S&P Global Ratings

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Massachusetts Bay Transportation Authority; Sales Tax

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Credit Profile		
US$95.605 mil sr sales tax bnds VRDO ser 2018 A-2 due 07/01/2026		
Long Term Rating	AA/A-1+/Stable	New
US$95.605 mil sr sales tax bnds VRDO ser 2018 A-1 due 07/01/2026		
Long Term Rating	AA/A-1+/Stable	New

Rationale

S&P Global Ratings assigned its 'AA/A-1+' rating to Massachusetts Bay Transportation Authority's (MBTA) senior sales tax bonds, variable-rate demand obligations (VRDOs), 2018 series A consisting of $95.605 million 2018 subseries A-1 and $95.605 million 2018 subseries A-2. The outlook on the long-term component of the rating is stable.

The series 2018A-1 and 2018A-2 bonds are being issued as VRDOs and will receive liquidity support in the form of standby-bond purchase agreements (SBPA) from State Street Bank and Trust Co. The long-term component of the rating reflects MBTA's credit characteristics. The short-term component of the rating reflects our assessment of the SBPAs provided by State Street.

The SBPA will cover principal and 187 days' interests at a maximum 10% annual rate for the purchase price of bonds that are not successfully remarketed during the weekly interest-rate mode.

The SBPA is scheduled to expire on July 2, 2023, at which time we will remove the short-term component of the rating unless the SBPA is extended or terminated beforehand according to their terms. The SBPA provider's obligation to purchase unremarketed tendered bonds will automatically terminate should certain events of default set forth in the SBPA occur. These events, which we deem consistent with our published criteria, include the lowering of the rating on the bonds below 'BBB-'.

At the same time, S&P Global Ratings affirmed its 'AA' long term rating on the authority's $179.5 million closed prior-lien debt (of which $146.6 million is variable rate); its 'AA' rating on $3.89 billion parity senior sales tax debt outstanding; its 'AA' rating on $230.1 million subordinated sales tax bonds outstanding; and its 'AA' rating on third-lien federal Transportation Infrastructure Finance and Innovation Act/Railroad Rehabilitation & Improvement Financing (TIFIA/RRIF) loans. The outlook on all bonds and loans outstanding is stable.

The senior sales tax bonds are secured by a pledge of the greater amount of either a statewide sales tax defined as a 1% statewide sales tax, plus a gross pledge of $160 million of additional state sales tax per year that MBTA receives for operational funding; or an inflation-adjusted sales tax revenue base amount distributed by the Commonwealth of Massachusetts. The senior sales tax pledge is subordinate to prior closed-lien general transportation bond obligations outstanding issued before 2000, to the extent that the MBTA does not certify that its general revenues can cover these prior-lien obligations in its annual budget from general revenues. In addition, pledged to the senior sales tax bonds are surplus assessments on 175 cities and towns, after payment of debt service on separate MBTA assessment bonds that have a first lien on those revenues.

The subordinate sales tax pledge securing the series 2017A subordinate sales tax bonds consists of the same revenue pledged to the senior sales tax bonds, after payment of senior-lien sales tax bond debt service and senior-lien debt service reserve replenishments, if any.

In addition, 2017 series B federal TIFIA and RRIF loans are secured by a third-lien sales tax revenue bond after the subordinate series 2017A sales tax bonds. The TIFIA/RRIF loan agreement also specifies that the loan's junior lien changes to parity with senior-lien bondholders in the event MBTA files for bankruptcy or commences bankruptcy-like actions; however, we believe that as a state agency MBTA is not permitted to file for bankruptcy under the federal bankruptcy code.

The MBTA will not draw on the TIFIA/RRIF federal loans until after the MBTA's positive train control (PTC) capital project has been completed, expected by December 2021, although the federal TIFIA/RRIF fixed loan rate is being set currently with the signing of the federal loan agreement. Whether MBTA will ultimately draw on future TIFIA or RRIF loans, or instead issue its own bonds secured by either a subordinate or senior sales tax lien, will depend on future market conditions after PTC project completion. In the meanwhile, the PTC capital project is being funded by short-term subordinate BANs and commercial paper (CP), which will be refinanced later into long-term loans or federal loans.

Our MBTA sales tax bond ratings are based on what we perceive to be the stronger pledge of either the state base revenue amount or pledged MBTA sales tax revenue. Currently, we view the pledge of state-guaranteed base revenue as of stronger credit quality as it is larger than MBTA sales tax revenue and backed by the commonwealth's guarantee of all sales tax Massachusetts collects. We do not make a rating distinction among the senior, subordinate, and TIFIA/RRIF liens, as we currently view all liens as linked to the credit quality of the commonwealth, which provides Massachusetts with the state base revenue securing the bonds. Both senior and subordinate sales tax bonds outstanding will continue to have an open lien permitting additional debt issuance using the same additional bonds test (ABT) coverage multiple, while no additional third-lien subordinate sales tax debt on parity with the TIFIA/RRIF loans can be issued beyond the currently authorized amount; as a consequence, we expect debt service coverage based on pledged state revenue to remain high and of similar magnitude in the near term for all liens. We believe the lack of a debt service reserve on the subordinate bonds and the TIFIA/RRIF loans is mitigated by strong debt service coverage levels.

The 'AA' ratings reflect the strength of Massachusetts (AA/Stable GO rating) to provide pledged sales tax revenue, in that the state base revenue amount, which is currently higher than the pledged sales tax revenue, is payable from total state sales taxes, and is not subject to state appropriation. The potential dependence on state base revenue, in our view, creates an indirect link to state credit quality.

Other rating factors include:

- A large and diverse statewide economy of 6.9 million generating the pledged sales tax;
- Strong 2.35x coverage of maximum annual debt service (MADS) on combined senior, subordinate, and TIFIA/RRIF

sales tax liens by fiscal 2019 pledged state base revenue, assuming unhedged variable-rate debt carries a 7% interest rate and BANs outstanding are refunded by proposed future subordinate sales tax bonds. MBTA projects that future annual debt service coverage on combined senior, subordinate, and TIFIA/RRIF sales tax revenue bonds will always remain at least 2.00x or greater, using the fiscal 2019 state base revenue amount, even after anticipated additional debt issuance in 2019 and 2020 and the BANs have been refunded;

- MADS coverage of all three liens is also strong by pledged MBTA sales tax revenue at 2.23x, using the most recent fiscal 2017 pledged sales tax revenue alone;
- Coverage of senior-lien MADS alone is slightly higher at 2.54x by the fiscal 2019 base revenue amount, while second-lien MADS coverage of combined senior-lien and subordinate-lien sales tax debt is 2.38x;
- Nondiversion and nonimpairment covenants that prevent reduction of the pledged sales tax rate or diversion of pledged revenues, while pledged sales tax and state base sales tax revenue is not subject to annual appropriation; and
- Pledged revenues that pay debt service on a gross basis before payment of MBTA operations, so that collection of pledged revenues is not dependent on the MBTA providing transportation services.

Offsetting factors include a currently modest exposure to unhedged variable-rate debt, which comprises about 10% of MBTA total debt ($528 million), as well as the potential for substantial additional bonding to meet MBTA's large capital needs, which we believe could lower coverage closer to the 1.5x ABT based on sales tax revenues. The current five-year capital improvement plan (CIP) is significantly higher than it was two years ago, and involves more bonding, with about $1.85 billion of additional sales tax bonds projected to be sold over the next five years, although matched with a significant scheduled debt paydown.

The 2018 series A VRDOs are being issued to refund an existing direct placement bank loan, which experienced an interest rate reset following the passage of federal tax reform that lowered corporate tax rates. MBTA will no longer have any direct placement debt after this refunding.

MBTA is currently operating under a state oversight board, following various operational issues in the winter of 2015. It estimates a five-year 2019-2023 MBTA CIP of $8.0 billion, up from a five-year CIP estimate last year for 2018-2022 of $7.4 billion, and its five-year CIP from two years ago of $6.8 billion. The 2019-2023 CIP includes a portion of the funding of the authority's $2.6 billion green line rail extension, which will also receive funding from federal and local sources. MBTA expects approximately $1.85 billion of its current five-year CIP will be funded with sales tax revenue bonds, $1.1 billion from state rail enhancement bonds, and $4.0 billion from federal assistance, including federal TIFIA/RRIF loans.

Although current debt service coverage is strong, we believe coverage could potentially drift downward again closer to the ABT, as occurred before the 2015 addition of the extra $160 million pledge to the bonds of state sales tax on a gross basis that is used for MBTA operations, in light of the large capital plan, and the potential for cost overruns or expanded borrowing. The $1.85 billion of additional sales tax debt MBTA plans to issue over the next five years is up from $600 million of additional bonds that were expected in MBTA's five-year CIP from two years ago. We believe the potential exists for additional capital needs to bring the system up to a state of good repair and for potential cost escalations on rail line extensions that could raise future bonding needs. Currently, MBTA plans to issue $500 million of additional parity debt in each of fiscal years 2019 and 2021.

Before a commonwealth enabling act in 2000, MBTA issued general revenue bonds backed by the commonwealth, and Massachusetts backfilled MBTA operating deficits after a time lag. Parity sales tax bonds issued since July 1, 2000, have been backed by a lien on the 1% statewide sales tax (which excludes sales tax on meals) plus the recent addition of $160 million per year of state sales tax, subordinate to the prior-lien bonds issued before 2000, with excess sales tax revenues funding subordinate debt service and MBTA general operations.

In addition, the commonwealth created a formula for a guaranteed base amount of pledged sales tax revenue, should pledged sales tax revenue decline, or not increase as fast as inflation. This base amount was raised by an extra $160.0 million in fiscal 2015, and subsequently increases annually by the rate of the Boston CPI up to 3% per year, or lower to the extent that the rate the CPI increases is less than 3% but more than the sales tax rate increase (in which case the base amount increase is the rate of increase in sales tax). If neither the CPI nor the sales tax increase in a given year, the base amount is held flat for that year. The base amount has increased to $1.032 billion, due in fiscal 2019, compared with $767 million in 2009. The commonwealth collected $977 million of pledged sales tax fiscal 2017, compared with $992 million under the 2017 base amount. MBTA also receives other commonwealth money and federal revenues that are not pledged to the sales tax bonds. We understand that both the pledged dedicated sales tax amount and the base amount do not need a legislative appropriation to be used to pay debt service.

The senior-lien bonds will have a debt service reserve funded at one-half the lesser of sales tax bond MADS, 125% of average annual debt service, or 10% or the original par amount of the bonds, while the subordinate bonds and the TIFIA/RRIF loans will not have a debt service reserve. In view of prospects that coverage will remain high for both liens, we do not believe lack of a debt service reserve is a significant credit differentiator between the senior and subordinate bonds. MBTA is in process of gathering bondholder consent to convert the senior bond debt service requirement into an aggregate amount, instead of a per series requirement, by voting new bond issues in favor of the amendment.

The 1% pledged sales tax, plus $160 million per year, are part of the commonwealth's overall 6.25% sales tax rate. State sales tax revenue declined in the last recession, with a cumulative decline of 7.9% in fiscal years 2008-2010. However, as Massachusetts' economy recovered, sales tax has since risen, increasing 2% most recently in fiscal 2017. In the long term, however, sales tax has not increased as fast as Massachusetts' base revenue amount.

A voter initiative is gathering signatures to roll back Massachusetts' sales tax rate on the November 2018 ballot. However, if the initiative were to roll back the sales tax rate, the sales tax bonds would still be secured by the same pledged sales tax rate as before, even if the commonwealth's overall sales tax rate declined.

Combined MADS coverage from all liens on general transportation revenue bonds, senior and subordinate sales tax bonds, and TIFIA/RRIF loan debt service is strong, in our opinion, at what we calculate as 2.23x by historical fiscal 2017 pledged actual sales tax revenues, and 2.35x by the 2019 certified state-guaranteed base revenue amount, assuming an interest rate of 7% on unhedged variable-rate debt. Coverage on senior sales tax revenue bond MADS alone of $406 million in 2022 will be 2.54x. Combined prior general transportation revenue, senior, and subordinate sales tax bond and third-lien loan MADS after issuance of the federal loans is projected to be $438 million in fiscal

2024, assuming no other additional bonds are sold and assuming a 7% interest rate on unhedged variable-rate debt and a synthetic swap interest rate for debt hedged with interest rate swap agreements, and also assuming BANs are refunded with future long-term debt. It does not include federal interest subsidies on Build America bonds or debt service reserve interest earnings. Assuming future bond sales in 2019 and 2020, MBTA projects combined MADS would rise to $489 million in 2024, which would still be covered 2.1x by the 2019 state-guaranteed base revenue amount.

The authority has $528 million of unhedged sales tax VRDOs and $105 million of unhedged BANs all secured by sales tax revenue, which will comprise about 10% of total sales tax-secured debt.

MBTA has three interest rate swap agreements associated with $150.5 million of variable-rate sales tax-secured bonds and sales tax-secured CP. The authority is not required to begin posting collateral for any of its swap agreements in the event of negative swap valuations until the sales tax rating on the MBTA falls below 'A'. Immediate swap termination events with notice do not go into effect unless the rating on the MBTA or Massachusetts falls below 'BBB-', although certain swap termination events with notice can occur if the sales tax rating falls below 'A-'. Any swap termination payments would be subordinate to payment of sales tax bond debt service. We believe that termination events are unlikely at current rating levels.

The ABT is the same for both senior sales tax bonds and subordinate sales tax bonds, the only difference being that the definition of debt service for the subordinate sales tax bond ABT includes combined annual debt service of both senior and subordinated debt. This, in essence, requires all bonds to meet the subordinate ABT. The ABT requires either 1.0x coverage of combined prior general transportation bonds and combined senior and subordinate sales tax bond MADS by the base revenue amount, or 2.0x coverage by historical sales tax revenues, net of prior general transportation bond debt service; and 1.5x coverage of sales tax revenue bond debt service and all prior general transportation debt obligations on a combined basis by historical sales tax revenue. The third-lien TIFIA/RRIF lien is closed to new debt after the current authorization of federal loan amounts have been fully drawn on.

(For more information on Massachusetts and its economy, please refer to the most recent state GO analysis published April 9, 2018, on RatingsDirect.)

Outlook

The stable outlook reflects our view of MBTA's ability to issue future additional parity bonds under its senior- and subordinate-lien ABTs based on the size of state base revenue, which is larger than directly pledged sales taxes, and the credit quality of the state base revenue as reflected in the Massachusetts GO rating. Should we lower our GO rating or revise our outlook on the commonwealth, we could potentially lower our ratings on the MBTA sales tax bonds and the TIFIA/RRIF loans. However, should we revise our outlook on Massachusetts to positive, or if we believe the creditworthiness of MBTA's direct sales tax pledge strengthens enough so that it is higher than the pledge of the state base amount, we could potentially revise our outlook on the senior and subordinate sales tax bonds to positive. Although future refundings on senior sales tax bonds into subordinate-lien debt could raise the debt service coverage differential between senior and subordinate debt, we would be unlikely to raise the senior-lien bond rating or revise the outlook alone because the senior bonds will have the same ABT as the subordinate-lien bonds and the credit quality of the pledged base revenue amount is linked to the state GO rating.

Our outlook also assumes consistently strong debt service coverage over our two-year outlook horizon, despite capital pressures. Significant additional debt leverage that lowered debt service coverage closer to the 1.5x sales tax coverage test portion of the ABT, or a debt structure that included a significant amount of variable-rate or short-term debt in a rising interest rate environment, could also result in our lowering the rating or revising the outlook to negative.

Operations

MBTA runs the oldest and fifth-largest transit system in the country, operating subway, bus, and commuter rail service throughout eastern Massachusetts. The authority is responsible for an estimated 1.3 million passenger trips each business day and operates more than 38 miles of rapid transit rail routes, and 26 miles of additional light rail. It owns more than 1,000 buses, which cover 763 miles of routes. The authority's commuter rail service operates more than 512 units of passenger rail equipment, providing service between Boston and 134 outlying rail stations. In addition, MBTA provides a broad range of other passenger services including commuter boats. Its territorial area has increased to 175 cities primarily in the greater Boston area, extending north to the New Hampshire border, west to the city of Worcester, and south into Providence, R.I., with a total service area population of about 4.8 million. MBTA has estimated about 55% of all trips to Boston are provided by public transportation.

The authority employs approximately 5,440 full-time and 600 part-time employees, most of which are represented by 29 labor unions, and is currently operating under a labor contract expiring June 30, 2021. In fiscal 2017, the last audited year, MBTA operating expenses less depreciation were $1.8 billion; this does not include debt service, which is deducted from sales tax before being credited to operating funds. Its unrestricted cash and temporary cash investment position was $338.4 million at fiscal year-end June 30, 2017, up from $272.5 million. As for most transit systems, MBTA relies heavily on intergovernmental operating subsidies to pay for operations. In 2017, it received $1.3 billion from state sales taxes, state contract assistance, and local assessments.

MBTA was created in 1964. In 2015, following operational difficulties during the winter, the state formed a five-member financial control board to exercise most MBTA powers through at least 2018, which has been extended to 2020. The control board is mandated to make operational and fiscal improvement and is temporarily exempt from anti-privatization laws. The control board includes three members of the Massachusetts Department of Transportation (MassDOT), and had obligations relative to the MBTA that are vested in the MassDOT board.

Apart from powers exercised by the control board, MBTA has an 11-member governing board, appointed by the governor, which is the same board as for the MassDOT, although MBTA exists as a separate legal entity within the department. Members serve four-year terms. The enabling act does not provide for MBTA to be a debtor under the federal bankruptcy code.

Massachusetts Bay Transportation Authority Pledged Revenues

Fiscal year	Total statewide sales tax receipts ($000s)*	MBTA carve-out of total sales tax receipts ($000s)§	% increase (decrease)§	Base revenue amount (BRA) (floor) ($000s)§	Difference in BRA versus dedicated 1%
1996	2,252,083	450,417	5.4	N/A	N/A
1997	2,494,702	498,940	10.8	N/A	N/A
1998	2,572,560	514,512	3.1	N/A	N/A
1999	2,833,644	566,603	10.1	N/A	N/A
2000	3,108,430	621,433	9.7	N/A	N/A
2001	3,273,817	654,591	5.3	645,000	9,591
2002	3,193,947	638,789	(2.4)	664,350	(25,561)
2003	3,196,009	639,202	0.1	684,281	(45,079)
2004	3,211,141	642,228	0.5	684,281	(42,053)
2005	3,330,838	666,167	3.7	704,809	(38,642)
2006	3,420,209	684,042	2.7	712,586	(28,544)
2007	3,458,885	691,777	1.1	733,963	(42,186)
2008	3,453,776	690,755	(0.1)	755,982	(65,227)
2009	3,239,083	647,817	(6.2)	767,057	(119,240)
2010	3,852,057	637,084	(1.7)	767,057	(129,973)
2011	4,091,485	654,643	2.8	767,057	(112,414)
2012	4,190,558	670,494	2.4	779,092	(108,598)
2013	4,262,750	682,046	1.7	786,867	(104,821)
2014	4,546,992	727,519	6.7	799,295	(71,776)
2015	4,775,641	924,103	27.0§	970,637§	(54,942)
2016	4,990,760	958,522	3.7	986,274	(27,751)
2017	5,104,756	976,761	1.9	992,192	(15,431)
2018	N/A	N/A	N/A	1,006,807	N/A
2019	N/A	N/A	N/A	1,032,068	N/A

*Total state sales tax rate was 5.00% until 2009, when it increased to 6.25%. §Pledged sales tax was equal to a 1% rate until 2015, when it was increased to 1% plus $160 million per year; 2015 increase without extra $160 million would have been 5.0%. The BRA floor amount is established by the state comptroller each year using a formula including CPI. By law, the BRA formula cannot increase more than 3% annually, except it was also increased $160 million in 2015. N/A--Not applicable. Source: Massachusetts Department of Revenue.

Ratings Detail (As Of June 25, 2018)

Massachusetts Bay Transp Auth sr sales tax		
Long Term Rating	AA/Stable	Affirmed
Massachusetts Bay Transp Auth sr sales tax (AGM) (MBIA)		
Unenhanced Rating	AA(SPUR)/Stable	Affirmed
Massachusetts Bay Transp Auth subord Sales Tax		
Long Term Rating	AA/Stable	Affirmed
Massachusetts Bay Transp Auth subord Sales Tax		
Long Term Rating	AA/Stable	Affirmed
Massachusetts Bay Transp Auth subord Sales Tax		
Long Term Rating	AA/Stable	Affirmed

Ratings Detail (As Of June 25, 2018) (cont.)		
Massachusetts Bay Transp Auth SALESTAX		
Long Term Rating	AA/A-1+/Stable	Affirmed
Massachusetts Bay Transp Auth (PTC Project RRIF Loan) subord sales tax		
Long Term Rating	AA/Stable	Affirmed
Massachusetts Bay Transp Auth (PTC Project TIFIA Loan) subord sales tax		
Long Term Rating	AA/Stable	Affirmed
Massachusetts Bay Transp Auth sr sales tax		
Unenhanced Rating	AA(SPUR)/Stable	Affirmed

Many issues are enhanced by bond insurance.