Massachusetts Water Resources Authority

Water and Sewer Revenue Bonds

New Issue Report

Ratings

New Issues

General Revenue Bonds, 2018 Series B	AA+
General Revenue Refunding Bonds, 2018 Series C (Green Bonds)	AA+

Outstanding Debt

General Revenue Bonds – Senior Lien	AA+
General Revenue Bonds – Subordinate Lien	AA

Rating Outlook

Stable

Related Research

Fitch Rates Massachusetts Water Resources Authority Revs 'AA+'; Outlook Stable (April 2018)

2018 Water and Sewer Medians (December 2017)

Fitch 2018 Outlook: Water and Sewer Sector (December 2017)

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New Issue Details

Sale Information: Approximately $125,000,000 General Revenue Bonds, 2018 Series B, and $25,000,000 General Revenue Refunding Bonds, 2018 Series C (Green Bonds), via negotiated sale the week of May 7.

Security: The bonds are secured by a first lien on net revenues of the Massachusetts Water Resources Authority (MWRA, or the authority), derived largely from wholesale rates and charges assessed on local units of government.

Purpose: Proceeds will be used to fund a portion of the authority's capital program, refund a portion of the authority's outstanding bonds for interest savings without extension of maturity and pay costs of issuance. A debt service reserve will not be funded with this transaction.

Final Maturity: Aug, 1, 2043.

Key Rating Drivers

Regional Provider of Essential Service: MWRA provides essential wholesale water and wastewater services to a large and diverse service area that encompasses 61 communities located primarily in eastern Massachusetts, including the city of Boston. The service area benefits from strong economic underpinnings.

Strong Revenue Defensibility: Local governments served by the authority are required to pay for MWRA services as a general obligation, and non-payment is subject to a tested state aid intercept. MWRA has achieved strong collection rates of 100% since its inception.

Ability to Set Rates Independently: The authority maintains independent rate-setting ability, prudent budgetary practices, comprehensive long-term planning and vigilant project oversight and prioritization of its capital program

Stable Financial Performance: Financial margins remain stable despite diminished financial flexibility over time due to significant leveraging. As the authority enters into the peak years of debt service costs, end user charges will escalate further but should ultimately stabilize over time.

Change in Capital Focus: The authority's capital improvement program (CIP) has transitioned from costly court-mandated projects to ongoing rehabilitation and water system redundancy. Water redundancy projects are expected to be substantial and span the next 16 years.

Abundant Capacity: The wholesale system benefits from an ample long-term water supply and sufficient excess water and sewer treatment capacity.

Rating Sensitivities

Escalation in Debt: Rising capital costs that lead to escalating debt levels, particularly if it results in lower debt service coverage (DSC), could pressure MWRA's ratings.

Rating History: Senior Lien

Rating	Action	Outlook/ Watch	Date
AA+	Affirmed	Stable	4/23/18
AA+	Affirmed	Stable	4/19/17
AA+	Affirmed	Stable	7/22/16
AA+	Affirmed	Stable	3/18/16
AA+	Affirmed	Stable	10/24/14
AA+	Affirmed	Stable	5/16/14
AA+	Revision	Stable	4/30/10
AA	Upgrade	Stable	3/8/05
AA–	Affirmed	Positive	12/11/03
AA–	Upgrade	Stable	6/7/00
A+	Upgrade	Stable	6/22/98
A	Assigned	Stable	9/14/92

Rating History: Subordinate Lien

Rating	Action	Outlook/ Watch	Date
AA+	Affirmed	Stable	4/23/18
AA	Affirmed	Stable	4/19/17
AA	Affirmed	Stable	7/22/16
AA	Affirmed	Stable	3/18/16
AA	Affirmed	Stable	10/24/14
AA	Affirmed	Stable	5/16/14
AA	Revision	Stable	4/30/10
AA–	Upgrade	Stable	3/8/05
A+	Affirmed	Positive	12/11/03
A+	Upgrade	Stable	10/12/00
A	Assigned	—	5/21/99

Related Criteria

Rating Criteria for Public-Sector, Revenue-Supported Debt (February 2018)

U.S. Water and Sewer Rating Criteria (November 2017)

Credit Profile

MWRA is a Massachusetts public authority established by an act of the state legislature in 1985 to provide wholesale water and sewer services to about three million people and more than 5,500 large industrial users in 61 metropolitan Boston communities. MWRA is governed by an 11-member board of directors (the board) who are appointed by the governor, Boston's mayor, Quincy's mayor, Winthrop town council and an advisory board of member community representatives. The authority's executive director is responsible for implementing MWRA programs, policies and procedures at the direction of the board. Four divisions carry out the MWRA's mission.

Large Service Territory with Strong Enforcement Mechanisms

MWRA provides wholesale water and wastewater services to 61 communities located primarily in eastern Massachusetts. Almost three million people (or 44% of the population of the commonwealth) reside in the authority's service area. The largest of these is the city of Boston (Issuer Default Rating 'AAA'/Stable Outlook), which contributes approximately 30% of MWRA's revenue derived from rates and charges. Fitch currently rates the Boston Water and Sewer Commission's (BWSC) revenue bonds 'AA+'/Stable Outlook. The service area generally is economically diverse, and wealth levels tend to be above state and national averages.

Revenue Defensibility

Charges and Rate Affordability

Billing, Collection and Enforcement

MWRA's enabling legislation requires it to set its rates and charges at levels sufficient to pay operations and debt service and to meet its obligations under the bond resolution (i.e. the rate covenant). Based on MWRA's service costs, each member community establishes local water and sewer charges to support both the community's MWRA assessment and the cost of operating its own local water distribution and wastewater collection systems. About 95% of yearly revenues are derived from wholesale assessments to local customers, and rate increases are adopted annually by the board as part of the budget process. Charges are billed directly to the local governments with payments due in 10 monthly installments.

MWRA's charges (referred to as community assessments) typically represent about 45% of the amount that communities bill their customers, although the proportion varies considerably among communities and some do not even size their charges to fully recover all costs. The local communities are required to pay for MWRA's services as a general obligation, and rate-setting is not subject to any limitations, including the state's Proposition 2½. Pursuant to the authority's enabling act, the authority may also use a local aid intercept to recover amounts unpaid by one of its member communities. The local aid intercept was utilized successfully six times between 1990 and 1993, although the amounts that had to be intercepted totaled less than one-tenth of 1% of the authority's revenues for each of those years. The intercept has not been used since.

These protections, coupled with the authority's ability (pursuant to its enabling act) to utilize a local aid intercept to recover amounts unpaid by one of its member communities (excluding revenues of the BWSC), provide significant operating flexibility and are important credit considerations.

High Rates Limit Flexibility

MWRA's high rates are an ongoing credit concern as flexibility continues to diminish. Average combined charges within MWRA, based on the authority's advisory board's most recent rate survey for fiscal 2017, were $1,558 per year (based on 120 hundred cubic feet of water usage). This total is 2% of median household income (MHI), which is Fitch's affordability threshold. However, the size of needed rate hikes has trended downward in recent years as annual capital spending has begun to decline to a more manageable level. Over the five years through fiscal 2017, the authority raised rates on average a moderate 3.4% annually and just 3.2% in fiscal 2018.

MWRA's long-term rate forecast also continues to trend below prior estimates. Rates originally projected to climb by as much as 5.2% annually by 2021 are now estimated to increase by 3.8% through fiscal 2022. Actual rate adjustments may be less though, as MWRA has prudently been applying surplus revenues to level off near-term escalations in debt service costs. Beyond fiscal 2023, debt service carrying costs begin to drop off, which should allow the authority to limit future rate increases.

Operating Risks

Capacity/Compliance with Environmental Laws and Regulations

Water System

The authority's ample water supply is drawn primarily from multiple reservoirs and the Ware River. Under current operating rules, the authority's water sources can supply a safe yield of approximately 300 million gallons daily (mgd), which has not been exceeded since 1989. Demand continues to decline due to improvements in water efficiency and increased conservation efforts, making current supply more than sufficient to meet demand through at least 2030.

The system operates two relatively new water treatment plants with a combined treatment capacity of 428 mgd. Transmission and distribution system components include approximately 350 miles of aqueducts, tunnels and mains, 12 active distribution storage reservoirs and standpipes, 11 active pumping stations and three active hydroelectric power stations. The authority is responsible for the maintenance of the water distribution system, and local communities served by the authority are responsible for distribution to their own retail systems.

Sewer System

Retail customers of the authority collect and convey wastewater to MWRA, which provides transport and treatment through its two wastewater treatment facilities. The largest of the two is Deer Island Treatment Plant, which has primary and secondary treatment capability and allows for an average daily flow of approximately 361 mgd and a peak hourly flow of 1,270 mgd.

Additional system assets include 240 miles of interceptor sewer, 11 pumping stations and four combined sewer overflow (CSO) treatment facilities. Effluent wastewater is discharged into Massachusetts Bay. Since Deer Island went into operation in 1996, the authority has regularly complied with its discharge permit. The authority submitted its renewal application for its discharge permit in February 2005, before the August 2005 expiration date, but the EPA has not yet drafted a new permit. In the interim, the prior permit remains in effect.

Capital Demands and Debt Burden

Substantial Leverage Tempered by Improving Capital Cycle

The spending for capital projects spanning fiscal years 2014–2018 is now estimated at $617 million and includes a significant shift in funding priorities from regulatory compliance projects to renewal and replacement of system assets and water redundancy. Estimated spending for asset protection and water redundancy is now almost 70% of the CIP, compared with 46% in the fiscal years 2009–2013 capital cycle. Conversely, costs related to the ongoing court-mandated CSO control plan will drop to around 10% of capital spending versus 38% over the last five years.

The authority's CIP remains sizable but is significantly below historical spending levels, which were driven by the cleanup of Boston Harbor in the 1990s and the completion of the majority of the CSO master plan in recent years. In December 2015, courts declared MWRA's long-term CSO control plan to be substantially complete.

Expected capital spending beyond fiscal 2018 totals $3 billion, with about $1.4 billion dedicated to new tunnels to provide water redundancy. While the fiscal years 2019–2023 CIP has yet to be formally adopted by the board, proposed capital costs total $1.2 billion, or the equivalent of $246 million in average annual spending. This represents a material increase in annual capital costs compared with the 2014–2018 CIP, which averaged $150 million annually. Despite the uptick in expected spending, Fitch believes future capital costs will remain manageable given MWRA's vigilant project oversight and its board's self-imposed spending cap for capital projects.

Funding for capital needs will continue to come almost entirely from long-term borrowings, including revenue bonds and state revolving fund loans. The authority's debt levels have been and will remain high for the foreseeable future due to past borrowings. Debt to net plant was notably high at 94% in fiscal 2017, with debt to funds available for debt service at 13.0x and annual debt service costs consuming over one-half of gross annual revenues.

Favorably, the authority continues to amortize more principal annually than it anticipates issuing through at least 2019. Even with the planned capital spending, this trend should help improve the authority's debt profile over time and position the authority to handle the additional debt associated with the renewal and redundancy projects.

Financial Profile

Coverage and Financial Performance/Cash and Balance Sheet Considerations

Stable Financial Performance

The authority's financial operations have remained very stable despite escalating debt service. Historical DSC on senior lien obligations has averaged a strong 1.8x over the three years through audited fiscal 2017 (based on Fitch's calculation of DSC, which includes certain accruals from the income statement). All-in DSC, which includes subordinate public debt and privately placed state revolving fund loans, has been low but adequate at 1.1x over the same period. Liquidity, while still solid, dipped slightly from 2016 to 246 days cash on hand in fiscal 2017 but less than the 300 days it has averaged since 2011.

Financial Summary

($000, Audited Fiscal Years Ended June 30)	2013	2014	2015	2016	2017
Balance Sheet					
Unrestricted Cash and Investments	94,780	95,257	99,482	102,929	101,121
Other Unrestricted Current Assets	30,379	31,310	30,956	31,251	31,338
Available Restricted Cash and Investments	139,492	140,757	97,084	78,418	91,926
Current Liabilities Payable from Unrestricted Assets	(328,837)	(371,594)	(356,568)	(282,777)	(349,139)
Net Working Capital	**(64,186)**	**(104,270)**	**(129,046)**	**(70,179)**	**(124,754)**
Net Fixed Assets	6,153,926	6,073,139	5,935,338	5,776,418	6,023,414
Net Long-Term Debt Outstanding	6,182,383	6,040,910	5,928,466	5,804,338	5,658,719
Operating Statement					
Operating Revenues	623,393	648,017	668,604	696,973	716,776
Non-Operating Revenues Available for Debt Service	(3,079)	5,433	15,949	19,276	3,124
Transfers (to)/from the Rate Stabilization Fund	—	3,500	—	—	—
Total Revenues Available for Debt Service	**620,314**	**656,950**	**684,553**	**716,249**	**719,900**
Operating Expenditures (Excluding Depreciation)	267,350	273,504	263,403	272,038	286,269
Depreciation	190,852	193,062	194,000	197,128	201,481
Fitch-Calculated Operating Income	**162,112**	**190,384**	**227,150**	**247,083**	**232,150**
Net Revenues Available for Debt Service	**352,964**	**383,446**	**421,150**	**444,211**	**433,631**
Senior Lien ADS	192,834	203,338	208,500	272,570	262,093
All-In ADS	344,432	363,370	370,237	387,051	401,523
Financial Statistics					
Senior ADS (x)	1.8	1.9	2.0	1.6	1.7
All-In ADS (x)	1.0	1.1	1.1	1.1	1.1
Days Cash on Hand	320	315	272	243	246
Debt / Net Plant (%)	100	99	100	100	94
Outstanding Long-Term Debt Per Capita ($)	2,208	2,157	2,117	1,935	1,886

Notes: Fitch may have reclassified certain financial statement items for analytical purposes. Sources: Massachusetts Water Resources Authority and Fitch.

Management forecasts point to continued stable operations based on the authority's conservative budgeting practices. DSC is expected to remain near historical norms and generate surpluses that the authority expects to use to defease future debt maturities. MWRA's positive variances are driven by conservative budgeting estimates (particularly for variable interest rate costs) and tight expenditure controls.

Projected Financial Summary

($000, Fiscal Years Ending June 30)	2018	2019	2020	2021	2022	2023
Operating Statement						
Operating Revenues	733,424	760,277	789,096	819,137	854,633	875,618
Non-Operating Revenues Available for Debt Service	10,206	12,995	14,363	16,754	19,140	20,241
Total Revenues Available for Debt Service	**743,630**	**773,272**	**803,459**	**835,891**	**873,773**	**895,859**
Operating Expenditures (Excluding Depreciation)	248,673	256,333	266,289	275,074	282,421	294,629
Fitch-Calculated Operating Income	**494,957**	**516,939**	**537,170**	**560,817**	**591,352**	**601,230**
Net Revenues Available for Debt Service	**494,957**	**516,939**	**537,170**	**560,817**	**591,352**	**601,230**
Senior Lien ADS	264,560	273,549	228,768	320,399	319,054	377,649
All-In ADS	434,544	451,510	488,837	509,833	537,592	546,573
Financial Statistics (x)						
Senior ADS	1.9	1.9	2.3	1.8	1.9	1.6
All-In ADS	1.1	1.1	1.1	1.1	1.1	1.1

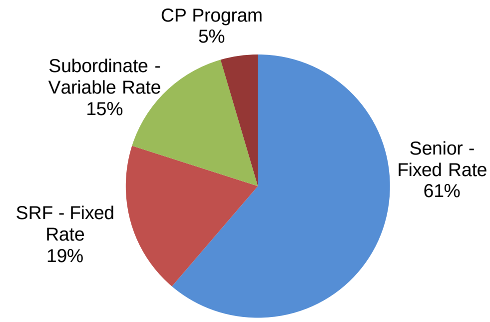
Notes: Fitch may have reclassified certain financial statement items for analytical purposes. Sources: Massachusetts Water Resources Authority and Fitch.

Asymmetric Risk Factors

Contingent and Derivative Obligations

Variable-Rate Debt Discussion and Exposure: The authority's exposure to variable-rate debt and derivatives is fairly sizable, although management's demonstrated ability to prudently monitor debt portfolio performance offsets this risk. Of the total amount of debt outstanding, approximately 15.5% was variable rate as of April 1, 2018, with each series of variable-rate bonds backed by liquidity agreements from a diverse pool of liquidity providers.

Debt Breakdown: Fixed vs. Variable



Source: Massachusettes Water Resrouces Authority.

Swaps Discussion and Exposure: Over 40% of the authority's outstanding variable-rate debt is hedged through floating-to-fixed rate swaps. All outstanding swaps were originally entered into during the 1998–2002 timeframe. The outstanding notional amount totaled $459,692,000 as of March 16, 2018, and the most recent mark-to-market value of the swaps totaled negative $88,405,000 as of March 16, 2018. Regular swap termination payments are on parity with subordinate bonds, and events resulting in automatic termination are considered remote. Unrestricted cash adjusted for swap exposure remained at a healthy level in fiscal 2017, equal to 201 days.

Covenants

Security

Outstanding bonds are secured by senior and subordinated liens on net authority revenues derived largely from wholesale rates and charges assessed to local units of government.

State Aid Intercept

In the event of nonpayment by a local entity to MWRA, the state treasurer may intercept state aid to certain localities to cover the assessment.

Rate Covenant and Parity Issuance Test

Rates and charges, including operating and rate stabilization reserve withdrawals, must equal at least 1.2x annual senior lien debt service and at least 1.1x subordinated lien debt service. Debt service assistance by the commonwealth is effectively treated as a reduction in debt service requirements under MWRA's covenant tests. MWRA may adjust the senior lien debt service covenant to at least 1.1x annually, provided this action does not result in a rating downgrade on any series of outstanding authority debt. The additional bonds tests are similar to the rate covenant requirements.

Debt Service Reserve Fund

The debt service reserve requirement is a 50% of maximum annual debt service standard three-prong lesser of test: 10% of original net proceeds of bonds, 125% of average annual debt service on bonds or the maximum annual debt service. Reserves are funded with cash from bond proceeds and are contained in a general debt service reserve fund (DSRF) available for all series of bonds.

Flow of Funds

All revenues received by the authority are deposited in the revenue fund held by the trustee and deposited in the following order of priority: for operating and maintenance expenses; for senior debt service; for subordinate debt service; for the senior DSRF; for the subordinate DSRF; for commonwealth obligations; and to the rebate fund.

Operating and Insurance Reserve Funds

The operating reserve requirement is at least one-sixth of annual operating expenses. The current balance totals $39 million. The insurance fund level is determined by an outside consultant and currently has a balance of $14 million.

Renewal and Replacement Fund

The manner in which the renewal and replacement (R&R) fund requirement is funded was changed under an amended indenture. Instead of funding the current requirement of $35 million with cash under the original indenture, MWRA will now fund $10 million with cash and use capacity under its commercial paper program or a committed line of credit established by the authority for the purpose of capital spending to fund the remainder. The R&R fund is for catastrophic events and has never been tapped.

Crew

Management prepares detailed annual budget and capital expenditure recommendations. A 10-year financial forecast included in the annual budget contains capital financings and rate increases necessary to fund operating and capital expenditures. The authority maintains detailed operating and financial procedures, including the manner in which rates are to be set annually, which are included in the budget document. MWRA's policies also detail items such as monitoring of budgeted operating and capital variances; in September 2012, the board reauthorized the practice, beginning in fiscal 2012, of allocating positive capital variance to the bond defeasance account.

The ratings above were solicited and assigned or maintained at the request of the rated entity/Issuer or a related third party. Any exceptions follow below.