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CREDIT OPINION
14 May 2020

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Massachusetts Bay Transportation Authority

Update to credit analysis on sales tax bonds

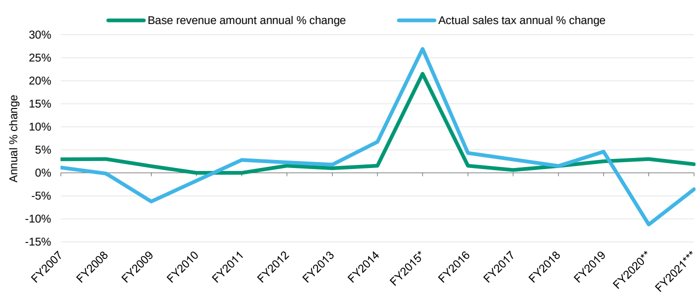
Summary

Massachusetts Bay Transportation Authority (MBTA, Aa2 stable) is well positioned to weather this difficult environment for mass transit credits. MBTA's pledged sales tax revenues cannot decline because of a statutory revenue floor (see Exhibit 1). This credit feature, a strength in regular times, is particularly powerful during economic declines as the state is all but certain to see sharp declines to sales tax collections. It positions MBTA to weather the coronavirus-related economic shutdown better than other special tax mass transits.

Nonetheless, as an enterprise, MBTA is reliant on fares: they are nearly one-third of its overall revenue. MBTA ridership has declined dramatically as social distancing regulations continue, but the authority has two key tools to manage through this difficult scenario: 1) healthy liquidity bolstered by a nearly $1 billion aid package from the federal government; and 2) continued strong financial and operational support from the Commonwealth of Massachusetts (Aa1 stable). New long-term bonds will free up capacity in the authority's commercial paper program while still maintaining healthy coverage of 2.5 times across both sales tax liens.

We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety. We do not see any material immediate credit risks for MBTA. However, the situation surrounding the coronavirus is rapidly evolving and the longer term impact will depend on both the severity and duration of the crisis. If our view of the credit quality of the authority changes, we will update our opinion at that time.

Exhibit 1
Statutory revenue floor prevents sales tax revenue from declining during stressed economic environments



*In FY15 $160M was added to the BRA **Actual sales taxes projected as of April 27, 2020 ***BRA reflects statutory authorization; actual sales tax reflects Moody's projected declines of -11.2% in FY20 and -3.5% in FY21
Source: Massachusetts Bay Transportation Authority; Moody's Investors Service

Credit strengths

» Pledge of 1% commonwealth-wide sales tax plus $160 million annually, with statutorily guaranteed sales tax floor that insulates MBTA from downward economic fluctuations

» Active state management including establishment of an oversight board has resulted in improved management practices

Credit challenges

» High long-term debt burden relative to similarly rated sales tax-backed issuers

» Sizable long-term capital needs to maintain a state of good repair for existing infrastructure that will result in additional leverage

Rating outlook

The stable outlook reflects our view that despite operating pressures that will mount as the global pandemic negatively impacts transits nationwide, MBTA's creditors are protected by the commonwealth-guaranteed sales tax floor.

Factors that could lead to an upgrade

» Significant increase in pledged revenue and maintenance at higher coverage levels

» Stronger bondholder protections, such as a higher additional bonds test

» Continued operational improvement, including reduction of annual structural operating deficit, progress toward reducing capital backlog and/or evidence of additional ongoing state support

Factors that could lead to a downgrade

» Significant additional leveraging of sales tax revenue that leads to lower debt service coverage

» Economic decline across Massachusetts that leads to weaker credit quality or challenges to its ability to subsidize the MBTA

» Operating strain, including an inability to reduce structural deficit while also funding growing capital needs

Key indicators

Exhibit 2

Massachusetts Bay Transportation Authority					
Credit background					
Pledged revenues	Gross 1% commonwealth wide sales tax plus $160 million annually from the Commonwealth and net assessment revenues				
Legal structure					
Additional Bonds Test *	1.0x (all liens)				
Open or Closed Lien	Open (all liens)				
Debt Service Reserve Fund requirement	Senior: 50% of the 3 prong test Subordinate: None PTC Loan: None				
Coverage					
MADS coverage**	Sales taxes: 2.5x Sales taxes + net assessment: 2.8x				
Trend analysis					
Fiscal year	**2015**	**2016**	**2017**	**2018**	**2019**
Debt outstanding - all long-term sales tax ($mil)***	$3,932	$4,024	$3,858	$4,236	$4,416
Sales tax revenue - base revenue amount ($mil)	$971	$986	$992	$1,007	$1,032
Sales tax revenue (annual % change)****	21.5%	1.5%	0.6%	1.5%	2.5%
Annual debt service coverage - sales tax revenue (x)	2.90	2.90	2.40	2.50	2.50

*Two different ABT tests must be met; see Debt and Legal Covenants section for more detail **Reflects post-Series 2020B coverage, including full draw down of federal loans ***Reflects all sales tax debt outstanding plus full amount of authorized PTC loan ****2015 increase reflects $160 million statutory increase to BRA
Source: Massachusetts Bay Transportation Authority FY15-FY19 Audits; Moody's Investors Service

Profile

The MBTA is the oldest and fifth largest transit system in the country, providing transportation service through subway, trackless trolley, trolley, bus and commuter rail service throughout the eastern portion of Massachusetts and into the northern portion of Rhode Island (Aa2 stable). There are approximately 1.3 million passenger trips on average per business day and MBTA operates over 38 miles of rapid transit rail routes. Service is also provided by streetcars and light rail vehicles on 26 miles of additional rail routes. The commuter rail system serves Boston and 131 outlying stations on a nearly 400 mile track system. Three ferry routes provide year-round service to popular destinations, including Logan International Airport, with two more ferries operated on a seasonal basis.

Detailed credit considerations

Tax base and nature of pledge

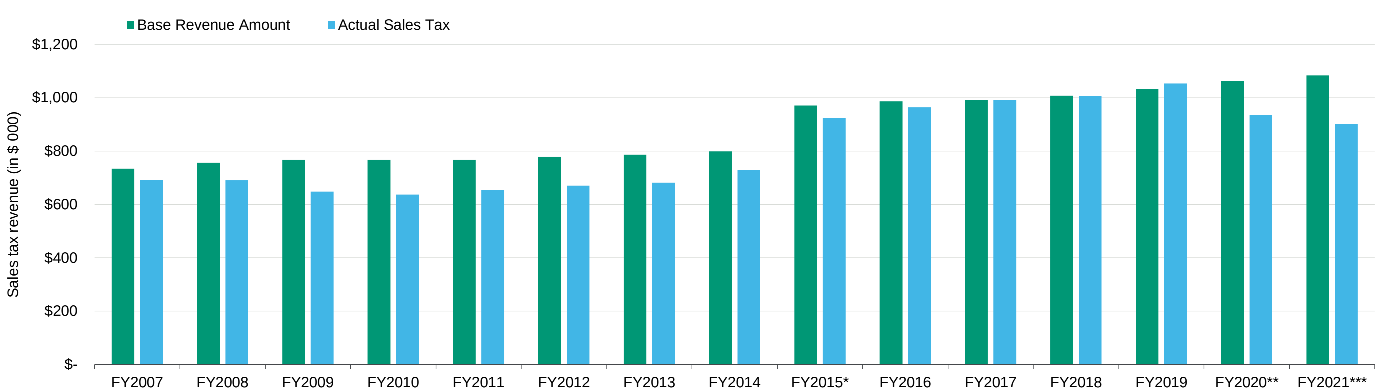
MBTA's senior sales tax bonds are secured by a gross pledge of 1% of the statewide sales tax plus $160 million annually, along with a subordinate lien on local government assessment revenue after assessment bond debt service. The pledged sales tax is allocated from the commonwealth's pre-August 1, 2009 5% sales tax.

Sales tax collections have generally performed well over the last several years (see Exhibit 1), but the authority is completely insulated from declines in actual collections. Per state statute, MBTA's sales tax revenue is protected by a commonwealth-guaranteed minimum annual amount. The floor, or the Base Revenue Amount, increases at CPI or the sales tax growth rate capped at 3% for the preceding year annually and cannot decline. The growth rate for fiscal 2021 was certified in March at nearly $1.1 billion, resulting in a five year annual growth rate of 1.9%. This growth rate does not include the fiscal 2015 $160 million increase to Base Revenue Amount, replacing the annual appropriation received in fiscal years 2010 to 2014. The amount generated by the dedicated 1% sales tax has exceeded the guaranteed minimum amount in each year from fiscal 2002 through fiscal 2019.

The floor provides protection against annual fluctuations in an otherwise economically sensitive revenue stream, a unique attribute for MBTA and a key bondholder protection. For example, when actual collections declined by nearly 8.0% peak-to-trough during the Great Recession MBTA's sale tax revenue was a constant $767 million (see Exhibit 3). We estimate that the economic downturn, caused by efforts to stem coronavirus, will result in a 15% drop in all tax revenue across the states between fiscals 2019 and 2021. MBTA's sales taxes will not decline because the fiscal 2021 (which starts July 1) base revenue amount has already been certified at 1.9% above this year's amount.

Exhibit 3

Moody's projecting actual tax collections will decline by 15% through fiscal 2021



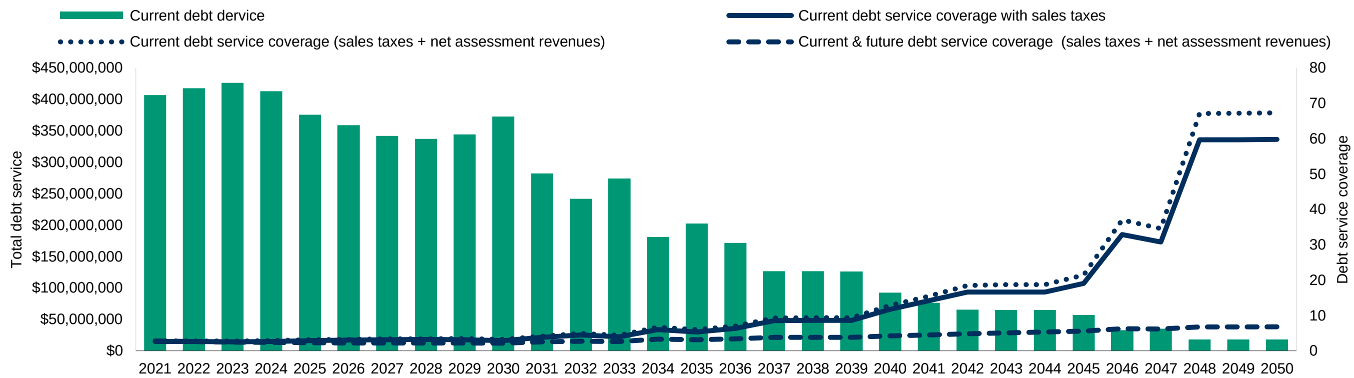
*In fiscal 2015 an additional $160M was added to the Base Revenue Amount **Actual sales tax collections projected as of April 27, 2020 ***Base Revenue Amount reflects statutory authorization; actual sales tax reflects Moody's projected declines of -11.2% in fiscal 2020 and -3.5% in fiscal 2021
Source: Massachusetts Bay Transportation Authority; Moody's Investors Service

Debt service coverage and revenue metrics

Current projections reflect maximum annual debt service (MADS) coverage on the senior and subordinate lien bonds of 2.54 times using the fiscal 2021 floor of nearly $1.1 billion and fiscal 2023 debt service of $426 million.[1] MADS coverage improves to 2.76 times of combined debt service when including assessment revenue that is available on a subordinate basis after debt service payments on the MBTA's assessment bonds (see Exhibit 4). The authority's fiscal 2021-2025 capital plan assumes $2.7 billion of new debt to fund reliability, modernization and expansion projects, including additional federal RRIF loans. Factoring in future planned issuance, MADS coverage remains greater than two times holding pledged sales tax and net assessment revenue flat.

Exhibit 4

Coverage remains greater than 2 times even with flat revenue



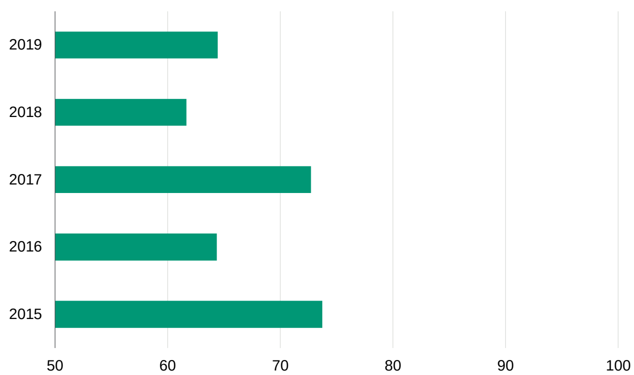
Source: Massachusetts Bay Transportation Authority; Moody's Investors Service

LIQUIDITY

The pledged revenue provides timely and ample liquidity for the payment of debt service. As of April 24, MBTA reports approximately 60 days cash on hand (see Exhibit 5), with $379.8 million in available liquidity for operating and capital expenses. The authority has additional sources of liquidity it can tap, if necessary. After the current issuance it will have access to $250 million via its commercial paper program, with liquidity support provided by an agreement with TD Bank, N.A. (A1(cr)/P-1(cr)) that expires December 10, 2021. In addition, MBTA has a $50 million revolving credit facility with UBS AG (Aa3 senior unsecured) (see Exhibit 6). Not included in the liquidity amounts is the $827 million the authority expects to receive from the federal CARES Act, which can be used to pay for operating costs, make up for lost revenue and pay for coronavirus-related expenditures.

Exhibit 5

Going into the downturn the authority maintained stable cash balances in excess of 50 days cash on hand...



Source: MBTA FY2015-FY2019 audits

Exhibit 6

...post issuance the authority will have nearly $700 million of total liquidity sources

MBTA post-issuance available liquidity sources		in $ millions
Available cash and investments		**$379.8**
Commercial paper		**$250.0**
Series A	*$100.0*	
Series B	*$150.0*	
Liquidity facitlities		**$50.0**
UBS Revolving Credit Facility	*$50.0*	
Total		**$679.8**

*MetLife facility has been approved by the board but not yet executed

Source: MBTA Fiscal and Management Control Board Presentations; MBTA FY19 Audit

Debt and legal covenants

Leverage is constrained by a two part additional bonds test (ABT), one that looks to sales tax collections (actual and the base revenue amount) and another that includes net assessment revenues. Each test must be met before issuing additional sales tax bonds, including a requirement that the base revenue amount provides minimum coverage of 1.0 times prior obligations, net senior and net subordinated sales tax bonds. Creditors also benefit from a debt service reserve funded at half of the least of a three-pronged test (10% of proceeds of sales tax bonds, 125% of average annual debt service and maximum annual debt service). The subordinate lien has the same ABT but no debt service reserve fund.

MBTA entered into an agreement with the US Department of Transportation (USDOT) for two loans to fund its Positive Train Control project. The TIFIA loan, which could be sized up to $162 million and the RRIF loan, sized up to $220 million, can be accessed upon substantial completion of the PTC project and used to repay the authority's outstanding bond anticipation notes (BANs) and to fund other construction costs. The loans benefit from a number of legal protections, the most notable being the springing lien that puts debt service for the loans on parity with senior lien debt upon the occurrence of a bankruptcy related event. Bankruptcy related events include MBTA missing two consecutive loan repayment dates, MBTA's insolvency or it being placed under the control of a receiver. The loans also benefit from other standard covenants, including a 1.0 additional bonds test, based on the sales tax floor, but lack a debt service reserve fund. The MBTA is in conversation with USDOT to refinance its existing loan and expand it to fund its Automatic Train Control and Fiber Resiliency projects.

For all sales tax bonds, commonwealth statute requires sales tax revenue to be deposited into a special fund held by the state treasurer in trust for bondholders. The statute also includes a covenant by the commonwealth that it will not divert the revenue streams or reduce them below their specified floor amount. Bond counsel has opined that these represent valid contractual pledges that are binding on future legislatures.

DEBT STRUCTURE

As of the close of fiscal 2019 MBTA had $5.7 billion of debt outstanding across three different revenue pledges: sales tax, assessment and parking revenue (see Exhibit 7).

MBTA's general transportation system (GTS) bonds (also known as prior obligations and rated Aa1 stable) are payable from general system revenue but are ultimately secured by the general obligation guaranty of the commonwealth. MBTA also uses its sales tax receipts to pay the GTS bonds, which have a final maturity in 2030 and a closed lien. Should the authority fail to appropriate for debt service, then GTS debt service is paid before senior and subordinated sales tax debt service.

The authority's parking revenue bonds, a modest 5% of outstanding debt are payable from gross parking revenue from the vast majority of the authority's commuter rail parking lots. Because ridership has plummeted over the last two months as the economy came to a standstill parking revenue has dropped similarly. Favorably, MBTA has stated its commitment to pay debt service on these bonds using all legally available revenue until it refunds the parking bonds into the sales tax credit, which is expected to occur next spring.[2]

Exhibit 7
Nearly all of MBTA's outstanding debt is paid from revenue streams that are protection by statutory collection floors

MBTA Debt Outstanding Overview

Credit	Rating	Priority of Payment	Pledge		FY19 Debt (in $ 000)
GTS/Prior Obligations*	Aa1/STA	Super senior	General system revenues but paid w/ sales taxes; ultimately secured by the GO guaranty of CW	$	160,680
Senior Sales Tax	Aa2/STA	1st	Gross 1% statewide sales tax, with collection floor, plus $160M annually; sub lien on net assessment revenues	$	3,341,565
TIFIA/RRIF**	Aa2/STA	3rd to 1st via springing lien	Gross 1% statewide sales tax, with collection floor, plus $160M annually; sub lien on net assessment revenues	$	382,000
Subordianted Sales Tax Bonds	Aa3/STA	2nd	Gross 1% statewide sales tax, with collection floor, plus $160M annually; sub lien on net assessment revenues; sub to senior lien	$	421,325
Subordianted Sales Tax BANs	Aa3/STA	2nd	Gross 1% statewide sales tax, with collection floor, plus $160M annually; sub lien on net assessment revenues; sub to senior lien	$	271,095
Assessment Revenue	Aa1/STA	N/A	GO of 175 communities, paid directly from local aid flowing from Mass; sub lien on net sales tax revenues	$	651,035
Parking Revenue	A1/STA	N/A	Gross pledge of system-wide parking revenues	$	304,585
Commercial Paper***	P-1	1st	Liquidity facility funds can be used to pay principal and interest; interest on the notes may be repaid with sales taxes, a payment that is on parity with senior lien sales tax bonds	$	250,000
Total				**$**	**5,782,285**

*If debt service is not appropriated in budget, then GTS debt service must be paid out of gross sales tax reviews before senior sales tax debt
**Debt outstanding reflects full amount of program; current draw amount is $0
***Commercial paper program reflects full amount authorized; current amount outstanding will be $0 post issuance
Source: MBTA fiscal 2019 Audit

Of the total debt outstanding the majority is fixed rate, with 12.3% in variable rate mode, including the full commercial paper authorization of $250 million. Also included in this total are the Series 2010A senior sales tax nine-month Windows-mode bonds, which are being refunded into fixed rate subordinate lien sales tax bonds.

The authority's Series 2000A-1 and 2000A-2 variable rate demand GTS bonds have liquidity support from a standby bond purchase agreement provided by Barclays Bank PLC (A1(cr)/P-1(cr)), with the facility expiring in September 2022. The 2018 Subseries A-1 and A-2 bonds have a standby bond purchase agreement with State Street Bank and Trust Company, NA (Aa2(cr)/P-1(cr) that expires July 2, 2023. The authority privately placed its $232.1 million Series 2008A-1 and 2008A-2 variable rate bonds with State Street Bank via a direct loan agreement executed in March 2017.

DEBT-RELATED DERIVATIVES

MBTA is party to two swap agreements with JPMorgan Chase Bank, N.A. (Aa1(cr)/P-1(cr)) for a total notional amount of $108.6 million. The sales associated with the swaps are being refunded to fixed rate so the authority will apply the agreements to other outstanding, unhedged variable rate debt. The two agreements result in MBTA receiving a SIFMA-based rate and are set to expire March 1, 2021 and March 1, 2030. The authority is also party to a swap with Morgan Stanley Capital Services, LLC (Aa3(cr)/P-1(cr)) ratings under review for upgrade) for the outstanding Series 2003C bonds, with a notional amount of $25.0 million and an expiration date of July 1, 2020. All of the interest rate derivatives require MBTA to pay a fixed interest rate and receive a variable interest rate. MBTA would be subject to termination payments on the swaps although the rating level for termination, which is A3, is well below the current rating.

PENSIONS AND OPEB

MBTA's pension obligations are sizable and growing, but fall below debt service in the priority of payment waterfall. Based on our adjustments, fiscal 2019 adjusted net pension liability reached 133% of gross revenues. Employer contributions are manageable, with the fiscal 2019 contribution of $100.7 million at 4.9% of gross revenue, but below our estimated tread water contribution of $111.9 million. MBTA's other post-employment benefits (OPEB) liability reached $2.5 billion in 2018, with the authority's fiscal 2019 employer contribution at $144.7 million, or 6.4% of its total operating expenses.

ESG considerations

Environmental considerations

The US mass transit sector overall has low exposure to environmental risks because mass transit is an energy-efficient mode of transportation that will see increased ridership as governmental policies and public preference shift from carbon inefficient travel. However, exposure to natural disasters and climate change is somewhat more elevated as mass transit and commuter rail issuers rely on infrastructure that is susceptible to earthquakes and wind and water damage.

The MBTA service area, concentrated in Boston (Aaa stable) and the coastal county of Suffolk located along the Atlantic Ocean, has above-average flood exposure. According to data from Moody's affiliate Four Twenty Seven, exposure of MBTA's primary service area to hurricane risk and water stress are in the second highest category. Four Twenty Seven's data measure relative projected change of five climate factors: heat stress, water stress, floods, hurricanes and sea level rise. When the individual counties' exposures are weighted by ridership, Suffolk County ranks 139 out of 3,190 counties, indicating a high concentration of ridership is more exposed to the economic impact its climate risks such as property damage, emergency response costs and interruption to business that reduces fare revenue or tax receipts.

Risk of flooding during periods of extreme precipitation, wind or storm surge is high, as experienced during Superstorm Sandy in 2012 and is likely to increase over the long term. Boston's mayor has pledged to spend $30 million annually to combat rising waters, while the MBTA has already completed capital projects to prevent certain underground stations from chronic flooding problems when high tides and elevated rainfall occur. The state is also providing assistance. Recognizing that it has above-average climate risks, the commonwealth is leading climate change preparedness, resiliency and mitigation efforts for itself and its local governments. The state is conducting vulnerability preparedness planning with its municipalities and last year the governor introduced legislation to fund investment in resiliency infrastructure with $100 million in new, annual revenue from a deed excise tax. Like most US transit systems, MBTA's exposure to environmental shocks is also partially moderated by the availability of private insurance and federal disaster recovery assistance.

Social considerations

The mass transit sector is moderately exposed to social risk given its labor intensive and customer-oriented operations. MBTA in particular is also exposed to affordable housing issues, which could stymie future economic growth in the region, as well as strong collective bargaining units, which can drive spending pressures. Massachusetts' population continues to grow, but at rates that lag the US, with 0.5% total growth projected in 2019, compared to 0.6% for the US. Massachusetts' population increased by nearly 8% between 2000 and 2016 but that was almost half the US rate of 15%.

The rapid and widening spread of the coronavirus outbreak, deteriorating global economic outlook, falling oil prices and asset price declines are creating a severe and extensive credit shock across many sectors, regions and markets. The combined credit effects of these developments are unprecedented. We regard the coronavirus outbreak as a social risk under our ESG framework, given the substantial implications for public health and safety. Future ridership trends are in question for mass transit operations across the country as workplaces may be reconsidering office arrangements and/or previous riders shift to personal car transportation options to guard against infection.

Governance

Governance considerations are a key determinant of credit quality for all issuers. MBTA benefits from strong support from the Commonwealth of Massachusetts, both financial and operational, that has resulted in key credit metric improvements in recent years.

After severe weather led to systemwide failures in the winter of 2015, the governor appointed a special panel to review the management and financial condition of the MBTA, which resulted in the establishment of a Fiscal and Management Control Board (FMCB). The five-member FMCB was initially delegated authority over the system through June 30, 2020.

In addition to delegating most powers and authority to the FMCB, the authorizing legislation also mandated that the rights of MBTA bondholders shall not be altered or impaired by the board. Upon dissolution, oversight of the authority will revert to the eleven member MassDOT board, which includes three members of the FMCB.

Operations have improved in recent years, with the new management team and board reducing Massachusetts annual appropriations to close operating and capital budget deficits from $155.8 million in fiscal 2016 to $127.0 million in fiscal 2020, though the state has historically transferred funds to close the operating deficits. The reductions have largely been attributable to streamlining employment costs and savings resulting in additional revenue being available for capital. Going forward, management is focused on continuing to reduce the annual operating deficit and using the savings to fund its estimated $8.1 billion backlog of good repair reliability projects.

Endnotes

1 MADS senior lien coverage reflects payments on senior sales tax bonds and prior obligations that are ultimately backed by the commonwealth's full faith and credit pledge. Debt service on variable rate debt uses an assumed rate of 2.75% and full take down of Positive Train Control (PTC), Automatic Train Control (ATC) and Resiliency Railroad Rehabilitation and Improvement Financing (RRIF) loans at rates ranging from 1.5% to 1.7%.

2 See Metropolitan Boston Transit Parking Corporation disclosure dated April 14, 2020.

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