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CREDIT OPINION
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New York City Municipal Water Fin. Auth., NY

Update to credit analysis

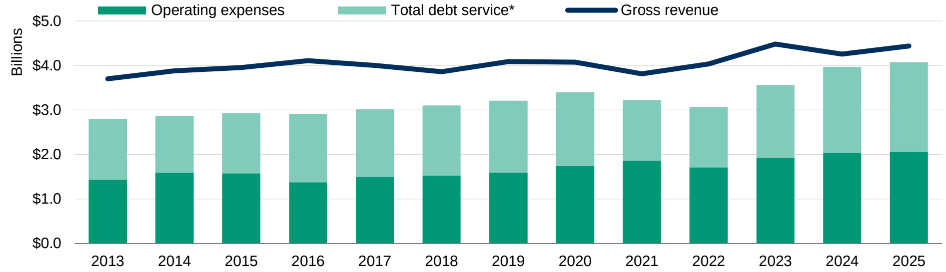
Summary

The New York City Municipal Water Finance Authority (Aa1 stable on senior and subordinate revenue bonds) issues debt for the New York City Water and Sewer System. The system delivers water and wastewater services to an expansive and diverse economic base that primarily comprises the five boroughs of New York City (Aa2 stable), but also includes an area of about one million residents outside the city. The city (system operator), along with the New York City Water Board (rate-setting entity) and the authority, collectively manage the system and have a record of maintaining strong financial metrics.

On a bond ordinance basis, coverage of annual debt service will remain strong, given a gross revenue pledge and the authority's use of prior year surplus revenue to defease debt and lessen debt service requirements. Defeasance of debt has had no impact on liquidity, which itself is on a steady growth trend thanks to annual operating surpluses. On a net revenue basis, coverage is lower, but in line with coverage ratios maintained by other large municipal utility systems in the US. Additionally, the authority has established a bondholder-friendly flow of funds, backed by early set-aside of debt payments.

Relative to large municipal utilities, the system's debt burden is high. However, we do not foresee the burden rising significantly in coming years. It is also worth noting that the total liabilities burden of New York City, inclusive of the system's debt (the system is a component unit of the city), remains below that of many major US cities with large utility systems of their own. Although the system itself stands out among peer utility systems on this metric, it does not impose a heavy burden on the city's broad, general revenue base.

Exhibit 1
Trend of operating revenue against system operating expenses and debt service
by fiscal year ending June 30; 2024 & 2025 figures projected



*Debt service includes debt paid with prior year surpluses and revenue carried forward.
Source: New York City Municipal Water Finance Authority and Moody's Investors Service

Credit strengths

» Very large service area with a diverse customer base

» Debt service coverage, on a bond ordinance basis, is strong and debt payments are set aside well in advance of being due

» Healthy liquidity equivalent to 391 days of operating costs in fiscal 2023

» Exposure to unfunded retirement liabilities of the city is low because New York City's unfunded pension burden is moderate and the city's contribution practices are strong among US local governments

Credit challenges

» Falling consumption, which is not out of line with trends in most large cities, necessitates regular rate increases to address rising operating costs and debt service

» Debt service coverage, on a net revenue basis, is narrow compared to many highly rated water and sewer systems, though in line with that of several large municipal utility systems

Rating outlook

The stable outlook incorporates the expectation that the New York City Water Board will manage rates sufficiently to maintain healthy liquidity and sound debt service coverage while generating new revenue over the longer term in support of system maintenance.

Factors that could lead to an upgrade

» Moderated borrowing or accelerated growth in revenue that brings the system's debt burden down to a level more in line with large system peers without adverse effects on system infrastructure

Factors that could lead to a downgrade

» Drop in coverage below 1.3x combined first and second resolution bond debt service, as measured by Moody's on a net revenue basis

» A fall in operating liquidity to under 250 days of operating expenses

» Growth in the system's debt burden to over 8x gross revenue

» The long-term rating on the second resolution bonds specifically could be downgraded if the authority materially increased its issuance of first resolution bonds

Key indicators

Exhibit 2

New York City Water and Sewer System
Debt Overview

Type of debt	Outstanding principal (billion)	Pledge	Lien status	Rate covenant	Debt service reserve
First resolution (senior lien) revenue bonds	$0.5	Senior lien on gross revenue of the water and sewer system	Open	1.15x	Lesser of traditional three-prong test
Second resolution (subordinate lien) revenue bonds	$31.8	Subordinate lien on gross revenue of the water and sewer system after payment of authority expenses	Open	1.00x	None

Principal outstanding is as of the close of fiscal 2023.
Source: New York City Municipal Water Finance Authority and Moody's Investors Service

Exhibit 3

New York City Water and Sewer System
Trend Analysis

	2016	2017	2018	2019	2020	2021	2022	2023
Gross revenue (million)	$4,106	$4,000	$3,860	$4,088	$4,076	$3,812	$4,035	$4,482
Coverage of senior lien debt service per bond ordinance	32.8x	37.0x	62.8x	51.4x	37.1x	428.1x	435.9x	180.5x
Coverage of total debt service per bond ordinance	7.5x	7.9x	10.2x	6.0x	6.6x	13.2x	10.5x	10.8x
O&M (million)	$1,375	$1,492	$1,530	$1,598	$1,734	$1,862	$1,711	$1,922
Net revenue (million)	$2,731	$2,507	$2,330	$2,490	$2,342	$1,950	$2,325	$2,560
Coverage of total scheduled debt service by net revenue	1.8x	1.7x	1.5x	1.5x	1.4x	1.4x	1.7x	1.6x
Available cash and investments (million)	$1,272	$1,451	$1,203	$1,334	$1,345	$1,359	$1,572	$2,056
Days cash on hand	338	355	287	305	283	266	335	391
Debt to operating revenue (x)	7.2x	7.5x	7.8x	7.4x	7.5x	8.1x	7.8x	7.2x

Gross revenue, O&M and net revenue are shown in the chart on an audited and full accrual basis. Available cash and investments consists of the sum of cash held in the New York City Water Board's operating and maintenance (O&M) reserve and the authority's revenue fund as reported in the authority's annual financial statements.
Source: New York City Municipal Water Finance Authority and Moody's Investors Service

Profile

The New York City Water and Sewer System serves a population of approximately 8.3 million in the five boroughs of New York City, a service area of more than 300 square miles. It also provides water to an additional 1 million people in the counties where its water supply facilities are located. The system is vast: its watershed area is 1.2 million acres; there are 19 water reservoirs and 3 controlled lakes; 6,800 miles of water mains; 7,500 miles of sewers; and 14 wastewater treatment plants. The New York City Municipal Water Finance Authority finances the capital needs of the system. The New York City Water Board sets the system's rates. The City of New York operates the system.

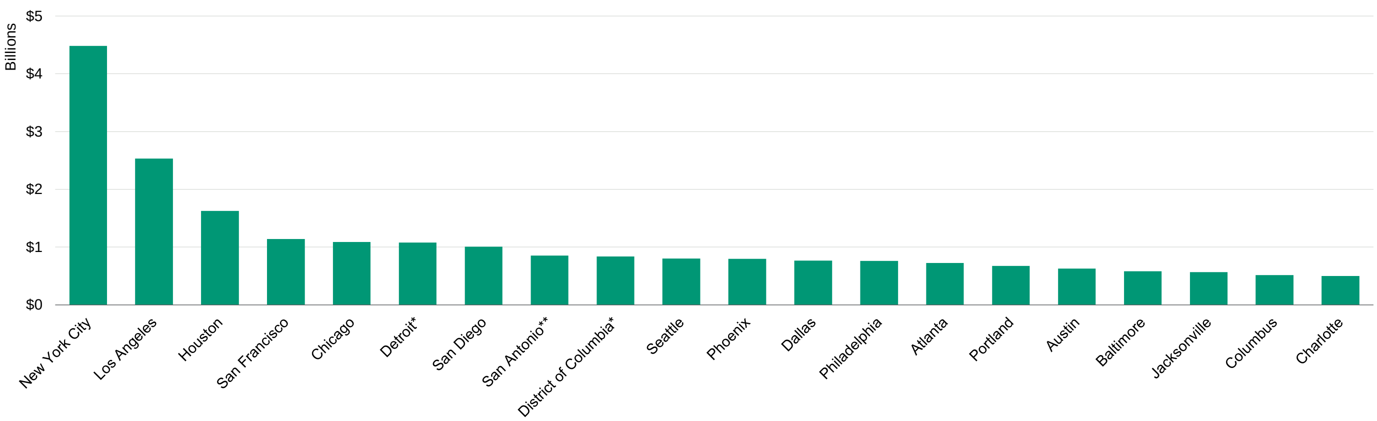
Detailed credit considerations

Service area and system characteristics

New York City's massive water and sewer system delivers 1 billion gallons of water per day to a population exceeding 9.3 million spread across the five boroughs, parts of Westchester County (Aa1 stable), and other suburban counties. In addition, the system treats an average of over 1.2 billion gallons of wastewater daily.

When compared with other municipally-owned systems, the sheer scale of New York's system comes into sharp relief. It takes in nearly double the revenue of the second-largest municipally-owned system in the country, and at least quadruple the revenue of most other large municipal systems, some of which serve metropolitan areas with populations up to twice that of the home city, such as Chicago (see Exhibit 4).

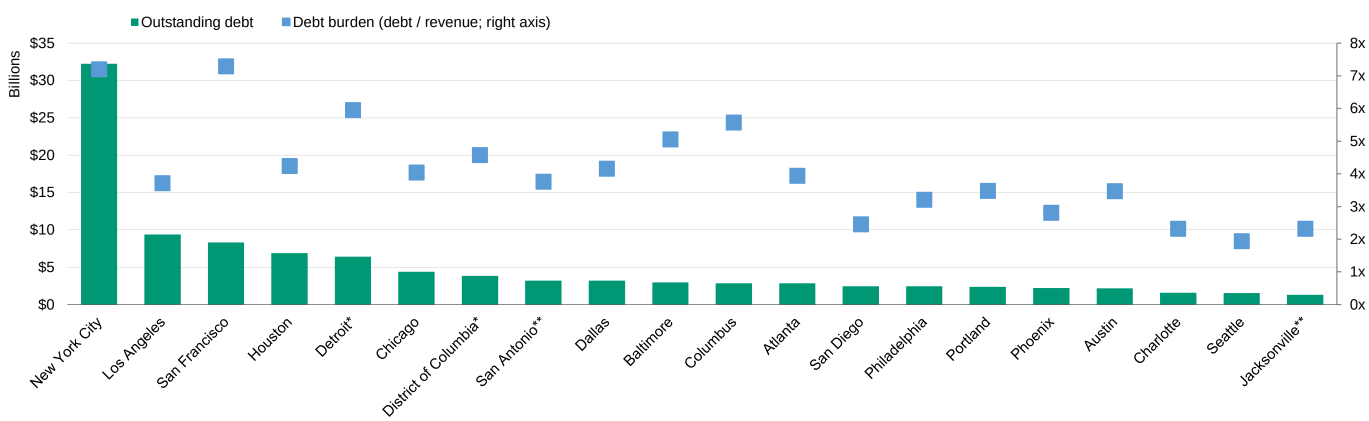
Exhibit 4
Gross revenue of a sample of US public water & sewer systems



See endnote [1]
Source: Audited financial statements and Moody's Investors Service

The comparison becomes even more striking when we examine debt. The outstanding debt of New York's water and sewer system dwarfs that of other systems, outstripping their revenue comparison by an even higher multiple (see Exhibit 5). A noteworthy factor driving this high debt is the system's expansive reach and the need to finance and maintain infrastructure that includes a system of aqueducts and tunnels channeling water from 19 upstate reservoirs, some of which are more than 100 miles from the city. The New York system has among the highest debt burdens of water and sewer systems in the nation, and especially among systems of large US cities. However, as illustrated in Exhibit 8 below, the total liabilities burden of New York City, inclusive of water and sewer system debt, remains below that of many major US cities and their own utility systems.

Exhibit 5
Outstanding debt and debt burdens of a sample of US public water & sewer systems



See endnote [2]
Source: Audited financial statements and Moody's Investors Service

The system has around 838,500 accounts, of which 96% billed on a metered basis and 91% are residential. The two largest users - the New York City Housing Authority and the City of New York - together contribute approximately 8% of the system's annual gross revenue. The next eight largest customers collectively account for an additional 2.5% of revenue.

Debt service coverage and liquidity

Water and Sewer Rates

The New York City Water Board has a strong record of adjusting rates to maintain robust financial metrics, despite a gradual but persistent decline in consumption. This strategy of countering falling consumption with regular rate hikes is a common thread among water utilities across the US that are grappling with a mix of stagnant or decreasing consumption and escalating debt service because of borrowing for infrastructure maintenance or upgrades.

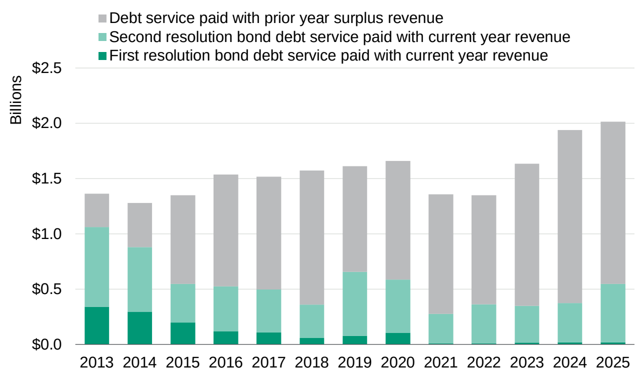
In response to the financial strain caused by the coronavirus pandemic, the Water Board adopted a 0% rate increase for fiscal 2021, highlighting a social risk for utilities that otherwise possess unrestricted rate-setting abilities. The board followed this with annual rate increases of between 2.8% and 4.9% between fiscal years 2022 and 2024. The current financial forecast of the system assumes modestly escalating annual rate increases through fiscal 2027.

Debt Service Coverage

The bond resolution allows the authority to reduce a given year's debt service by the amount of debt service paid with the previous year's operating surplus. The system's recent surplus trend has financed an annually increasing amount of debt defeasance with available cash. The debt defeasance has had no significant negative impact on the authority's finances, given the system's robust liquidity.

Exhibit 6

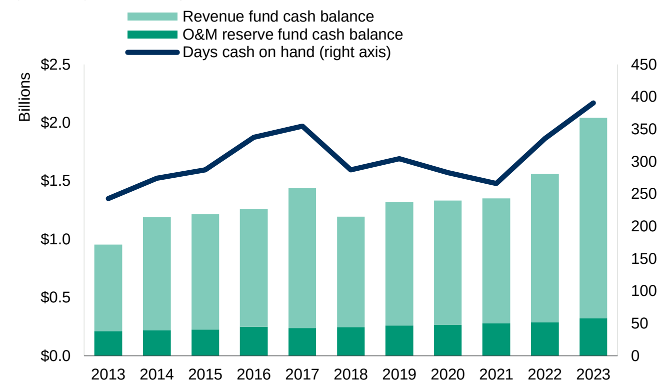
Annual debt service, including debt defeased with surplus revenue
by fiscal year ending June 30; 2024 & 2025 figures projected



Source: New York City Municipal Water Finance Authority and Moody's Investors Service

Exhibit 7

Available operating cash balances and days cash on hand
by fiscal year ending June 30



Source: New York City Municipal Water Finance Authority and Moody's Investors Service

The surplus funds' application toward debt service reduces the annual debt service charge against current year revenue, resulting in high debt service coverage by gross revenue. Even with revenue declines in fiscal 2018 and fiscal 2021, debt service coverage on a bond ordinance basis increased in both years (see Exhibit 3 above).

There are two other perspectives on debt service coverage. If we consider the debt defeased with surplus revenue and cash as a debt service payment covered by current year gross revenue, the coverage would still have been a strong 2.7x combined first and second resolution bond debt service in fiscal 2023. Additionally, we can examine coverage on a net revenue basis, which is consistent with our calculation of coverage in our methodology for all municipal utility systems and acknowledges that the water and sewer system could not function without covering operating and maintenance expenses. On this measure, coverage of combined first and second resolution bond debt service averaged 1.5x over the past five fiscal years (see Exhibit 3 above).

The authority's updated forecast of revenue, operating expenses and borrowing suggests that debt service coverage by net operating revenue could decrease. However, actual operating expenses have typically been about 10% under forecast. If this pattern of expenditures falling under budget holds and revenue also continues to exceed projections, we expect net operating revenue will remain close to or above 1.5x total annual debt payments.

The authority's early payment of debt from either current year operating revenue or surpluses carried forward is a further strength. Since fiscal 2014, the authority has annually set aside with its trustee by at least November of each fiscal year (year ending June 30) 100% of that year's debt service requirement.

Exhibit 8

Comparison of a sample of US public water & sewer systems on select financial metrics

City	Rating	Debt service coverage (x)	Days cash on hand	Long-term liabilities burden***
Charlotte	Aaa	1.9	314	293%
Seattle	Aaa**	1.8	244	212%
San Antonio	Aa1	2.4	561	407%
District of Columbia	Aa1	2.3	320	106%
Houston	Aa1	1.8	1,041	363%
Portland	Aa1*	1.7	645	325%
Sample median		**1.8**	**394**	**352%**
New York City	**Aa1**	**1.6**	**391**	**308%**
Columbus	Aa1**	1.1	775	429%
Phoenix	Aa2*	2.5	593	298%
Austin	Aa2	2.4	316	391%
Atlanta	Aa2	2.0	1,185	356%
Dallas	Aa2	1.8	278	487%
Los Angeles	Aa2*	1.7	211	505%
Baltimore	Aa2**	1.6	398	351%
San Francisco	Aa2*	1.4	541	353%
San Diego	Aa2**	1.1	253	246%

See endnote [3]

Source: Audited financial statements and Moody's Investors Service

Liquidity

At the close of fiscal 2023, the system held a substantial $3 billion in total cash and investments. This total includes $335 million held by the New York City Water Board in an operation and maintenance reserve fund and local water fund. The authority itself had $1.7 billion in its revenue fund. The remaining $1 billion consisted of funds across the authority's debt service reserve fund, escrow account, and construction fund.

When looking solely at the water board's operating reserves and the authority's revenue fund, fiscal 2023's cash and investments represented an impressive 391 days of operating expenses. In the past three years, system liquidity averaged a solid 331 days of operating expenses. These figures illustrate the authority's steady and consistent management of liquidity over the years, both in absolute terms and relative to expenses (see Exhibit 7 above).

Debt and legal covenants

The system carries a high debt burden. To maintain and update the system, the city's ten-year capital plan anticipates $29 billion of total capital spending on the system. As part of this plan, the authority expects to borrow about $10.5 billion in new debt over fiscal years 2024 through 2028. This will likely result in a net increase in debt over this period, but growth in revenue should keep the debt burden stable.

Legal security

The authority's first resolution bonds are secured by a senior lien on gross revenue of the New York City Water and Sewer System. The second resolution bonds also have lien on revenue of the water and sewer system, but that lien is applied to revenue after the payment of first resolution bonds and authority operating expenses. Authority expenses, which are only those to operate the authority, averaged about $50 million annually over the past several years.

Debt structure

Most of the system's debt is fixed rate revenue bonds issued under the second resolution and secured by a subordinate claim on gross revenue. The system currently has $4.1 billion of revenue bonds in adjustable rate mode. The variable rate bonds carry liquidity support from several banks and existing standby bond purchase agreements do not include term-out provisions. An additional $500 million of debt consists of index rate bonds. In total, about 14% of the system's revenue debt is in a non-fixed rate mode.

Debt-related derivatives

The authority has two outstanding swap agreements with two different counterparties in an aggregate notional amount of $401 million. Termination of the swaps by the counterparties is limited to certain events of default that include a downgrade of the authority's rating below Baa2. If the authority should owe a termination payment, the swaps include provisions allowing the rate-setting process to occur before the payment is due.

Pensions and OPEB

The authority's exposure to unfunded pension liabilities is moderate, largely because New York City's pension burden is in line with that of most local governments and the city's pension funding practices are strong. As of fiscal 2023, New York City's adjusted net pension liability (ANPL) was $99 billion, approximating 90% of that year's revenue. The city's unfunded pension burden, as measured by the ANPL, has been fairly close to the median of all US local governments for the past several years. The ANPL is our measure of a local or state government's unfunded pension liability that incorporates a market-based interest rate to value liabilities accrued by the government.

The New York City Water and Sewer System is operated by the New York City Department of Environmental Protection. Eligible employees of the department, as employees of the city, are covered by the New York City Employees Retirement System, a defined benefit pension plan of the city. The city's water and sewer system is classified as a component unit of the city in the city's comprehensive annual financial reports. The system's reported net pension and OPEB liabilities each constitute a minimal share of New York City's total reported net pension and net OPEB liabilities.

The city's annual contributions to its pension plans have, for several years, exceeded what we calculate as a “tread water” indicator. This indicator, which we derive from pension plan disclosures, measured the annual employer contribution required to prevent an increase in plan reported net pension liabilities, assuming other plan actuarial assumptions hold, after factoring in employee contributions. Contributions exceeding this level cover all net pension liability interest and pay down some principal. From a credit perspective, this is stronger compared to contributions falling below this level. Over the past few years, New York City's total pension contributions averaged 130% of the city's annual aggregate “tread water” indicator.

ESG considerations

New York City Municipal Water Fin. Auth., NY's ESG credit impact score is CIS-3

Exhibit 9

ESG credit impact score

CIS-3

ESG considerations have a limited impact on the current rating, with potential for greater negative impact over time.

Source: Moody's Investors Service

The authority’s ESG Credit Impact Score is moderately negative (**CIS-3**), reflecting its above average exposures to environmental and social risks, and good governance.

Exhibit 10
ESG issuer profile scores

ENVIRONMENTAL	SOCIAL	GOVERNANCE
E-3	S-3	G-1

Source: Moody's Investors Service

Environmental

The authority's exposure to physical climate risks is higher than average within the regional and local government sector. This is reflected in its E issuer profile score of moderately negative (**E-3**), which is the same score we assign to New York City. The water & sewer system is a component unit of New York City whose rates are set by the New York City Water Board. New York City's risks are more elevated than those of other local governments because of its location on the Eastern Seaboard and its geographic position between two tidal estuaries. Environmental risks within the city include intense storms and extreme heat, and the city has initiated resilience and adaptation strategies to confront these risks. For greater detail on the risks to the city in general, please see our reports on the City of New York. Wastewater and combined water and wastewater utilities, in general, also have moderately negative exposure to water management considerations given the risk of regulatory violations associated with wastewater disposal. Wastewater operations face risks of increased operating costs or capital requirements to address violations. The authority's debt burden is high among utility systems in part because it has borrowed to address many of the issues utility systems face. To the authority's credit, New York City's water reservoirs are distant from areas with greater hurricane risk, and the water and sewer system's three water tunnels create flexibility and supply redundancy should damages be incurred. One particular outstanding issue for the New York City Water and Sewer System is the pending expiration of a filtration avoidance determination by the New York State Department of Health. In 2017, the department extended the system's ability to provide water from certain upstate portions of the system without filtration, following an original determination that was issued in 1993. The authority anticipates the department could revisit the determination in 2027. As of 2007, the city estimated the cost of constructing a filtration system would exceed $6 billion. The cost of doing so later this decade is likely to be even higher. As a result, a change in the authority's ability to provide certain water without filtration would carry substantial capital costs.

Social

The authority's exposure to social risks is moderately negative (**S-3**), primarily reflecting water utilities' exposure to responsible production risk, which we view as moderately negative across the sector. Testing results reported to the Environmental Protection Agency indicate that most utilities provide clean and safe drinking water. However, water utilities are at risk of health violations resulting from catastrophic events, changes in source water quality, failures in treatment or transmission processes or revised regulations. The New York City Water Board has been proactive in adjusting water and sewer rates and will continue to enact increases to accommodate the city's capital improvement plan. Rising rates could gradually reduce the affordability of service among the city's lower income population. To help mitigate reduced affordability, the water board has managed a Home Water Assistance Program since 2015 that provides an annual credit to certain low income residential customers. Further assistance to multifamily affordable housing properties is provided through the Multi-Family Water Assistance Program, which has been in place since 2017.

Governance

The authority's G issuer profile score is positive (**G-1**). The authority is part of a larger nexus of state-created entities designed to finance and operate the New York water and sewer system. Under state law and a variety of agreements, the city leases its water and sewer system to the New York City Water Board, members of which are appointed by the mayor of New York City. The board establishes water rates. The city's Department of Environmental Protection operates the system and collects revenue from system activity. The authority issues bonds to fund the system's capital needs. Collectively, management of the system and its finances has been strong, as illustrated by the healthy indicators discussed above. We view New York City's financial management, in general, to be strong. Our assessment is supported by institutional budget and financial management practices that emerged from the 1970s fiscal crisis and substantial transparency of its financial operations. The hallmark of these practices is effective multiyear planning via quarterly updates to the city's five-year financial plan, including consistently conservative revenue estimates, which gives a clear forward-looking view to potential budget challenges.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Endnotes

1 Exhibit 4 shows combined water and sewer revenue, which in some cities is collected in a single fund and in others is collected in two separate funds. Unless noted with asterisks, each city's water and sewer system(s) is/are wholly-owned business enterprise(s) of the city. *The "Detroit" system is the Great Lakes Water and Sewer Authority, which is an independent entity and not part of the City of Detroit government; the District of Columbia Water & Sewer Authority is also an independent entity and not part of the district government. **The Jacksonville and San Antonio water and sewer systems, like that of New York City, are classified as component units of their respective cities in those cities' audited financial statements.

2 As with Exhibit 4, the debt and debt / revenue metrics are calculated across water and sewer funds of each city (in some cases a single fund; in others two funds). * and ** see Exhibit 4 note.

3 As with Exhibits 4 & 5, the debt service coverage and days cash on hand data shown in Exhibit 8 reflect that of a single fund when presented as a combined water & sewer enterprise fund in city audited financial statements and the combination of water & sewer funds when presented as separate funds in city audited financial statements. Ratings with no asterisk are those that are on a pledge of combined water & sewer revenue. *Ratings are on distinct pledges of water or sewer revenue, but those ratings are the same. **Ratings are on distinct pledges of water or sewer revenue, and the rating shown is either the higher of the two or reflects only one pledge having a rating. ***The long-term liabilities burden reflects that of the entire city, not just the water and sewer system(s). In most cases, the burden is calculated across governmental and business type activities consistent with the calculation laid out in our US Cities & Counties methodology. In some of these cases, this results in business enterprises beyond water & sewer being captured in the liabilities burden. The exceptions to this calculation are San Antonio, District of Columbia and New York City. In these cases we have combined the component unit water & sewer systems (San Antonio and New York) or the independent water & sewer authority (District of Columbia) with the primary city government to calculate a burden comprising comparable activities to the other cities.

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