

CREDIT OPINION

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New Issue

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Massachusetts (Commonwealth of)

New Issue - Moody's downgrades Massachusetts' CTF bonds to Aa1 and GANs to Aa2; outlook stable

Summary Rating Rationale

Moody's Investors Service has downgraded the Commonwealth of Massachusetts' Commonwealth Transportation Fund (CTF) Revenue Bond rating to Aa1 from Aaa. Concurrently, we have assigned an Aa1 rating to the state's \$326 million CTF Revenue Bonds (Rail Enhancement & Accelerated Bridge Program) 2016 Series A and \$104.3 million CTF Revenue Refunding Bonds, 2016 Series A.

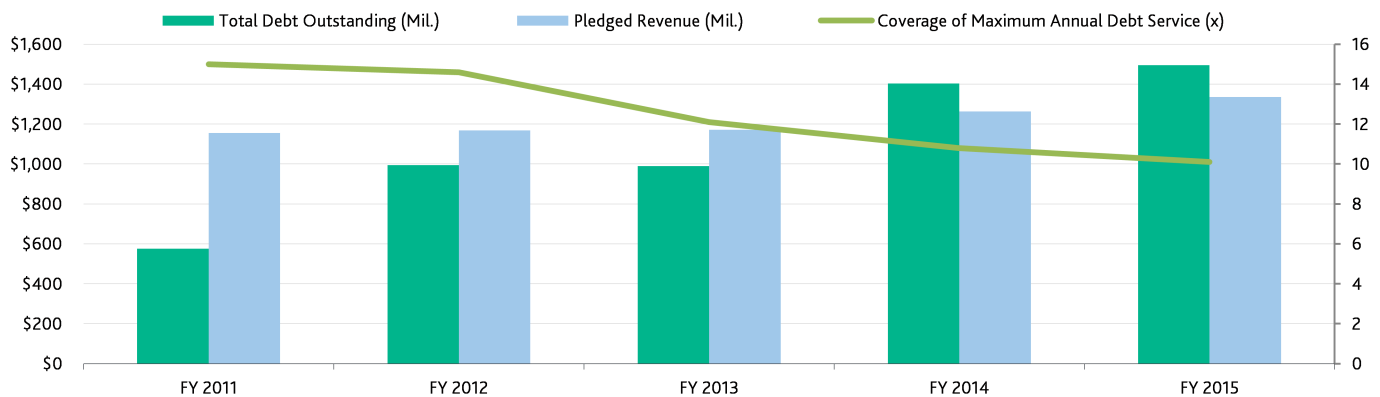
We have also downgraded the outstanding ratings on the commonwealth's Accelerated Bridge Program grant anticipation notes (GANs) to Aa2 from Aa1, and have assigned the Aa2 rating to the \$127.2 million Federal Highway Grant Anticipation Notes (Accelerated Bridge Program) 2016 Series A. All new issuances are scheduled to price on September 29, 2016. The downgrades affect \$2.1 billion of outstanding CTF bonds and \$657.0 million of outstanding GANs.

The downgrade of the CTF bonds to Aa1 is based on our revised view of the rating in relation to the [Commonwealth of Massachusetts' general obligation \(GO\) rating](#) (Aa1 stable) and reflects an evolution in our thinking about when a special tax rating can pierce a general obligation rating. That relationship caps the CTF rating at the level of the GO. While the credit fundamentals have not changed, we note the ongoing need for annual appropriation of CTF debt service, and, the flow of pledged revenues through the commonwealth, via the Department of Revenue and Registry of Motor Vehicles, prior to being transferred to the trustee.

Even at the lower rating, the CTF bonds exhibit considerable credit strengths, including healthy debt service coverage levels even after factoring in additional future debt, and strong historical revenue performance. Legal protections are strong in addition to practical considerations that incentivize the commonwealth to make the annual debt service appropriations, including the constitutional limitation on the use of transportation revenues for transportation purposes.

The downgrade of the GANs rating to Aa2 reflects the subordinate pledge on CTF revenues after debt service is paid on CTF bonds. The rating also reflects the strong coverage provided by a senior lien on Massachusetts' federal highway reimbursements, balanced by the periodic reauthorization risk of the revenue stream from the federal government. The rating also incorporates the strong bondholder protections provided by an advance set-aside of federal revenues for debt service and a two-pronged additional bonds test that limits the issuance of parity GANs.

Exhibit 1

CTF Bonds Maintain Strong Coverage Even After Additional Issuance

Source: Massachusetts CAFRs FY11-FY15; Moody's Investors Service

Credit Strengths

- » CTF - A strong additional bonds test that requires four times coverage of maximum annual debt service and the commonwealth's covenant not to alter the pledged revenues if it would result in maximum annual debt service coverage of less than four times
- » CTF - The deposit and segregation of the pledged revenues with the bond trustee and a legal structure that provides some insulation from the competing claims of the commonwealth's general obligation bondholders
- » CTF- Strong debt service coverage provided by the pledged gas taxes and motor vehicle-related fees
- » GANs - Strong coverage provided by a pledge of Massachusetts' federal highway reimbursements that became senior in June 2014 when the final trustee set-aside of debt service for the senior GANs was made
- » GANs - Additional strong coverage provided by a pledge of CTF funds after payment of senior CTF bonds

Credit Challenges

- » CTF - The need for annual legislative appropriation for debt service, somewhat mitigated by a mechanism that prohibits the use of the pledged funds for any other purpose unless that appropriation is made
- » CTF - Pledged revenues collected by the commonwealth, via the Department of Revenue and the Registry of Motor Vehicles, before being remitted to the trustee on a monthly basis, which then results in the separation of the pledged revenues
- » CTF - The aggregate limitation on debt secured by the pledged revenues is statutory and could be increased going forward
- » GANs - 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
- » GANs - Periodic reauthorization risk inherent in the federal program and uncertainty about the form of future federal highway aid programs

Rating Outlook

The outlook for the Commonwealth of Massachusetts' Commonwealth Transportation Fund bonds and Federal Highway Grant Anticipation Notes is stable. For the CTF bonds, the outlook reflects the strong legal structure of the bonds and healthy debt service coverage. For the GANs, the outlook reflects the expected levels of federal reimbursements and the backup pledge of the net CTF funds.

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.

Factors that Could Lead to an Upgrade

- » CTF - An upgrade of Massachusetts' general obligation rating
- » CTF - A change in legal structure that permits debt service to be paid without an appropriation, regardless of budget authorization
- » CTF - A change in the flow of funds that diverts the pledged revenues directly to the trustee rather than flowing through the commonwealth first
- » GANs - An upgrade to the CTF rating
- » GANs - Changes in legal structure such as stronger limitations on CTF leverage at the senior and subordinate level

Factors that Could Lead to a Downgrade

- » CTF - A downgrade to the Massachusetts' general obligation rating
- » CTF - Additional leverage, or decline in the pledged revenues that materially weakens debt service coverage
- » CTF - Non-appropriation of funds for debt service
- » GANs - A downgrade to the CTF rating
- » GANs - 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
- » GANs - Large leverage of the CTF or material weakening in the CTF revenues that reduce backup coverage

Key Indicators

Exhibit 2

Massachusetts Commonwealth Transportation Fund	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
Coverage of Maximum Annual Debt Service (x)	15.0x	14.6x	12.1x	10.8x	10.1x
Total Debt Outstanding (Mil.)	\$576	\$995	\$989	\$1,404	\$1,495
Pledged Revenue (Mil.)	\$1,155	\$1,169	\$1,172	\$1,264	\$1,336
Pledged Revenue Annual Change	1.4%	1.6%	2.4%	1.6%	5.7%
Additional Bonds Test (x)	4x	4x	4x	4x	4x

Source: Massachusetts CAFRs FY11-FY15; 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 CTF bonds are secured by a broad mix of transportation-related taxes and fees. The bonds have a first lien pledge on 73% of the commonwealth's 24 cent fuel excise tax, collected on each gallon of gasoline (other than aviation fuel), 100% of the tax collected on special fuels and liquefied gas sold in Massachusetts, and 100% of motor carrier taxes. Massachusetts increased its gas tax from 21 cents per gallon to 24 cents effective August 1, 2013 and is moderate compared to its northeast neighbors. A provision enacted by the legislature to further adjust the gas tax annually for inflation was repealed by voters in 2014.

Additionally, the bonds are secured by a first lien pledge of a variety of motor vehicle license, registration and title fees (commonly referred to as Registrar of Motor Vehicles or "RMV" fees). RMV fees were increased in fiscal years 2003, 2009 and again in 2015. After debt service is paid on the commonwealth's outstanding 1994 Trust Indenture Special Obligation Revenue Bonds (senior and subordinate bonds both closed with final maturities in 2022). The CTF bonds also are backed by the excess of 6.86 cents of the gasoline fuels excise. Combined, fuels excise taxes account for 56.4% of the pledged revenues and motor vehicle fees are 42.8%. Additionally,

the federal Build America Bond and Recovery Zone Development Bond interest subsidies received in conjunction with the 2010 issuance (which total a maximum of \$12.3 million annually) are pledged to the bonds.

The commonwealth's 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 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.

Debt Service Coverage and Revenue Metrics

The CTF pledged revenues provide strong debt service coverage. Based on fiscal 2016 CTF pledged revenues of \$1.3 billion and debt service on the outstanding bonds and the current issue, coverage of maximum annual debt service (MADS) is 8. times. Using the same fiscal 2016 revenue and based on MADS that is inclusive of an additional \$1.7 billion of CTF issuance (the outstanding and current issues, plus planned issues through 2020) coverage is a strong 5.8 times, indicating that even with higher leverage the pledged revenues can withstand another economic downturn and still maintain healthy coverage.

Historical performance of the pledged revenues is good. Consumer responses to changes in gas prices over the long term is relatively inelastic, although during fiscal 2006 the taxes and fees that are now the pledged CTF revenues declined by 4.7%, the largest decrease since fiscal 1996. During the more recent economic downturn, collections of motor fuels taxes declined by 2.8% in fiscal 2009 while RMV fees increased by 1.7%, equaling a decline in total pledged revenues of 1.1%. Since then, pledged revenues have grown annually. For fiscal 2015, the commonwealth recorded a healthy 5.7% increase in pledged revenues, reflecting an increase in registry fees implemented on July 1, 2014. The commonwealth is estimating revenues grew a modest 0.7% in fiscal 2016.

For the GANs, MADS coverage is 6.2 times based solely on federal funds. Inclusive of both federal funds and expected net CTF funds, MADS grows to a significant 18.4 times. Incorporating the additional GAN debt currently contemplated by the commonwealth, MADS coverage falls slightly to 5.1 times projected federal revenues and 15.1 times across both federal and net CTF revenues.

LIQUIDITY

The pledged sales tax stream provides timely and ample liquidity for the payment of debt service. Liquidity of the Authority is not a rating factor in the methodology.

Debt and Legal Covenants

For the CTF bonds, the additional bonds test (ABT) requires the pledged revenues to equal four times maximum annual debt service on outstanding bonds and the planned issuance in any 12 of the prior 18 months prior to issuance. A strong non-impairment covenant allows the commonwealth to reduce the pledged revenue tax rates or base but only if that action would continue to result in at least four times coverage of maximum annual debt service. Inclusion of the BAB subsidies received as part of the 2010 issue in the pledged revenues somewhat dilutes those protections but not materially; they are still strong relative to similar credits and the ability to issue new bonds under the BAB program has expired. GANs may be issued subject to a two pronged additional bonds test that requires 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

CTF bonds are issued under two programs: the Accelerated Bridge Program, which has \$1.5 billion in outstanding debt, and Rail Enhancement Program, which has \$450.0 million outstanding. Nearly \$1.7 billion is expected to be issued by 2021 to fund the programs. The commonwealth currently has \$657.0 million in outstanding federal Grant Anticipation Notes Additional, which are also used to fund the commonwealth's Accelerated Bridge Program. The commonwealth expects to issue another \$256.6 million in GANs through 2020. The ABP was created in 2010 to fund capital improvements to bridges and related infrastructure, with total authorization of approximately \$3.0 billion in debt to fund the improvements.

DEBT-RELATED DERIVATIVES

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

PENSIONS AND OPEB

Pensions and OPEB are not a major factor in Moody's special tax methodology.

Governance

Debt service for the CTF bonds is subject to annual appropriation and revenues are collected by the commonwealth before being transferred on a monthly basis to the trustee. These governance connections result in the CTF rating being capped at Massachusetts' general obligation rating.

In addition to this connection, we continue note the strong legal framework supporting the CTF pledge. The Massachusetts constitution limits the use of transportation-related revenues to transportation purposes, which we note could be interpreted broadly in certain circumstances. Additionally, the authorizing statute under which the bonds are issued, the Special Obligation Act, permits the state treasurer to enter into a trust agreement and to pledge the CTF revenues and all right and title to them to bondholders, a pledge the act says is perfected.

While revenues are collected by the commonwealth, immediately after receiving the monthly transfer of CTF funds from the state treasurer, the trustee is required to make a deposit into the Debt Service Fund equal to one-fifth interest and one-tenth principal. Once the revenues are on account with the trustee, that account is subject to the pledge created by the master trust and cannot be used for any other purpose until debt service on the CTF bonds has been paid. Finally, if no debt service appropriation is made, the trustee is prohibited from releasing any CTF revenues, precluding their use for any other purpose and giving Massachusetts strong incentive to authorize use of the funds.

The federal highway revenues that are pledged to the GANs are not subject to annual appropriation 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 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.

Legal Security

The CTF Bonds are special limited obligations of the commonwealth and are payable solely from the pledged revenues, which are primarily comprised of Motor Fuel Taxes and Registry Fees.

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 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

Proceeds from the CTF bonds will be used to fund projects that are part of the Commonwealth's Accelerated Bridge Program and Rail Enhancement Program. Major bridge projects include the replacement of the Kenneth F. Burns Memorial Bridge, replacement of the John Greenleaf Whittier Memorial Bridge and rehabilitation of the Longfellow Bridge linking [Cambridge](#) (Aaa stable) and [Boston](#) (Aaa stable).

Proceeds of the refunding bonds will refund portions of its outstanding 2012 Series A and 2013 Series A bonds for expected net present value savings of 10.5%.

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.

Obligor Profile

The Commonwealth of Massachusetts has a population of 6.7 million people and a gross state product of approximately \$420 billion. The state is economically well diversified and has very high wealth levels.

Methodology

The principal methodology used in these ratings was US Public Finance Special Tax Methodology published in January 2014. Please see the Ratings Methodologies page on www.moodys.com for a copy of this methodology.

Ratings

Exhibit 3

Massachusetts (Commonwealth of)

Issue	Rating
Commonwealth Transportation Fund Revenue Bonds (Rail Enhancement & Accelerated Bridge Programs) 2016 Series A	Aa1
Rating Type	Underlying LT
Sale Amount	\$325,965,000
Expected Sale Date	09/29/2016
Rating Description	Special Tax: Transportation-Related
Commonwealth Transportation Fund Revenue Refunding Bonds 2016 Series A	Aa1
Rating Type	Underlying LT
Sale Amount	\$104,310,000
Expected Sale Date	09/29/2016
Rating Description	Special Tax: Transportation-Related
Federal Highway Grant Anticipation Notes (Accelerated Bridge Program) 2016 Series A	Aa2
Rating Type	Underlying LT
Sale Amount	\$127,165,000
Expected Sale Date	09/29/2016
Rating Description	Special Tax: Transportation-Related

Source: Moody's Investors Service

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