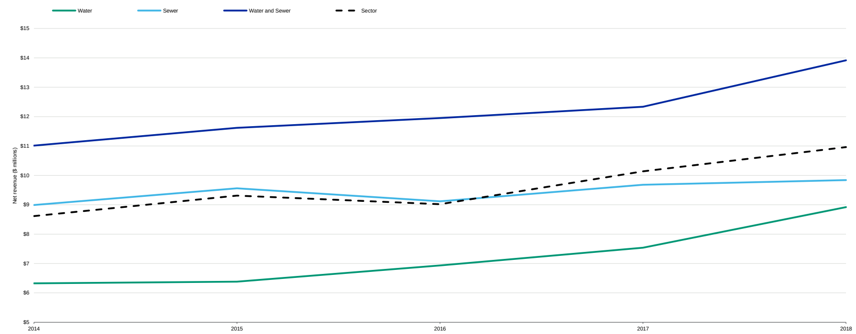
» Larger utilities benefit from economies of scale and are better equipped to handle unexpected expenses, service and revenue disruptions than smaller utilities.

» San Francisco Public Utilities Commission Water Enterprise, CA (Aa2 stable) has used its size and sophistication to build water storage and redundancy that protects the system against periodic drought conditions in California and addresses other climate change risk associated with sea-level rise.

Net revenue

Exhibit 3

Net revenues improve as system revenue outpaces expenditures



Source: Moody's Investors Service

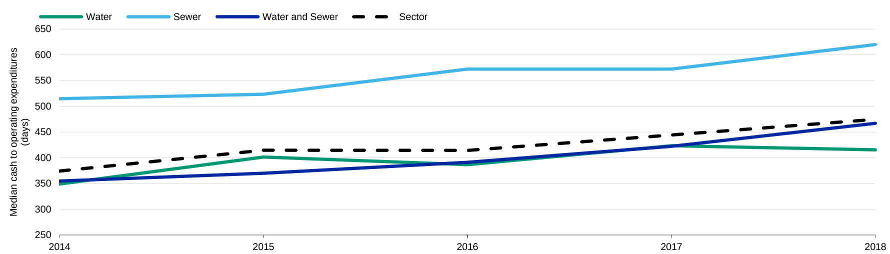
Improving net revenues indicate continued financial strength and flexibility

- Net revenue continued to rise across all three utility types, providing a strong basis for paying debt and building up liquidity to further address capital needs through pay-go financing.
- While both revenue and expenditures increased, the rise in net revenue shows the positive effect of the sector's independent rate-raising ability.
- Healthy net revenue growth provides a strong base to cover continuing maintenance without the need to increase leverage.

Liquidity

Exhibit 4

Liquidity remains strong, with all sectors retaining more than one year of operating cash



Source: Moody's Investors Service

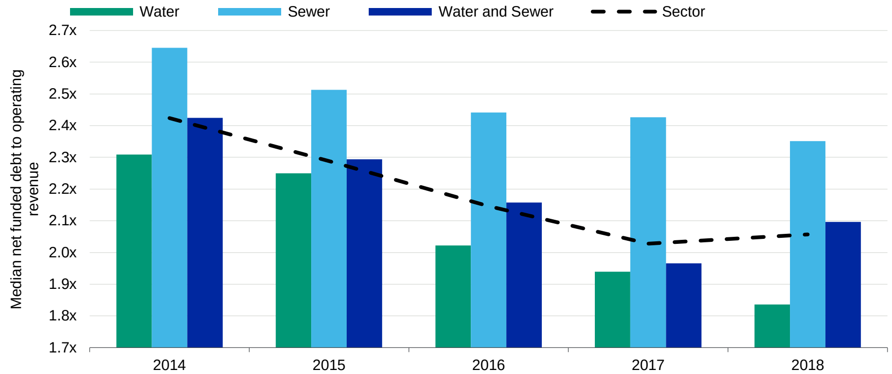
Strong liquidity provides flexibility and protection from revenue loss

- Liquidity improved across all subsectors. Sewer and combined systems had large increases in 2018, while water systems' liquidity dipped. All system types had much stronger cash positions than in 2014.
- Strong liquidity protects systems from the need to raise rates unexpectedly and provides a cushion against unforeseen capital expenditures and delinquencies in times of economic stress.
- Sewer entities maintain higher cash balances, given the need to fund maintenance and environmental mitigation projects to meet increasingly strict environmental regulations.
- Hawaii's Honolulu (City and County of) Sewer Enterprise (Aa2 senior lien, Aa3 junior lien) built cash reserves up to 3,179 days cash on hand from 1,847 days in 2014 to address an aggressive capital plan that involves mitigation projects related to a consent decree.

Leverage

Exhibit 5

Leverage sectorwide begins to increase after a multiyear decline



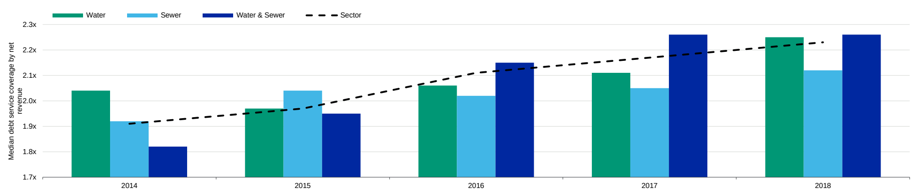
Source: Moody's Investors Service

Overall leverage begins to rise as combined systems fund new plans

- Debt to operating revenue across the sector began to rise in 2018 as large combined utilities embark on new 10-year capital plans following the end of major capital plans driven by Build America Bonds.
- South Carolina's Columbia (City of) Water and Sewer Enterprise (Aa1 stable) increased its debt to operating revenue to 4.0 times in 2018 from 3.4 times in 2017 as it began to issue debt to fund a $120 million a year five-year capital plan.
- Leverage at single-purpose water and sewer systems continued a multiyear decline, which provides capacity to address future capital needs.

Exhibit 6

Debt service coverage remains healthy at above 2.0x



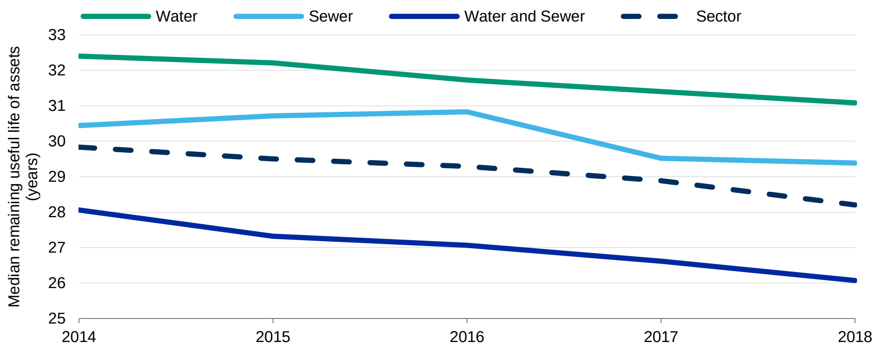
Source: Moody's Investors Service

Debt service coverage improves across all system types

- Systems' willingness and ability to adjust rates for operations and debt service drove coverage to 2.2 times in 2018. Coverage remained well in excess of standard rate covenants that are usually 1.0-1.5 times annual debt service.
- Water and sewer entities had continued growth in coverage, while recent large issuances drove flat coverage of 2.3 times in 2018 and 2017 for those for combined systems.
- City of Peoria, AZ Water and Sewer Enterprise (Aa2 stable) implemented steady rate increases, allowing it to improve its debt service coverage while addressing capital needs on a pay-go basis.

Exhibit 7

Remaining useful life of assets continues to decline as depreciation outpaces capital investment



Source: Moody's Investors Service

Declining asset condition indicates underinvestment in infrastructure

- Asset condition declined modestly, though remained at a healthy 28 years, giving systems time to address capital needs before system failure.
- Deferral of capital investment increases the risk of broken water mains and sewer overflows. These issues can lead to revenue loss and increased expenses to meet regulatory requirements.
- The median asset condition for water systems remained stable and was stronger, at 31 years, than sewer systems, at 29, and combined water and sewer systems, at 26.

Basis for medians

This medians report conforms to our US Municipal Utility Revenue Debt rating methodology published in October 2017. As such, the medians presented here are based on the key metrics outlined in the methodology and the associated scorecard. The appendix of this report provides additional metrics broken out by sector and rating category.

We use data from a variety of sources to calculate the medians, some of which have differing reporting schedules. Whenever possible, we calculated these medians using available data for fiscal year 2018. The median family income data was derived from the 2018 US Census American Community Survey.

Medians for some rating levels, namely Aaa- and Baa-rated issuers, are based on relatively small sample sizes. These medians may therefore be subject to substantial year-over-year variation.

Our ratings reflect our forward-looking opinion derived partly from forecasts of financial performance and qualitative factors, as opposed to strictly historical quantitative data. Our expectation of future performance, combined with the relative importance of certain metrics on individual local government ratings, account for the range of values that can be found within each rating category.

Key ratios

» Net revenue: total operating revenue minus operating expenditures

» Debt service coverage: annual net revenues (including connection or impact fees) divided by annual debt service.

» Liquidity: unrestricted cash and liquid investments multiplied by 365 and divided by operating and maintenance expenses (net of depreciation), expressed in days.

» Days cash on hand: Unrestricted cash and liquid investments times 365 divided by operating and maintenance expenses, expressed in days

» Debt to operating revenues: net long-term debt less debt service reserve funds divided by most recent year's operating revenues.

» Asset condition: net fixed assets divided by depreciation expense, expressed in years.

Appendix A: Water, sewer and combined water and sewer utilities

Exhibit 8

Medians for US water utilities

Selected Indicators	2014	2015	2016	2017	2018
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	98.6%	98.8%	99.2%	100.0%	99.9%
Asset Condition: (Remaining Useful Life)	32	32	32	31	31
Debt to Operating Revenues	2.3	2.2	2.0	1.9	1.8
Annual Debt Service Coverage	2.1	2.0	2.1	2.1	2.2
Days Cash on Hand	349	402	387	423	416
System Size: (O&M, $000)	7,703	8,220	8,587	8,544	10,192
Debt Service ($000)	2,909	2,974	3,002	3,027	3,785
Net Revenues ($000)	6,325	6,382	6,936	7,539	8,919
Net Funded Debt ($000)	32,610	32,703	32,828	31,701	32,680
Total Revenues ($000)	14,701	15,257	15,866	17,055	18,441

Source: Moody's Investors Service

Exhibit 9

Medians for US sewer utilities

Selected Indicators	2014	2015	2016	2017	2018
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	98.1	98.3	98.5	100.0	100.0
Asset Condition: (Remaining Useful Life)	30	31	31	30	29
Debt to Operating Revenues	2.6	2.5	2.4	2.4	2.4
Annual Debt Service Coverage	1.9	2.0	2.0	2.0	2.1
Days Cash on Hand	515	524	572	572	620
System Size: (O&M, $000)	9,731	9,925	10,305	11,056	10,909
Debt Service ($000)	4,339	4,067	3,813	3,948	4,089
Net Revenues ($000)	8,991	9,560	9,118	9,682	9,839
Net Funded Debt ($000)	38,311	39,492	39,700	38,781	38,456
Total Revenues ($000)	18,354	19,705	20,464	20,605	22,407

Source: Moody's Investors Service

Exhibit 10

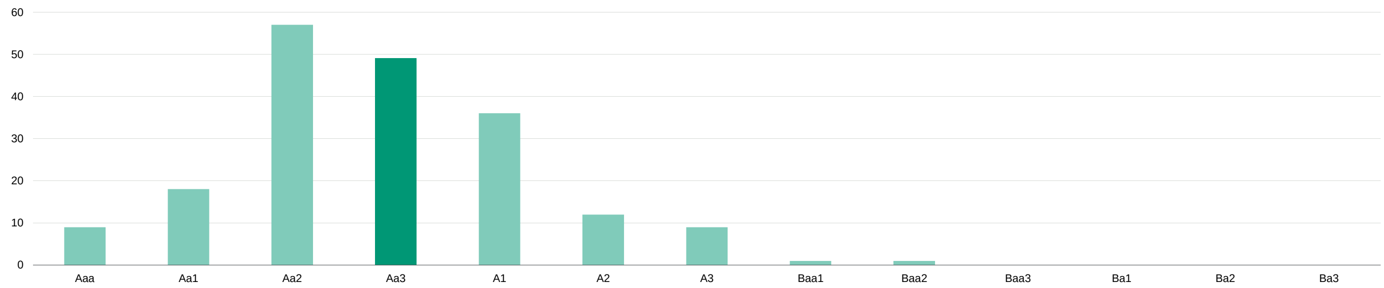
Medians US combined water and sewer utilities

Selected Indicators	2014	2015	2016	2017	2018
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	91.6	91.0	91.1	90.9	90.2
Asset Condition: (Remaining Useful Life)	28	27	27	27	26
Debt to Operating Revenues	2.4	2.3	2.2	2.0	2.1
Annual Debt Service Coverage	1.8	2.0	2.2	2.3	2.3
Days Cash on Hand	355	370	391	422	467
System Size: (O&M, $000)	14,322	14,623	15,205	16,164	18,476
Debt Service ($000)	4,934	5,136	5,228	5,228	5,805
Net Revenues ($000)	11,013	11,619	11,951	12,335	13,916
Net Funded Debt ($000)	55,061	53,053	51,433	50,062	59,249
Total Revenues ($000)	26,261	26,617	27,870	29,037	33,080

Source: Moody's Investors Service

Appendix B: Water utilities

Exhibit 11
Rating distribution US water utilities



*Highlighted bar represents median rating
Source: Moody's Investors Service

Exhibit 12
2018 medians for US water utilities

Selected Indicators	2018
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	99.9%
Asset Condition: (Remaining Useful Life)	31
Debt to Operating Revenues	1.9
Annual Debt Service Coverage	2.2
Days Cash on Hand	416
System Size: (O&M, $000)	10,355
Debt Service ($000)	3,837
Net Revenues ($000)	8,979
Net Funded Debt ($000)	34,020
Total Revenues ($000)	19,081

Source: Moody's Investors Service

Exhibit 13
2018 medians for US water utilities by rating category

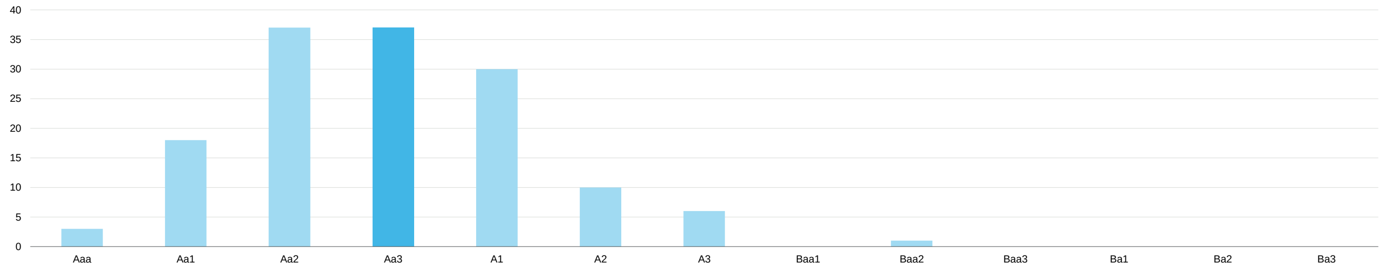
Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	109.2	103.7	87.9	91.7	N/A
Asset Condition: (Remaining Useful Life)	36	32	26	41	N/A
Debt to Operating Revenues	2.0	1.7	2.0	2.2	N/A
Annual Debt Service Coverage	2.6	2.4	1.9	2.2	N/A
Days Cash on Hand	640	417	413	465	N/A
System Size: (O&M, $000)	81,274	16,631	3,138	118,805	N/A
Debt Service ($000)	40,191	5,006	1,626	98,363	N/A
Net Revenues ($000)	99,168	14,758	2,301	290,508	N/A
Net Funded Debt ($000)	421,652	45,523	15,270	1,246,788	N/A
Total Revenues ($000)	194,362	34,006	5,744	409,313	N/A

Source: Moody's Investors Service

Appendix C: Sewer utilities

Exhibit 14

Rating distribution for US sewer utilities



*Highlighted bar represents median rating
Source: Moody's Investors Service

Exhibit 15

2018 US sewer medians

Selected Indicators	2018
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	100.0
Asset Condition: (Remaining Useful Life)	29
Debt to Operating Revenues	2.4
Annual Debt Service Coverage	2.1
Days Cash on Hand	620
System Size: (O&M, $000)	10,909
Debt Service ($000)	4,089
Net Revenues ($000)	9,839
Net Funded Debt ($000)	38,456
Total Revenues ($000)	22,407

Source: Moody's Investors Service

Exhibit 16

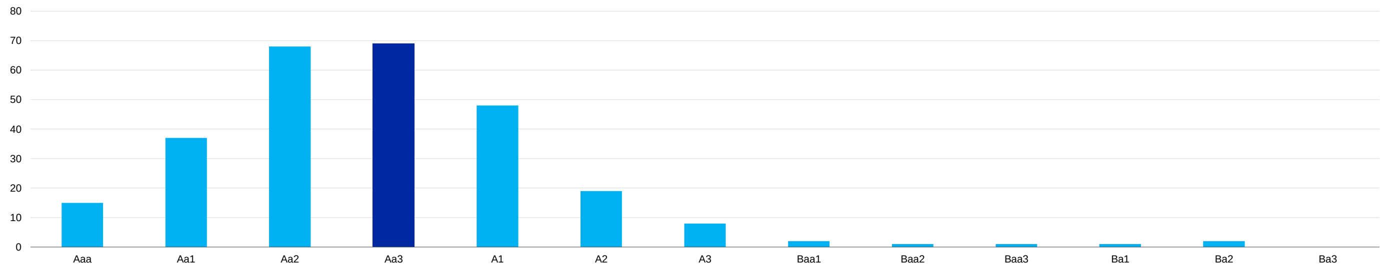
2018 medians US sewer utilities by rating category

Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	130.2	101.2	85.9	87.0	N/A
Asset Condition: (Remaining Useful Life)	27	30	25	56	N/A
Debt to Operating Revenues	2.8	2.3	2.2	4.8	N/A
Annual Debt Service Coverage	2.9	2.2	1.6	1.7	N/A
Days Cash on Hand	1,581	652	590	417	N/A
System Size: (O&M, $000)	99,685	21,050	3,928	149,634	N/A
Debt Service ($000)	44,827	8,069	1,799	135,036	N/A
Net Revenues ($000)	128,628	18,047	2,564	227,515	N/A
Net Funded Debt ($000)	551,369	74,349	13,429	1,788,124	N/A
Total Revenues ($000)	228,313	39,056	7,432	377,149	N/A

Source: Moody's Investors Service

Appendix D: Combined water and sewer utilities

Exhibit 17
Rating distribution US combined water and sewer utilities



*Highlighted bar represents median rating
Source: Moody's Investors Service

Exhibit 18
2018 US combined water and sewer utilities

Selected Indicators	2018
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	90.2
Asset Condition: (Remaining Useful Life)	26
Debt to Operating Revenues	2.1
Annual Debt Service Coverage	2.3
Days Cash on Hand	467
System Size: (O&M, $000)	18,476
Debt Service ($000)	5,805
Net Revenues ($000)	13,916
Net Funded Debt ($000)	59,249
Total Revenues ($000)	33,080

Source: Moody's Investors Service

Exhibit 19
2018 medians US combined water and sewer utilities by rating category

Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	118.0	92.4	82.9	86.3	60.7
Asset Condition: (Remaining Useful Life)	28	26	25	26	26
Debt to Operating Revenues	2.2	2.1	2.5	2.9	4.2
Annual Debt Service Coverage	3.4	2.4	2.0	2.0	0.9
Days Cash on Hand	844	504	377	176	59
System Size: (O&M, $000)	87,835	24,509	7,600	4,040	10,421
Debt Service ($000)	20,768	8,036	2,334	1,001	1,641
Net Revenues ($000)	79,087	21,776	4,488	1,939	5,499
Net Funded Debt ($000)	271,387	81,576	27,884	18,203	16,417
Total Revenues ($000)	156,109	16,082	13,006	5,978	15,919

Source: Moody's Investors Service

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

REPORT NUMBER 1226464

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454