

CREDIT OPINION

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New Issue

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New York City Municipal Water Finance Authority, NY

New Issue: Moody's Assigns Aa1 to NYC Water's \$160M Revenue Bonds, Ser. 2018AA; Outlook Stable

Summary Rating Rationale

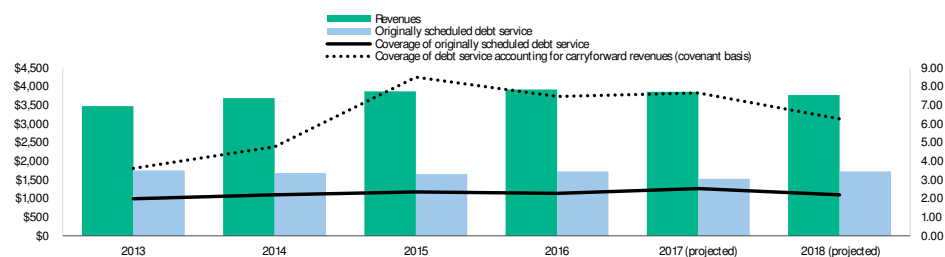
Moody's Investors Service has assigned a Aa1 rating to the New York City Municipal Water Finance Authority, NY's \$160 million Water and Sewer System Second General Resolution Revenue Bonds, Fiscal 2018 Series AA. The Aa1 rating applies to roughly \$27.2 billion of parity subordinate lien bonds, and \$2.4 billion of senior lien bonds. The outlook is stable.

The Aa1 rating on both liens reflects the bonds' strong legal structure, which grants bondholders a lien on the gross revenues of the New York City water and sewer system, explicit remoteness from a city bankruptcy, and a bondholder-friendly flow of funds.

The rating also recognizes the water and sewer system's size and regional importance, as well as substantial ongoing capital needs that will likely be funded largely with authority debt.

We rate both liens the same because of the strong legal structure, the open lien on the first resolution bonds, and the ongoing need for sizeable capital reinvestment.

Exhibit 1

Strong, Consistent Coverage
 \$ in millions


Note: Coverage is shown both before and after the effect of carryforward revenues. See "Debt Service Coverage and Liquidity" for more detail.

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

Credit Strengths

- » Strong legal structure
- » Demonstrated willingness to raise rates
- » Solid coverage of debt service by pledged revenues

Credit Challenges

- » Large and ongoing capital needs likely to be funded with authority debt
- » Need for regulatory clearance to avoid costly water filtration requirements
- » High debt levels relative to pledged revenues and system size

Rating Outlook

The stable outlook recognizes the New York City Water Board's proven willingness to raise rates continually to assure strong coverage of debt service. The outlook incorporates the system's ongoing capital needs, as well as the fact that the system has already undertaken a large share of mandated capital projects.

Factors that Could Lead to an Upgrade

- » Stronger limitations on leveraging the pledged revenues

Factors that Could Lead to a Downgrade

- » Weaker debt service coverage or financial ratios
- » Departure from long track record of rate increases
- » Regulations creating especially large capital expenditures or costs

Key Indicators

Exhibit 2

New York City Municipal Water Finance Authority	2012	2013	2014	2015	2016
Asset Condition (Remaining Useful Life)	36	41	40	28	32
System Size (O&M in millions)	\$1,447	\$1,376	\$1,518	\$1,517	\$1,314
Service Area Wealth (Median Family Income, % of US median)	88%	89%	89%	89%	89%
Operating Revenue (cash basis, \$ in millions)	\$3,237	\$3,469	\$3,686	\$3,866	\$3,914
Long-Term Debt (\$ in millions)	\$28,378	\$29,493	\$30,196	\$30,933	\$30,829
Debt Service Coverage (Covenant Basis)	3.0	3.6	4.8	8.5	7.5
Debt Service Coverage (Gross Moody's-Adjusted)	2.3	2.0	2.2	2.3	2.3
Days Cash on Hand	221	287	324	294	332
Debt to Operating Revenues	8.8	8.5	8.2	8.0	7.9

Source: Moody's Investors Service

Recent Developments

Recent developments are incorporated into the Detailed Rating Considerations section below.

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.moody's.com for the most updated credit rating action information and rating history.

Detailed Rating Considerations

Service Area and System Characteristics

The water and sewer system that generates the gross revenues securing the authority's bonds remains healthy.

Operated by the New York City Department of Environmental Protection, the system provides drinking water to 9.5 million people, or nearly half the population of [New York State](#) (Aa1 stable). The system delivers drinking water to [New York City](#) (Aa2 stable) and some of its suburban counties from three upstate watersheds. Consumption is more than 1 billion gallons per day. Supply is more than adequate, as the system holds up to 550 billion gallons in a network of reservoirs.

Among the many differences between New York Water and the typical US municipal utility is that this system's water supply is far away from its customers – as far as 125 miles away. The utility delivers water to the city through long aqueducts, giving this system an unusually large and complex footprint.

While the system's water delivery is complicated, its water treatment is simple. The system delivers most of its water unfiltered, because of the pristine condition of the upstate water supplies. Regulators confer the right to deliver unfiltered water through a Filtration Avoidance Determination that expires next year. The system will likely devote part of its future capital plan to complying with the terms of an extension, and difficulties extending the permit or onerous terms of an extension are one potential source of pressure for the utility.

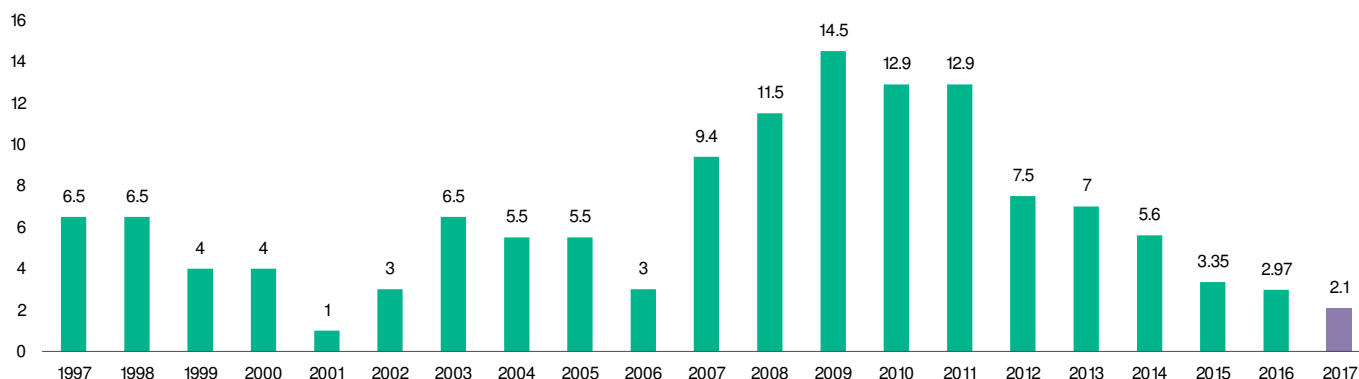
The system also operates 14 wastewater treatment plants, with total capacity of 1.8 billion gallons per day and average flow of 1.25 billion gallons per day. The wastewater system is under various regulatory mandates – especially around stormwater overflows – that are incorporated into its capital plan.

Debt Service Coverage and Liquidity

Pledged revenues continue to perform well as the city's water board has shown a willingness to regularly raise rates, often significantly (see exhibit).

Exhibit 3

Annual Increases in New York's Water and Sewer Rates



The 2.1% rate increase in 2017 was enjoined by the New York State Supreme Court. Fiscal 2016 rates remain in effect.

Source: NYC Water

As a result of these rate increases, coverage of authority debt service is ample. Like most utilities, New York's water consumption is flattish, meaning that most revenue growth has come and will continue to come from rate increases as opposed to volumetric increases. The water board's track record of increasing rates to generate sufficient revenues, as well as the system's need for capital funding, will assure that the water board sets rates sufficient to cover authority debt service in future years.

Because the authority's legal structure is unlike most other municipal utilities, there are several sensible ways to think about debt service coverage, all of which show a solid financial position. The table below presents coverage in three different ways: coverage according to the authority's bond resolution, gross Moody's-adjusted coverage, and net Moody's-adjusted coverage.

Exhibit 4

NYC Water's Coverage Shown Three Different Ways

Coverage	2014	2015	2016	2017 (projected)	2018 (projected)
Revenues net of authority expenses	\$3,686	\$3,866	\$3,914	\$3,856	\$3,767
System O&M (including rental payment to city)	\$1,361	\$1,536	\$1,397	\$1,454	\$1,444
Net revenues	\$2,325	\$2,330	\$2,517	\$2,402	\$2,323
Debt service net of debt service advance funded in prior year	\$775	\$456	\$525	\$505	\$602
Originally scheduled debt service excluding prepaid debt service	\$1,681	\$1,650	\$1,722	\$1,526	\$1,721
Coverage (covenant basis)	4.76	8.49	7.46	7.64	6.26
Gross coverage of originally scheduled debt service	2.19	2.34	2.27	2.53	2.19
Net coverage of originally scheduled debt service	1.38	1.41	1.46	1.57	1.35

Note: Originally scheduled debt service in each actual year is taken from the prior year's Comprehensive Annual Financial Report. Projected debt service is taken from the most recent Official Statement. The figure excludes short-term maturities on the authority's commercial paper and bond anticipation notes.

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

- » **Bond resolution basis (7.5x).** Coverage according to the bond resolution starts with the revenues deposited with the authority before any is distributed to the water system for operations. It then divides that by the debt service paid in that fiscal year, excluding debt service funded with balances on hand from surpluses in the prior year ("carryforward revenues"). Because the water system is each year generating significant carryforward revenues and applying them to the following year's debt service, the debt service excluded from this number is significant. For instance, the authority utilized its fiscal 2016 carryforward revenues to pay roughly \$1 billion in fiscal 2017 debt service, leading covenant-basis debt service to be \$1 billion lower than the originally scheduled debt service for the year. Coverage on this basis is exceptionally strong, reaching nearly 8.5x in 2015 and 7.5x in 2016.
- » **Gross Moody's-adjusted coverage (2.3x).** This approach evaluates coverage of current-year debt service by current-year revenues, excluding the carryforward revenues generated in prior years. To make this adjustment, we divide revenue from the fiscal year by the debt service originally scheduled for that year, even if it is funded from carryforward revenues. This coverage metric assesses by how much the system's annual revenues cover annual debt service, and does not consider that carryforward revenues are generally used to pay current year debt service. Coverage on this basis is also very strong, at 2.3x in both 2015 and 2016.
- » **Net Moody's-adjusted coverage (1.5x).** A third way of evaluating coverage is to look at coverage of originally scheduled debt service by revenues net of the water system's operating costs. Although the authority's legal structure insulates it from the cost of operating the system, the pledged revenues are designed to cover debt service and actually deliver water and treat wastewater. Assuming that the pledged revenues would also have to cover the system's O&M, the net revenue coverage was 1.41x in 2015 and 1.46x in 2016. This is the way we evaluate coverage for most utilities that have a net revenue pledge, although we recognize that the authority's legal structure and gross revenue pledge subordinate O&M to debt service.

LIQUIDITY

As the first stop for all New York water revenues, the authority always has huge amounts of cash on hand. The authority's flow of funds ensures that water revenues are deposited first with the authority, where it is applied toward debt service, often well in advance of the debt service date. In the past few years, annual debt service was fully funded only two months into the fiscal year.

As of the end of fiscal 2016, the authority reported nearly \$1.5 billion of cash, which was restricted for debt service.

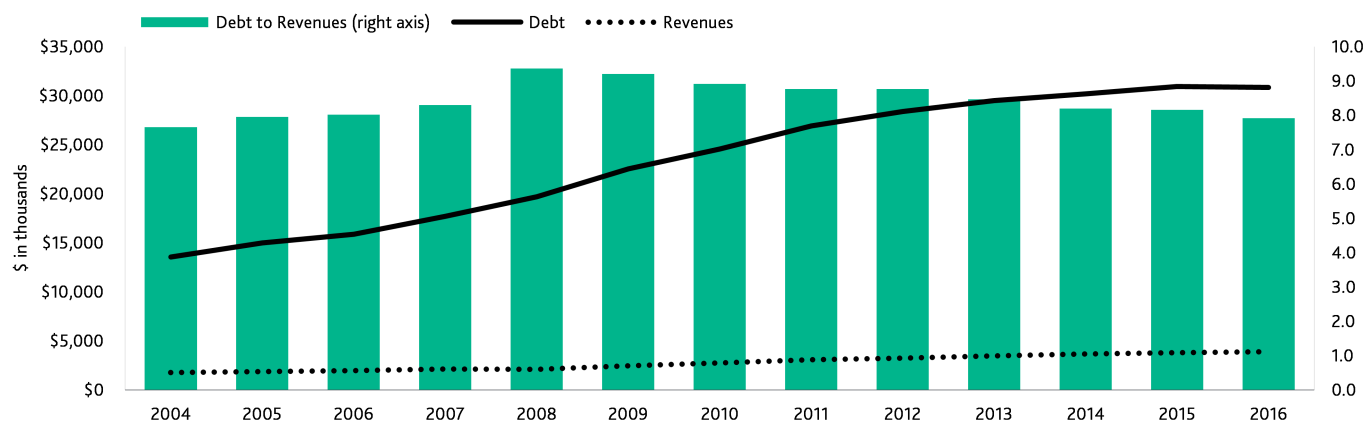
The authority's cash is equal to about 330 days of the system's O&M, although we note that the system does not have recourse to this cash ahead of bondholders.

Debt and Legal Covenants

The authority has issued a lot of debt to help fund the considerable capital needs of the system, leading to a debt burden that is heavy relative to pledged revenues.

Exhibit 6

NYC Water's Debt is Heavy Relative to Revenues



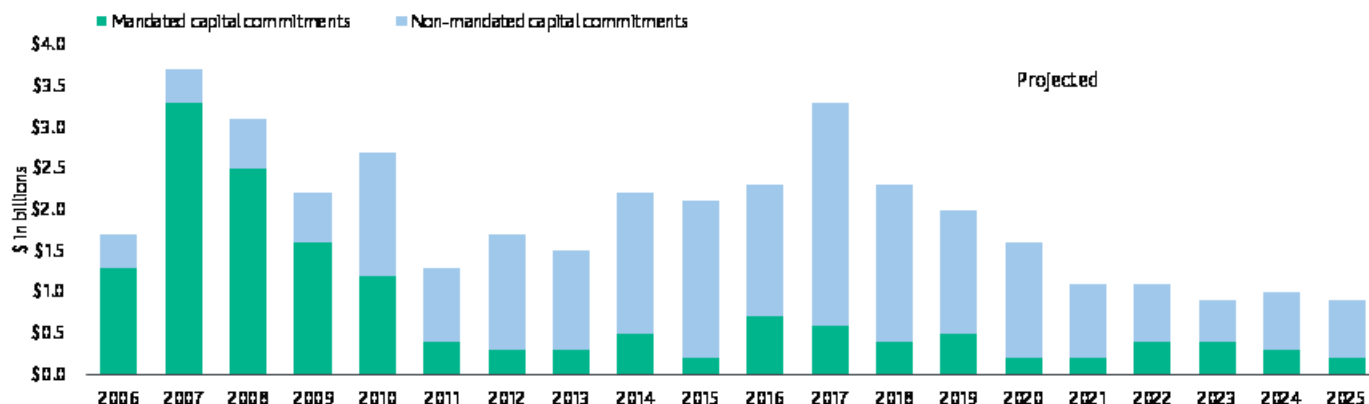
Source: New York City Municipal Water Finance Authority

The large debt burden is in part a consequence of a capital plan that has been driven by regulatorily mandated projects. Positively, as the system has implemented mandated projects, the share of its capital plan devoted to mandated projects has been shrinking. With the majority of the capital plan now consisting of non-mandated projects, the system has more flexibility in managing the program.

The system's four-year capital plan totals \$11 billion.

Exhibit 7

Capital Plan Has More Flexibility with Fewer Mandated Projects



Note: 2016 and beyond are projections

Source: New York City Municipal Water Finance Authority

DEBT STRUCTURE

The authority has \$5.4 billion of variable rate obligations outstanding (both hedged and unhedged), which includes \$200 million of bank-supported commercial paper (currently undrawn). It also has a \$400 million extendible commercial paper program without external liquidity support.

Including the full amount of authorized commercial paper, the variable rate portfolio reflects 19% of the authority's total outstanding debt.

DEBT-RELATED DERIVATIVES

The authority has two outstanding swap agreements with two different counterparties in an aggregate notional amount of \$401 million. As of June 30, 2016 the mark-to-market value was -\$142.8 million. Termination of the swaps by the counterparties is limited to highly unlikely events. In the event that the authority should owe a termination payment, the swaps include provisions that allow the rate setting process to occur before the payment is due.

PENSIONS AND OPEB

The New York water and sewer system is operated by the New York City Department of Environmental Protection. Pension liabilities related to those employees are included in our calculations of the city's pension burden. The city's pension system includes three multiemployer cost-sharing plans (the New York City Employees Retirement System, Teachers Retirement System, and Board of Education Retirement System), and separate plans for fire and police. The city's shares of the multi-employer plans are 55.5%, 97.3% and 99.9%, respectively. Reflecting those plans, the city's fiscal 2016 Moody's-adjusted net pension liability (ANPL) is \$144.5 billion, or 18.2% of operating revenues. While the city's three-year adjusted ANPL as a percentage of full value is the fourth largest of the 50 largest local governments, at 11%, the burden is more moderate as percentage of operating revenue: 129%, ranking 34th (based on fiscal 2015 data, the most current available to make this comparison). Our adjustments improve comparability of reported pension liabilities, but the adjustments are not intended to replace the city's reported liability information.

Management and Governance

The authority is a legally independent entity governed by a seven-member [board](#) consisting of city officials and mayoral and gubernatorial appointees. Unlike other municipal utilities (which operate water and sewer systems), the authority is detached from the operations of the water and sewer system and exists solely to issue bonds to finance the water system and to service the debt.

The authority fits into a larger nexus of state-created entities designed to finance and operate the New York water and sewer system. The city's Department of Environmental Protection operates the system. The legally separate [New York City Water Board](#) has the legal responsibility to set rates and collect water revenues, although it uses DEP as its collection agent.

The management of these entities has collectively been strong, showing clear will to increase rates and keeping coverage of debt service solid despite big increases in debt and debt service.

Legal Security

The authority's bonds are secured by a lien on the revenues of the New York City water and sewer system; in the instance of the first resolution bonds it's a first lien, and in the instance of the second resolution bonds it's a second lien. This is a gross revenue pledge.

The legal security for the authority's bonds is established in a bond resolution, a series of state laws, a lease, and a financing agreement. Under this series of laws and contracts, the New York City Water Board has covenanted to set rates sufficient to cover debt service, and to collect and deposit all revenues into the Local Water Fund. The authority holds a statutory and contractual first lien on those revenues, and their first use is debt service. Only after the payment of monthly debt service requirements is money transferred to the water system for O&M.

One crucial element of this security is that the city remains obligated to operate the water system regardless of whether it receives any revenues from the authority. This is substantially stronger than a typical net revenue pledge, in which debt service is only paid with residual revenues after O&M.

Authority's Bankruptcy Remoteness

One of the strengths of the authority's legal structure is that, in the opinion of bond counsel, its bonds would survive a bankruptcy of New York City.

The authority asked counsel to consider whether a New York City bankruptcy would tie up water revenues or lead to the consolidation of the authority or the New York City Water Board with the city.

Bond counsel opined that a bankruptcy court "exercising reasonable judgment" would not consider water revenues to be part of the city's estate, would not subject the water revenues to an automatic stay, and would not consolidate the authority or the board with the city. Bond counsel also opined that neither the authority nor the board would qualify for bankruptcy themselves.

Use of Proceeds

Proceeds of the bonds will be used to refund certain maturities of outstanding bonds for net present value savings.

Obligor Profile

The obligor for the bonds is a network of entities we refer to collectively as the New York water system.

New York's water system is operated by the New York City Department of Environmental Protection. The rates for water and sewer service in New York are set by a separate entity called the New York City Water Board, which is also responsible for collecting the revenues (although the board uses DEP as its agent for collections).

Finally, the board covenants to deposit water revenues into a fund on which authority bondholders have a claim.

Methodology

The principal methodology used in this rating was US Municipal Utility Revenue Debt published in December 2014. Please see the Rating Methodologies page on www.moody's.com for a copy of this methodology.

Ratings

Exhibit 8

New York City Municipal Water Fin. Auth., NY

Issue	Rating
Water and Sewer System Second General Resolution Revenue Bonds Fiscal 2018 Series AA	Aa1
Rating Type	Underlying LT
Sale Amount	\$160,000,000
Expected Sale Date	07/11/2017
Rating Description	Revenue: Government Enterprise

Source: Moody's Investors Service

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