

## CREDIT OPINION

20 October 2017

New Issue

Rate this Research >>

### Contacts

**Genevieve Nolan** +1.212.553.3912  
 VP-Senior Analyst  
 genevieve.nolan@moodys.com

**Timothy Blake** +1.212.553.4524  
 MD-Public Finance  
 timothy.blake@moodys.com

**Dan Seymour, CFA** +1.212.553.4871  
 VP-Senior Analyst  
 dan.seymour@moodys.com

### CLIENT SERVICES

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

# Massachusetts (Commonwealth of)

New Issue - Moody's assigns Aa2 to Massachusetts' \$143M GANs, 2017 Ser. A; outlook stable

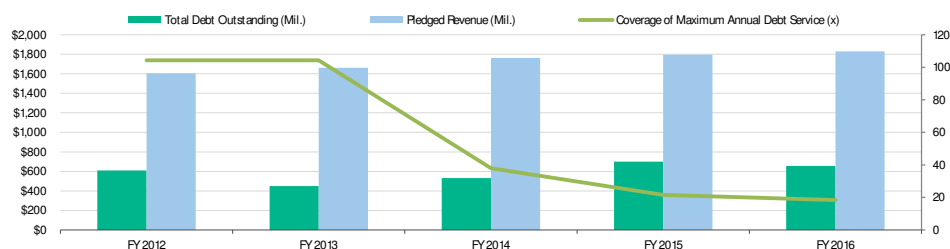
## Summary Rating Rationale

Moody's Investors Service has assigned a Aa2 rating to the Commonwealth of Massachusetts' \$143 million Federal Highway Grant Anticipation Notes (GANs) (Accelerated Bridge Program) 2017 Series A. The bonds are expected to sell on November 1.

The Aa2 rating reflects the subordinate pledge on Commonwealth Transportation Fund (CTF) revenues after debt service is paid on outstanding CTF bonds, which are currently rated Aa1. The ratings also reflects the strong coverage provided by a senior lien on federal highway reimbursements, balanced by the periodic reauthorization risk of the revenue stream from the federal government. Creditors benefit from strong legal protections as well, including an advance set-aside of federal revenues for debt service, a two-pronged additional bonds test that limits the issuance of parity GANs and debt service payments that do not require appropriation from the state.

Exhibit 1

### Net CTF revenues and federal highway funds provide healthy MADS coverage



Source: Commonwealth of Massachusetts; Moody's Investors Service

## Credit Strengths

- » Strong coverage provided by a pledge of Massachusetts' federal highway reimbursements
- » Additional coverage provided by a pledge of CTF funds after payment of senior CTF bonds

## Credit Challenges

- » No limit on additional subordinated bonds in the CTF indenture, although additional debt is limited by additional bonds tests of 2.5 times on CTF revenues and 1.5x on federal reimbursements in the ABP GANs indenture

- » Periodic reauthorization risk inherent in the federal program and uncertainty about the form of future federal highway aid programs

## Rating Outlook

The outlook is stable, reflecting the expected levels of federal reimbursements through 2020 as well as the continued steady growth of CTF revenues that will be available in the event of disruption to federal funds.

## Factors that Could Lead to an Upgrade

- » An upgrade to the CTF rating
- » Changes in legal structure such as stronger limitations on CTF leverage at the senior and subordinate level

## Factors that Could Lead to a Downgrade

- » A downgrade to the CTF rating
- » A significant decline in federal reimbursements or obligation authority, or overall changes in the federal highway aid program that materially impact the funds that flow to Massachusetts
- » Large leverage of the CTF or material weakening in the CTF revenues that reduce backup coverage

## Key Indicators

Exhibit 2

Massachusetts Federal Grant Anticipation Notes	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Coverage of Maximum Annual Debt Service (x)	104.3x	104.3x	38.0x	21.5x	18.4x
Total Debt Outstanding (Mil.)	\$610	\$449	\$531	\$700	\$657
Pledged Revenue (Mil.)	\$1,605	\$1,662	\$1,763	\$1,796	\$1,829
Pledged Revenue Annual Change	-8.5%	3.6%	6.1%	1.9%	1.9%
Additional Bonds Test (x)	4.0x	4.0x	4.0x	4.0x	4.0x

Source: Commonwealth of Massachusetts; Moody's Investors Service

## Recent Developments

Recent developments are incorporated in the Detailed Rating Considerations.

## Detailed Rating Considerations

### Tax Base and Nature of Pledge

The GANs benefit from two sources of pledged revenues: first, all federal highway construction reimbursements and second, net CTF pledged revenues after the payment of debt service on the CTF bonds. Federal revenues flow from the Federal-Aid Highway Program, established in 1956 and are primarily comprised of federal fuel taxes. Distribution of these funds requires periodic reauthorization and appropriation from Congress, which was most recently granted in December 2015 and running through September 30, 2020. The commonwealth expects to receive approximately \$600 million annually. CTF pledged revenues are comprised of a variety of state fuel taxes and motor vehicle registry fees. For a more detailed discussion on the CTF revenues, please refer to our most recent rating report, dated October 20, 2017.

### Debt Service Coverage and Revenue Metrics

Post sale, MADS coverage is projected at 5.5 times based solely on federal funds. MADS is projected to occur in fiscal 2021, one year after expiration of the current federal highway funding program. Inclusive of both federal funds and expected net CTF funds, MADS

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](http://www.moody.com) for the most updated credit rating action information and rating history.

grows to a significant 16.2 times. Incorporating the additional GAN debt currently contemplated by the commonwealth, MADS coverage falls slightly to 5.3 times projected federal revenues and 15.1 times across both federal and net CTF revenues.

### Debt and Legal Covenants

GANs are subject to a two pronged leverage constraint, requiring 1.5 times coverage of MADs by federal reimbursements for both the senior and subordinate GANs, and 2.5 times coverage by excess CTF revenues.

### DEBT STRUCTURE

The commonwealth currently has \$940 million in outstanding federal Grant Anticipation Notes, with proceeds funding the Rail Enhancement Program (REP) and Accelerated Bridge Program (ABP). The commonwealth expects to issue another \$30 million in GANs through 2021.

### DEBT-RELATED DERIVATIVES

All of the commonwealth's GAN debt is fixed rate and it does not have any derivative products outstanding.

### PENSIONS AND OPEB

Based on the commonwealth's fiscal 2016 pension data, we have calculated that its adjusted net pension liability (ANPL) was \$65.2 billion, or 201.5% of revenues. The 50-state median ANPL to revenues is 82.2%, and Massachusetts ranks sixth-highest in this ratio. Massachusetts is among the handful of states that take responsibility for directly funding teacher pensions. Moody's ANPL reflects certain adjustments made to improve comparability of reported pension liabilities.

The commonwealth's other post-employment benefits (OPEB) accrued liability, assuming no pre-funding and a discount rate of 4.5%, was approximately \$16.3 billion as of January 1, 2016. The liability falls to \$10.2 billion assuming pre-funding and a discount rate of 7.75%. Massachusetts dedicates future tobacco settlement monies to its OPEB trust fund, phased-in starting in fiscal 2013.

The commonwealth contributes more than the full amount of its actuarially determined pension contribution, about \$1.9 billion in fiscal 2016. However, the state's contributions were 65.7% of our "tread water" benchmark, which is the payment covering the year's newly accrued service costs and interest on the NPL. The state's combined debt service, pension and OPEB contributions in fiscal 2016 were 20.0% of own-source governmental revenues, increasing to 23.1% if the state made its tread water contribution. The high fixed costs are partly attributable to the Commonwealth's absorption of certain costs covered by local governments in most other states.

For a more detailed discussion on Massachusetts' pension and OPEB liabilities, please refer to our most recent [rating report](#) for the Commonwealth.

### Governance

The federal highway revenues that are pledged to the GANs are not subject to annual state appropriation for debt service payments and the federal revenues are deposited with the trustee one year in advance, insulating the credit somewhat from the state governance practices. However, we note the subordinate pledge on the CTF revenues, and that in the event of a lack of authorization for the federal revenues, the GANs would also be subject to the same governance ties as the CTF bonds given the subordinate pledge on the CTF revenues. For more discussion on the CTF governance ties to the commonwealth, please see our most recent CTF report dated October 20, 2017.

### Legal Security

The GANs are secured by a senior lien on federal reimbursements with a secondary pledge on net CTF funds. If federal reimbursements are not expected to provide 1.5 times coverage of debt service, the governor is required to request an appropriation from excess CTF funds to cure the deficiency. If no appropriation is made by the legislature, the trustee is prohibited from releasing CTF funds to the commonwealth for operations. As long as projected federal reimbursements meet the 1.5 times test, the indenture also requires that funds sufficient for the succeeding year's debt service be set-aside by the trustee one year in advance of each of the December 15 and June 15 debt service payment dates.

## Use of Proceeds

The Federal Highway GANs are being issued as part of the commonwealth's Accelerated Bridge Program, with proceeds being used to finance bridge repair and construction in the commonwealth. The proceeds will also be used to advance refund certain outstanding maturities of the Series 2013 A GANs for expected net present value savings.

## Obligor Profile

The Commonwealth of Massachusetts has an estimated 2016 population of 6.8 million people and a gross state product of approximately \$507.9 billion. The state is economically well diversified and has very high wealth levels.

## Methodology

The principal methodology used in this rating was US Public Finance Special Tax Methodology published in July 2017. Please see the Rating Methodologies page on [www.moody.com](http://www.moody.com) for a copy of this methodology.

## Ratings

Exhibit 3

### Massachusetts (Commonwealth of)

Issue	Rating
Federal Highway Grant Anticipation Notes (Accelerated Bridge Program) 2017 Series A	Aa2
Rating Type	Underlying LT
Sale Amount	\$142,640,000
Expected Sale Date	11/01/2017
Rating Description	Special Tax: Transportation-Related

Source: Moody's Investors Service

© 2017 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 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](http://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 61 003 399 657 AFSL 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 1095500

## CLIENT SERVICES

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