

CREDIT OPINION

19 July 2016

New Issue

Rate this Research >>

Contacts

Heather Guss 617-535-7693
 Analyst
 heather.guss@moodys.com

Edward (Ted) 212-553-6990
 Damutz
 VP-Sr Credit Officer
 edward.damutz@moodys.com

Massachusetts Water Resources Authority

New Issue - Moody's Assigns Aa1 to MWRA's \$150M Sr. Lien Rev. Bonds 2016 Ser. D; Outlook Stable

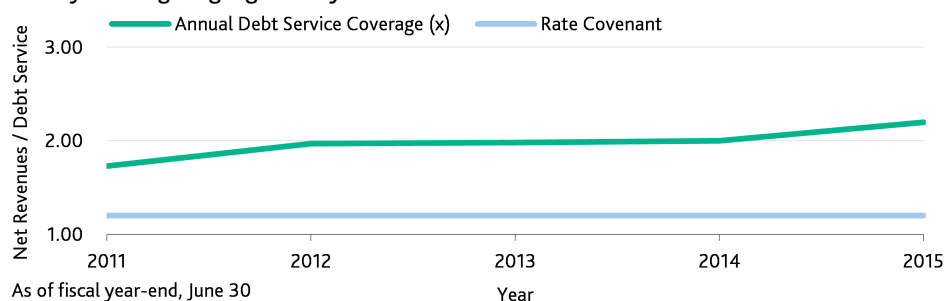
Summary Rating Rationale

Moody's Investors Service has assigned an Aa1 rating to the Massachusetts Water Resources Authority's (MWRA) \$150 million General Revenue Refunding Bonds, 2016 Series D (Green Bonds). Moody's maintains the Aa1 rating on the authority's \$3.3 billion of outstanding senior lien general revenue bonds and the Aa2 rating on the authority's \$905.5 million of outstanding subordinate general revenue bonds. The outlook is stable.

The Aa1 rating on senior lien debt reflects the strong credit profile of the authority's service area, stable debt service coverage levels, and comprehensive fiscal policies. The rating also incorporates MWRA's tested ability to intercept member municipalities' state aid in the event of non-payment to the authority. These credit strengths mitigate a highly leveraged position including a sizeable variable rate component.

The Aa2 rating on subordinate lien debt reflects the bonds' secondary position relative to MWRA's senior lien debt and a weaker rate covenant of 1.1 times on combined senior and subordinate debt service. This includes subordinate fixed-rate loans issued by the Massachusetts Clean Water Trust (Aaa stable).

Exhibit 1

Healthy Coverage Highlights Very Stable Financial Position


Credit Strengths

- » Strong credit quality and payment history of local government members
- » Ability to intercept members' state aid to cure delinquencies
- » Strong management of financial operations, capital needs and debt portfolio
- » Well funded pension plan

Credit Challenges

- » Highly leveraged position
- » Reliance on annual rate increases

Rating Outlook

The stable outlook reflects our expectation that financial operations will remain balanced over the near term with manageable annual rate increases. The outlook also incorporates the conservative and comprehensive planning towards capital needs that remain manageable.

Factors that Could Lead to an Upgrade

- » Substantial decline in the debt ratio
- » Improved coverage for senior and total debt service

Factors that Could Lead to a Downgrade

- » Higher debt ratio with increased exposure to variable rate debt
- » Trend of narrow debt service coverage
- » Acceleration of debt amortization due to failed remarketings
- » Deterioration of service area's composite credit strength

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

Key Indicators

Exhibit 2

Massachusetts Water Resources Authority

System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	31 years				
System Size - O&M (in \$000s)	263,403				
Service Area Wealth: MFI % of US median	129.%				
Legal Provisions					
Rate Covenant (x)	1.20				
Debt Service Reserve Requirement	DSRF funded at less than 3-prong test OR springing DSRF				
Financial Strength					
	2011	2012	2013	2014	2015
Operating Revenue (\$000)	584,354	602,620	623,213	650,957	671,544
O&M (\$000)	254,847	261,510	267,350	273,504	263,403
Long-Term Debt (\$000)	5,800,267	5,879,419	5,876,695	5,697,812	5,601,104
Annual Debt Service Coverage (x)	1.73	1.97	1.98	2.00	2.20
Cash on Hand	167 days	162 days	170 days	168 days	180 days
Debt to Operating Revenues (x)	9.9x	9.8x	9.4x	8.8x	8.3x

Operating revenues include changes in derivative related accounts

As of fiscal year-end, June 30

Source: Moody's Investors Service

Recent Developments

Since our report in March, the authority projects a \$44.8 million operating surplus in fiscal 2016 (June 30) which will be used for debt defeasance. In addition, the fiscal 2017 budget was adopted. Expenses increased 2.4% driven by an increase in capital financings, and the budget was balanced with a 3.3% rate increase and no use of rate stabilization reserve funds. For the first time, the authority budgeted \$11 million towards defeasance, which would be in addition to using any year-end surplus for the same purpose.

Detailed Rating Considerations

Service Area and System Characteristics: Large Regional System Providing Essential Service to Member Communities with Strong Credit Characteristics

MWRA provides wholesale water and wastewater services to 61 communities primarily in eastern Massachusetts (Aa1 stable), serving approximately 2.8 million people, or 43% of the commonwealth's population. Incorporated in the long-term ratings are the authority's strong collection of member assessments supported by historical receipt of 100% of assessments within the levy year, 31% of which come from the Boston Water and Sewer Commission (BWSC, Aa1 stable). Including BWSC, the top five largest customers provide 47.2% of total assessments: Cities of Newton (4.8%, Aaa stable), Quincy (4.6%, Aa3 negative), Cambridge (3.4%, Aaa stable) and Somerville (3.4%, Aa2 positive). Additional credit strength is provided by: MWRA's ability to intercept the majority of the members' monthly state aid payments; the authority's stable membership with lack of alternative sources; independent rate-setting authority; and the essential nature of the services provided.

Water supply is provided to 53 communities and is primarily derived from the Quabbin Reservoir, located 65 miles west of Boston (Aaa stable) and the Wachusett Reservoir, located 35 miles west of Boston, with a combined capacity of 477 billion gallons. Demand consistently falls below the safe yield level of 300 million gallons per day and capacity is expected to be sufficient for at least 20 years due to continued improvements in water use efficiency. Treatment of much of the system's water by ozonation, UV light and chlorination is provided at the system's John J. Carroll Treatment Plant. Transmission and covered storage facilities include the 17.6-mile MetroWest Water Supply Tunnel and the 115 million gallon Norumbega Covered Storage Facility.

Wastewater collection and treatment are provided to 43 communities, with a major treatment facility located on Deer Island in Boston Harbor. The \$3.8 billion Deer Island plant and 9.5-mile effluent outfall tunnel were phased into service beginning between 1996 and 2000, and allow for average flow of 310 million gallons per day (with peak capacity of 1,270 MGD). Sludge is piped to the authority's pelletization plant in Quincy where it is processed into commercially available fertilizer.

Debt Service Coverage and Liquidity: Strong Coverage and Liquidity Bolstered by Long History of Stable Operations

Financial operations will remain stable over the near term due to continued adoption of regular rate increases that are critical to generating annual operating surpluses and ample debt service coverage. From fiscal 2012 through 2016, the combined average annual rate increase has been 3.4%. Future annual rate increases are expected to rise an average of 3.8% through fiscal 2022 given increased costs for debt service and operations. We expect the authority to continue to approve predictable and sustainable annual rate increases that will result in strong assessment collections and stable operations.

The authority's debt service coverage, as defined by its bond resolution, allows for the recognition of annual transfers from reserves in net revenues, which MWRA commonly uses. Consequently, coverage as defined by the resolution is generally higher than Moody's net revenue calculation, which does not include reserve transfers. Senior lien coverage, based on Moody's definition of net revenues, was healthy at 2.2 times in fiscal 2015, the highest coverage in at least seven years. Total net revenue debt service coverage was more narrow at 1.16 times. Coverage in fiscal 2015 from pledged revenues, as defined by MWRA's resolution, was strong at 2.12 times and 1.20 times for senior lien and total debt service, respectively. Coverage calculations in 2015 were more in line with each other due in part to the lack of rate stabilization funds being allocated towards revenue and an increase in assessments compared to prior year. Management intends to utilize rate stabilization reserves in fiscal years 2020-2022 and 2026 in order to maintain annual rate increases of approximately 3.8%.

Operations, including debt service, typically generate sizeable annual surpluses which are usually employed to defease outstanding debt related to future spikes in debt service which can mitigate the need for large rate increases in the future. MWRA also maintains healthy reserves for operations, insurance, and renewal and replacement that provide additional operating flexibility.

The fiscal year ends June 30, and as of May 31, expenditures are \$7.3 million (1.1%) under budget and revenues are up \$3.3 million (0.5%) and management projects a total surplus of \$44.8 million. Of this amount, \$37 was already allocated for debt defeasance, and the remaining \$7.8 million will also be used for debt defeasance, pending approval from the Board of Directors in September.

Fiscal 2017 budgeted expenses increased 2.4% driven by an increase in capital financings, and the budget was balanced with a 3.3% rate increase and no use of rate stabilization reserve funds. For the first time, the authority budgeted \$11 million towards defeasance, which would be in addition to using year-end surplus for the same purpose.

LIQUIDITY

As of fiscal 2015 year end, unrestricted cash and investments represented a healthy 180 days cash on hand, bringing the five-year average to 169 days. While strong, MWRA has historically maintained a narrower cash position than the rating category median given its strong management and proactive maintenance of using surplus towards debt defeasance.

Debt and Legal Covenants: Strong Covenants Support Highly Leveraged Position Including Variable Rate Exposure

The General Resolution establishes a rate covenant of 1.2 times on senior lien debt service and 1.1 times on subordinate debt service. The debt service reserve fund requirement equals to the least of (i) 50% of maximum annual Adjusted Debt Service, (ii) 10% of original par, (iii) 125% of the average annual debt service, or (iv) the maximum annual debt service.

In support of significant capital investments, MWRA has issued a high amount of debt and remains fairly leveraged (79.5% debt ratio and net debt to operating revenues of 8.3 times in fiscal 2015). The authority has \$3.3 billion in senior lien general revenue bonds, \$1 billion in SRF loans (subordinate), and \$905 million in subordinate revenue bonds that also represent the variable rate portfolio. Additionally, MWRA is authorized to issue up to \$250 million in tax-exempt commercial paper plus \$100 million revolving loan that is used to manage its capital program. Over the near term, we expect the debt ratio to remain high but at a reduced level compared to prior years, given significant completion of compliance related projects and a shift to maintenance and repairs.

DEBT STRUCTURE

Variable rate debt currently represents 17% of total outstanding debt, down from over 20% in recent years. The variable rate demand bonds in the amount of \$421.5 million are hedged with interest rate swaps while the balance (\$484 million) are unhedged. The authority has completed a multi-stage plan to moderate its capital structure risks including staggering of mandatory tender dates, and diversification of bank and swap counterparties. The potential for debt acceleration is remote given MWRA's good headroom under its covenants and management's very careful attention to debt details.

DEBT-RELATED DERIVATIVES

MWRA has a large and complex interest rate swap portfolio, including five floating-to-fixed swaps. As of July 8, 2016, the entire swap portfolio had a market valuation of negative \$153 million to MWRA. Early termination events are triggered if MWRA's underlying senior lien rating falls below Baa3.

Two Letters of Credit (LOC) support the remaining unhedged VRDBs and expire in December 2020. The 2012 Series E, F, and G bonds as well as 2014 Series A and B were all issued through negotiated direct purchase agreements with strong diversification of liquidity providers.

PENSIONS AND OPEB

MWRA contributes to the Massachusetts Water Resources Authority Employees' Retirement Plan, a single-employer, defined benefit plan. The plan is well-funded with a small reported unfunded liability of only \$7.6 million as of January 1, 2015, the most recent valuation report. The plan is expected to be fully funded by 2024, well in advance of most enterprise systems as well as the Commonwealth's mandate of 2040.

The authority has also started to make larger contributions towards its OPEB liability, contributing 95% of the annual cost in 2015 as well as additional payments into an OPEB trust (current balance is \$16.1 million). As of June 30, 2015, the UAAL is \$154.4 million.

Management and Governance

MWRA benefits from a strong and experienced senior leadership team with comprehensive policies that address financial, capital and debt management. A ten-year capital plan is updated annually, as well as financial projections incorporating long-term rate management strategy, use of reserves, and approach to defeasance of debt.

The authority is governed by a diverse, 11-member board of directors, chaired by the Secretary of Energy and Environmental Affairs for the Commonwealth.

Legal Security

The bonds are secured by a senior lien pledge of net system revenues. Additional security for roughly two-thirds of MWRA's revenues is provided by a general obligation pledge of the member communities to make timely assessment payments to the authority, as well as a tested state intercept program.

Use of Proceeds

The bonds will refund certain maturities of the outstanding 2002 Series J, 2010 Series A, 2011 Series B, 2012 Series A, and 2014 Series D bonds for estimated net present value savings of \$7.8 million or 7.5% of refunded principal.

Obligor Profile

MWRA is a regional water and sewer enterprise system, providing wholesale water and wastewater services to the Boston (Aaa stable) metro-area and eastern Massachusetts (Aa1 stable).

Methodology

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

Ratings

Exhibit 3

Massachusetts Water Resources Authority

<u>Issue</u>	<u>Rating</u>
General Revenue Refunding Bonds, 2016 Series D (Green Bonds)	Aa1
Rating Type	Underlying LT
Sale Amount	\$150,000,000
Expected Sale Date	08/01/2016
Rating Description	Revenue: Government Enterprise

Source: Moody's Investors Service

© 2016 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved.

CREDIT RATINGS ISSUED BY MOODY'S INVESTORS SERVICE, INC. AND ITS RATINGS AFFILIATES ("MIS") ARE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND CREDIT RATINGS AND RESEARCH PUBLICATIONS PUBLISHED BY MOODY'S ("MOODY'S PUBLICATIONS") MAY INCLUDE MOODY'S CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL, FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS AND MOODY'S OPINIONS INCLUDED IN MOODY'S PUBLICATIONS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S PUBLICATIONS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. CREDIT RATINGS AND MOODY'S PUBLICATIONS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. NEITHER CREDIT RATINGS NOR MOODY'S PUBLICATIONS COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS AND PUBLISHES MOODY'S PUBLICATIONS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS AND MOODY'S PUBLICATIONS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS OR MOODY'S PUBLICATIONS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the rating process or in preparing the Moody's Publications.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY SUCH RATING OR OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any rating, agreed to pay to Moody's Investors Service, Inc. for appraisal and rating services rendered by it fees ranging from \$1,500 to approximately \$2,500,000. MCO and MIS also maintain policies and procedures to address the independence of MIS's ratings and rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold ratings from MIS and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody's.com under the heading "Investor Relations — Corporate Governance — Director and Shareholder Affiliation Policy."

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors. It would be reckless and inappropriate for retail investors to use MOODY'S credit ratings or publications when making an investment decision. If in doubt you should contact your financial or other professional adviser.

Additional terms for Japan only: Moody's Japan K.K. ("MJKK") is a wholly-owned credit rating agency subsidiary of Moody's Group Japan G.K., which is wholly-owned by Moody's Overseas Holdings Inc., a wholly-owned subsidiary of MCO. Moody's SF Japan K.K. ("MSFJ") is a wholly-owned credit rating agency subsidiary of MJKK. MSFJ is not a Nationally Recognized Statistical Rating Organization ("NRSRO"). Therefore, credit ratings assigned by MSFJ are Non-NRSRO Credit Ratings. Non-NRSRO Credit Ratings are assigned by an entity that is not a NRSRO and, consequently, the rated obligation will not qualify for certain types of treatment under U.S. laws. MJKK and MSFJ are credit rating agencies registered with the Japan Financial Services Agency and their registration numbers are FSA Commissioner (Ratings) No. 2 and 3 respectively.

MJKK or MSFJ (as applicable) hereby disclose that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by MJKK or MSFJ (as applicable) have, prior to assignment of any rating, agreed to pay to MJKK or MSFJ (as applicable) for appraisal and rating services rendered by it fees ranging from JPY200,000 to approximately JPY350,000,000.

MJKK and MSFJ also maintain policies and procedures to address Japanese regulatory requirements.

REPORT NUMBER 1035144