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## Massachusetts; Appropriations; CP; Gas Tax; General Obligation; General Obligation Equivalent Security; Miscellaneous Tax; Sales Tax

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# Massachusetts; Appropriations; CP; Gas Tax; General Obligation; General Obligation Equivalent Security; Miscellaneous Tax; Sales Tax

Credit Profile		
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
<b>Boston Hsg Auth, Massachusetts</b>		
Massachusetts		
Boston Hsg Auth (Massachusetts) APPROP		
<i>Long Term Rating</i>	A/Positive	Outlook Revised
<b>Massachusetts Bay Transp Auth, Massachusetts</b>		
Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) GOEQUIV		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised

## Credit Highlights

- S&P Global Ratings revised the outlook to positive from stable on the Commonwealth of Massachusetts' general obligation (GO) bonds as well as on various other bonds secured by annual appropriations from the commonwealth.
- S&P Global Ratings assigned its 'AA' long-term rating with a positive outlook to Massachusetts' \$1.0 billion GO bonds, consolidated loan of 2022, series C; and \$200 million GO refunding bonds, series A.
- At the same time, S&P Global Ratings revised its outlook to positive on its 'AA' rating on the commonwealth's GO debt outstanding and its 'A' long-term rating on the Boston Housing Authority's series 2003 housing project bonds (West Broadway Homes IV project), supported by a commonwealth annually appropriated state-operating subsidy, subject to the terms of a trust agreement, as well as its 'AA' long-term rating, its 'AA/A-1+' dual rating, and 'A-1+' short-term rating on the Massachusetts Bay Transportation Authority's sales tax bonds, reflecting the commonwealth's general creditworthiness based on its pledge to pay base revenue amounts to support payment of debt service.
- We have also revised our outlook to positive on the commonwealth transportation fund (CTF) revenue bonds outstanding rated based on our priority-lien criteria.
- The outlook revision reflects the state's improved reserves, which, if sustained through near-term recessionary pressures at levels commensurate with a higher rating, could change our view of the state's commitment to building reserves.

## Security

Massachusetts' full faith and credit are pledged to the GO bonds. Proceeds from the 2022 series C consolidated bonds will fund various capital expenditures authorized in the capital investment plan (CIP). The 2022 series A refunding bonds will refund certain outstanding GO bonds of the commonwealth.

## **Credit overview**

Strong revenue growth, combined with extra federal aid, helped the state rebound strongly from the 2020 pandemic and end its last two fiscal years in an extremely strong financial position and highest level of reserves in the commonwealth's history. At fiscal year-end June 30, 2021, the BSF stood at \$4.6 billion, or a strong 9.4% of operating expenditures and other uses on a budgetary basis of accounting, higher than the 5.3% originally budgeted. The trend of adding to its reserves continued in fiscal 2022 with the year ending with a preliminary BSF balance of \$6.9 billion, or a strong 12.4% of budgeted operating expenditures and other uses.

Nevertheless, the commonwealth still faces headwinds as national recessionary pressures persist, with long-term liabilities remaining among the highest in the nation and persistent underfunding of its pensions, which could lead to budgetary pressures as revenue growth softens and test the commonwealth's commitment to strong BSF levels in the next two years.

Massachusetts' rating reflects a strong economy, with the second-highest per capita income level in the nation, partly due to an above-average presence of high-technology companies in the Boston metropolitan statistical area (MSA). The rating further reflects some historical cyclicity in financial results, although recent strong growth in tax collections and federal aid have led to large operating surpluses and reserves, as well as high debt, pension, and other postemployment benefit (OPEB) liabilities, with a history in recent years of funding less than full annual actuarial recommendations to its pension and OPEB funds.

We believe that Massachusetts' economy, with a substantial high-technology sector presence in the Boston MSA, has been a bright spot, with a substantial proportion of well-educated workers that were able to work at home during the pandemic and contribute to the state's income tax. Massachusetts has the second-highest per capita income in the nation, at 130% of the nation. S&P Market Intelligence forecasts that real gross state product (GSP) will increase at a slightly faster average growth rate than that of the nation through 2025, at 1.6% compared with the nation's real GDP growth average growth of 1.5%. The state's monthly unemployment rate has come down from a peak of 17.1% in April 2020, to a 3.5% preliminary unemployment rate as of July 2022, similar to the nation.

The state enacted its 2023 budget in July, after its June 30, fiscal year-end (using an interim budget in the meanwhile). The budget is based on a 3.9% decline in tax revenue, reflecting conservative projections of historically more volatile tax revenue as well as the moderating effects of the pass-through entity provisions (which boosted 2022 tax revenue). Total operating expenditure and uses is expected to increase by 11%, but the budget is structurally balanced after adjusting for nonrecurring appropriations. The budget projects that the BSF will increase to \$8.4 billion (13.5% of budgeted expenditures and other uses) at the end of fiscal 2023. State tax revenue exceeded revenue limits pursuant to Chapter 62 of the commonwealth's general laws in fiscal 2022, leading to about \$2.9 billion in tax rebates to be distributed as refunds to taxpayers by the Department of Revenue in fiscal 2023. The 2023 budget outlines that \$2.9 million is expected to be paid with excess revenues set aside from 2022.

Already, state tax revenue is running well ahead of the revised July 2022 forecast used in the fiscal 2023 budget. Through September 2022, fiscal 2023 tax collections for the year to date were up 5.9% over the same period the prior year. Strong recent tax growth has swelled the commonwealth's BSF balance, which receives both excess general fund revenue, as well as capital gains tax above an annual benchmark, and certain other lesser revenue sources.

Despite the commonwealth's strong finances and economy, financial risks remain. We believe Massachusetts has an above-average dependence on cyclical capital gains tax revenue, which has benefited from the high stock market, but could recede in future years with national economic contraction and pressure the state's commitment to its financial goals. The state has also had large recent increases in Medicaid enrollment, a potential budgetary concern if the federal government no longer pays the higher Medicaid reimbursement rate it implemented during the pandemic. S&P Global Economics currently factors a recession into its baseline forecast and expects national GDP growth to decelerate to about 0.2% for 2023. However, the recent build-up of reserves should position the commonwealth well to mitigate disruption from the currently escalating economic pressures (see "Economic Outlook U.S. Q4 2022: Teeter Totter," published Sept. 26, 2022, on RatingsDirect).

Other long-term pressures for the commonwealth include its high debt levels and moderately high OPEBs, exacerbated by persistent underfunding of its annual actuarial pension contribution, which we believe could significantly increase liabilities in the future. At fiscal year-end 2021, the last audited fiscal year, we calculate the commonwealth had net total tax-backed debt per capita of \$5,825 and 7.1% of personal income, including tax-supported revenue debt.

Also, Massachusetts has been chronically underfunding its actuarially required annual pension contribution. Pension contributions are statutorily determined, and the state has made contributions in accordance with its schedule set in 2020. The schedule assumes a fully funded retirement system by 2036, but only if it increases annual contributions by 9.63% per year through 2035, a steep increase that we believe delays current pension pressure to future years. We calculate the pension underfunding amounts equivalent to about 1% of operating expenditures or higher for the past five years, if excluding restricted federal revenue from the budget denominator. The commonwealth has contributed less than its actuarial annually recommended contribution since 2011, funding only an estimated 86% (including supplemental contributions) of its annual actuarial recommendation in fiscal 2022, which has contributed to what we consider a relatively low combined three-year average pension-funded ratio on a Governmental Accounting Standards Board (GASB) basis of 61%. A strong investment return of 29.9% in fiscal 2021 temporarily improved funded levels to 68.7%, but preliminary estimates show that fiscal 2022 returns were extremely weak at negative 2.8% and could lead to lower funded levels for 2022. At fiscal year-end 2021, the commonwealth's net pension liability (NPL) on a GASB basis was a high \$5,006 per capita, or 6.1% of state personal income. Net OPEB liability on a GASB basis at fiscal year-end 2021 was also high, at \$2,639 per capita, although the state has made efforts in recent years to prefund a portion of OPEBs through a trust fund.

Factors supporting the 'AA' GO rating include what we view as Massachusetts':

- Deep and diverse economy;
- High income levels, with per capita income at 130% of the nation in 2021, the second-highest among the states;
- History of timely monitoring of revenues and expenditures and swift action when needed to make adjustments;
- Strong financial, debt, and budget management policies, including annualized formal debt affordability statements and multiyear capital investment planning;
- Strong BSF balance, equal to 12.4% of expenditures and other uses on a budgetary basis at fiscal year-end 2022, and an estimated increase in 2023 to 13.4%, in part due to currently strong capital gains tax; and

- High debt, pension, and OPEB liabilities.

Based on the analytic factors we evaluate for states, on a scale of '1.0' (strongest) to '4.0' (weakest), we have assigned a composite score of '1.8' to Massachusetts, which is consistent with a 'AA' indicative rating.

### **Environmental, social, and governance**

ESG Credit Indicators: E-3, S-2, G-2

We consider Massachusetts' environmental risks moderately negative in our credit rating analysis because of the commonwealth's coastal exposure, with about two-thirds of its population in the Boston MSA and substantial property value in the combined Boston and Cape Cod area exposing the state to significant economic disruption following a high-impact event. However, we also note that the commonwealth has been addressing environmental risks since 2004 through its Climate Protection Plan and has historically maintained a stable management and policy framework to respond to developing risks. We view social and governance as neutral to the credit rating analysis.

## **Outlook**

The positive outlook reflects our view that Massachusetts' underlying economy and currently very strong reserves could support a higher rating if sustained. We believe that there is a one-in-three chance that we could raise the rating over the next two years if future budgets show continued commitment to maintaining reserves at very strong levels and a goal of structural balance as it progresses to fully funding its pensions.

### **Downside scenario**

We could return the outlook to stable if we believe Massachusetts will fail to make budget adjustments to maintain structural balance or maintain strong reserves if revenue growth weakens. Other factors that could reverse the outlook back to stable include overly optimistic revenue projections, significant increases in debt or other fixed costs, or a significant decline in pension-funded levels due to the commonwealth falling significantly behind static pension funding contribution levels.

### **Upside scenario**

If Massachusetts' budget in the next two years reflects continued commitment to maintaining reserves at strong levels as a matter of budgetary policy, especially during periods of strong economic activity, we could raise the rating. While we understand that the BSF reserves could be drawn in periods of economic contraction, we expect the commonwealth to demonstrate commitment to rebuilding reserves as the economy recovers to maintain a higher rating.

## **Credit Opinion**

## **Governmental Framework**

State finance law requires that the governor submit a balanced budget and the House and Senate each produce a

balanced budget. The final general appropriation act must also be balanced. If there is a revenue shortfall, the governor is required by section 9C of Chapter 29 to reduce agency appropriations or recommend a transfer from the BSF.

Massachusetts has autonomy to raise taxes and has adjusted its tax structure. Medicaid was budgeted for about 35% of total fiscal 2022 spending, while direct local aid accounted for about 12%. Funding levels for major program areas have been adjusted as needed. Massachusetts voters have approved revenue growth limitations, but these have not weakened operations or limited flexibility, in our view. More significant measures to reduce or eliminate major tax sources have been on the ballot but not approved. A citizens' initiative to place a 4% income tax surcharge on incomes of more than \$1 million gathered enough signatures to be on the November 2018 ballot, but the Massachusetts Supreme Court did not allow it to go to a vote as it impermissibly tied increased tax revenue to specific spending categories. Since then, another referendum has cleared procedural steps and would be on the November 2022 ballot, similarly raising the top income tax rate for those making more than \$1 million per year. As a legislatively placed initiative, it would be more likely to pass a court challenge. If passed by the voters, it would apply to tax year 2023.

The commonwealth is authorized to issue GO debt, special obligation debt, and federal grant anticipation notes. There is a statutory limit on debt outstanding and a limitation as stipulated by Massachusetts' debt affordability policy published annually with the commonwealth's CIP, which is designed to limit debt service on Massachusetts' direct debt to no more than 8% of budgeted revenues. These limitations have not impaired flexibility to manage capital and infrastructure requirements. There is no statutory priority for funding debt, but debt service payments are not subject to the warrant requirement applicable to other state spending, and we understand that the comptroller and other state officials have developed procedures to prioritize payments and that debt service is given the highest priority among various payment obligations.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '1.5' to the commonwealth's governmental framework.

## **Financial Management**

### **Financial management assessment: Strong**

S&P Global Ratings maintains a strong Financial Management Assessment (FMA) score for Massachusetts. In its framework, an FMA of strong indicates that practices are strong, well embedded, and likely sustainable. Many of the commonwealth's management practices related to debt and financial management are embedded in statute.

Highlights include the following:

- Massachusetts uses internal resources and outside economic forecasting firms to develop consensus revenue forecast. It has regularly performed monthly revenue estimates and quarterly budget reviews. Legislation approved in 2008 requires that revenue reports be submitted semi-monthly to the legislature.
- A five-year CIP (administrative intent, not binding) coordinates all types of debt issuance, informed by a detailed debt affordability analysis that officials update each year.
- The commonwealth has detailed and frequently reviewed investment policies managed through the office of the treasurer. Quarterly cash-flow projections are prepared and submitted to the legislature.

Massachusetts has a statutorily established BSF that prescribes a mechanism for funding, as well as funding levels; however, the mechanism has been weakened in some previous years by the legislature's decision to adjust deposit thresholds and suspend required transfers into the fund in certain years.

Statute requires the deposit of 100% of consolidated net surplus in any given year into the BSF. The statute also provides that the BSF's maximum amount cannot exceed 15% of the current year's revenues. The commonwealth must use any excess for tax reduction. In 2010, the state passed a statutory law that directed excess capital gains tax revenues of more than \$1 billion to the BSF, although Massachusetts subsequently suspended or lowered this threshold in fiscal years 2015 and 2016. Legislation in 2012 indexed the \$1 billion capital gains excess threshold to the growth in U.S. GDP for each fiscal year beginning with fiscal 2014. The statute also directs 5% of the excess capital gains tax to the state retiree benefits trust fund and another 5% to pension liabilities. We believe the capture of above-trend capital gains tax enhances the BSF, while decreasing some of the cyclicity of state revenue. An indexed threshold and lower collections in fiscal 2017 eliminated the potential for a transfer in that fiscal year. In 2020, the governor filed a supplemental budget request to retain excess capital gains tax above the threshold in the general fund. Some judgments and settlements must also be deposited into the fund, although this requirement was modified in fiscal 2015 so that only settlements and judgments exceeding the average of the total for the preceding five fiscal years would be transferred to the BSF.

There are statutory limits on debt issuance. For direct debt, there is a limit allowing the issue of up to 105% of the previous year's limit. In addition to the above-mentioned statutory requirement, the governor's office adheres to an administrative bond cap (debt service capped at 8% of budgeted revenues), which sets the annual limit on debt issuance. The treasurer's office maintains debt management and swap policies that we view as comprehensive.

The commonwealth has detailed and frequently reviewed investment policies managed through the office of the treasurer. Quarterly cash-flow projections are prepared and submitted to the legislature.

## **Budget Management Framework**

Once the budget is approved, the Secretary of Administration and Finance (A&F) monitors expenditures, at least quarterly, and receives regular monthly updates on revenue receipts. The A&F secretary is required to formally update revenue projections and submit them to the legislature in October. If officials expect projected revenues to be insufficient to meet appropriations, A&F certifies this and, pursuant to statute (section 9C of Chapter 29), the governor is required to reduce allotments, or submit proposals to raise additional revenues or to make appropriations from the BSF to restore balance. Budget adjustments have historically been implemented regularly and on time, and deficits are not carried forward.

Massachusetts is a voter-initiative state. Although there have been initiatives that limit the overall growth in state tax revenue and a limit on the amount of bonds outstanding and debt service appropriations, these have not substantially altered Massachusetts' ability to manage its budget or fund debt service, in our opinion. While more recent ballot initiatives to reduce or eliminate the commonwealth's major tax sources that made the ballot were not approved, the legislature can amend an initiative.

The commonwealth provides a relatively high level of service, in our opinion. Adjustments have been made to programs, but reductions to areas such as education have been limited.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '1.0' to Massachusetts' financial management framework.

## **Economy**

We believe the Massachusetts economy, anchored by the Boston MSA that includes many higher education institutions and associated technology companies, represents an important credit strength.

Massachusetts' recent economic experience has mirrored national trends, although per capita income has grown slightly faster than that of the nation, spurred by growth in the high-paying professional, scientific, and technical services sector that suffered less in the recent recession than lower-paying service sector jobs. The average annual unemployment at 5.7% in 2021 is slightly higher than the U.S., at 5.3%. We view the economy as slightly more concentrated in education and health services than the nation as a whole. Education and health services accounted for 22.5% of total state nonfarm employment in 2021, according to the Bureau of Labor Statistics, compared with 16.2% for the nation. This is followed by professional business services (17.2% versus 14.6%), and trade and transport (15.7% versus 18.9% nationally). The manufacturing and construction sectors, known for their cyclical nature, represented only 6.6% and 4.7% of employment, respectively.

The U.S. Census Bureau population estimate for Massachusetts in 2021 is about 7 million, a 0.5% decline over 2020, and the five- and 10-year compound growth rate of 0.2% and 0.5%, respectively, trailed the nation's 0.5% and 0.6%, respectively. The commonwealth's age dependency ratio of nonworking age population to working age population, at 58.3% in 2020, was better than that of the nation (63.8%).

The commonwealth has always had high income levels. Per capita personal income of \$82,475 was 130% of the U.S. in 2021, consistent with prior years. State per capita income ranks second highest among all the states. We expect that income will remain well ahead of that of other states based on the highly educated workforce that have jobs more conducive to telecommuting. S&P Market Intelligence estimates that real GSP has mirrored national trends recently, despite the higher unemployment rate. S&P Market Intelligence forecasts real GSP to rise 2.6% in 2022, and grow 6.3% over the next four years 1.2% in 2024, slightly higher than the U.S. forecast of 5.8% for the next four years. In 2021, GSP per capita of \$91,129 was strong at 132% of that of the nation's GDP.

The increasing role of services in the economy reflects growth in research laboratories, computer software, management consulting, other business services, and health care. Higher education anchors, a high level of federal research funding, and venture capital give the commonwealth a leading edge in emerging industries, such as biotechnology, software, communications equipment, and surgical instruments. S&P Market Intelligence has estimated about 10% of state employment is in high-technology-related industries. In addition, Massachusetts has defense-related industries that have ranked high in the value of federal defense and research contract awards.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '1.4' to Massachusetts'



economy.

## **Budgetary Performance**

Massachusetts has established a formal BSF under statutory law that receives excess capital gains taxes over a threshold amount, indexed for inflation. However, state budgets in fiscal years 2013 and 2014 drew down the BSF, and the commonwealth overrode the BSF formula in certain years by either retaining all excess capital gains tax or by resetting the hurdle for excess capital gains at a higher level than in statute. As a result, we viewed the BSF as essentially level funded during fiscal years 2014-2017.

Under statutory law, tax revenues collected from capital gains income during a fiscal year that exceed the threshold are required to be transferred to the BSF, with 5% of the amount so deposited, then transferred to the State Retiree Benefits Trust Fund (for OPEBs) and an additional 5% transferred to the commonwealth's pension liability fund. However, in fiscal years 2015 and 2016, state budgets diverted capital gains taxes that would have otherwise flowed to the BSF to instead pay for general fund budget expenditures. In 2017, capital gains taxes came in below the level that would have triggered a transfer of excess capital gains to the BSF.

Despite the uncertainty in the economy at the start of the year, fiscal 2021 actual revenues exceeded re-benchmarked revenue forecasts leading to a higher BSF balance of \$4.6 billion at the end of the year. Continued strong revenue growth in fiscal 2022 supported structural balance at the end of the fiscal year after accounting for nonrecurring appropriations and contributed to an additional deposit to the BSF, leading to a balance of \$6.9 billion, or 12.4% of budgeted expenditures and other uses. The BSF balance in fiscal 2022 is very strong, in our view, and represents the largest amount in dollar terms that the BSF has ever reached. State tax revenue exceeded revenue limits pursuant to Chapter 62 of the commonwealth's general laws in fiscal 2022, leading to about \$2.9 billion in tax rebates to be refunds to taxpayers by the Department of Revenue in fiscal 2023.

The 2023 enacted budget forecast currently anticipates that Massachusetts' adopted budget will have a decline of 1.5% in operating funds tax revenue (using actual budgetary results in 2022, not adopted 2022 budget numbers) but will be structurally balanced and deposit an additional \$1.5 billion to the BSF, resulting in a total of \$8.4 billion, or 13.5% of operating funds expenditure.

We view Massachusetts' liquidity as strong, with the help of annual cash-flow note borrowing. The commonwealth does not engage in interfund borrowing, so the general fund cannot borrow from the BSF without an act of the legislature. In fiscal 2020, the commonwealth issued \$1.4 billion in revenue anticipation notes, maturing in April, May, and June 2020 and has not required short-term financing since. In addition, it obtained a line of credit for \$1.75 billion from a syndicate of banks to ensure adequate liquidity due to a pandemic-related extension of the time for taxpayers to file their income tax in fiscal 2020. As of February 2021, the line of credit was reduced to \$500 million, and no amount was outstanding under the line, which is scheduled to expire March 30, 2024, under a renegotiated agreement.

Fiscal 2022 ended with a nonsegregated general fund cash position of \$16.9 billion, and according to the September 2023 cash-flow statement, the state projects it will end with a general fund cash position of \$10.3 billion at fiscal year-end 2023.

We view Massachusetts' revenue sources as diverse. Income tax was 63% of budgeted operating funds tax revenue in fiscal 2022, and sales tax was 19%.

We believe the commonwealth's revenue forecasting is good. Massachusetts prepares quarterly revenue updates and uses a consensus revenue forecast for budgeting purposes. The governor is required to recommend midyear budget adjustments if necessary. We believe that state budgeting has historically been done with an eye toward long-term structural balance, apart from the below-actuarially required contribution (ARC) pension contributions. However, we believe that Massachusetts is a high service state, with expenditures that could be difficult to reduce at times. In particular, Medicaid accounted for 29.8% of budgeted fiscal 2023 total operating expenditures and other uses, while health and human services accounted for 13.1%. Operating funds' debt service accounted for 3.5%, and OPEB costs were budgeted at 6.8% of expenditures.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '1.7' to Massachusetts' budgetary performance.

## **Debt And Liabilities**

### **Debt**

We calculate total GO bonds outstanding at fiscal year-end 2021, the most recent audited year, at \$24.8 billion, and total tax-supported debt at \$40.6 billion, including debt issued by Massachusetts' authorities and supported by the statewide sales tax, gas taxes, and debt of state agencies supported by annual state contract assistance payments. As of Aug. 31, 2022, the commonwealth reported it had \$24.5 billion of GO debt outstanding.

By most measures, Massachusetts' debt burden remains high compared with that of other states. The variable-rate portfolio is about 4% of total GO debt, and the commonwealth actively manages this under formal debt policies. About \$730 million, or 3% of state GO debt, consists of unhedged variable-rate bonds, with the remainder of the variable-rate debt's interest rates synthetically fixed through interest rate swaps. There are no major plans to significantly expand its unhedged portfolio in the near term. Within its variable-rate portfolio, the commonwealth has \$500 million of direct-placement debt outstanding, in structures we do not believe create an unusual risk to Massachusetts.

Tax-backed debt per capita is high, in our view, although stable, at what we calculate as \$5,825 at fiscal year-end 2021 and 7.1% of personal income. We also calculate combined total tax-backed debt service to operating expenditures as high at 7.6% on a generally accepted accounting principles basis.

The current five-year CIP projects debt service remaining below the commonwealth's calculation of 8% of budgeted revenues. A state debt and capital affordability committee conducts an annual debt affordability study. The committee includes seven voting members and eight nonvoting members from the legislature and is charged with formally reviewing the CIP and providing an estimate of debt authorization for the year. The current five-year CIP for fiscal years 2023 through 2027 calls for new bonding of \$2.8 billion in 2023, slightly higher than previous years, as part of a total five-year capital budget of \$4.9 billion. Our debt calculation includes special tax bonds supported by statewide tax sources in the ratios we use to assess total tax-supported debt. We view amortization of tax-backed debt as average at 42% over 10 years.

## **Pensions**

We consider the commonwealth's pension funding discipline in recent years poor, with Massachusetts funding substantially underfunding the ARC since 2011. ARC is calculated using previous GASB Statement 27 methodology because the more recent GASB Statements 67/68's actuarially determined contribution (ADC) is arrived at using commonwealth statutory law that is not based on the current year's full actuarial requirement. In fiscal year 2022, Massachusetts paid an estimated 81% of ARC. However, the state also contributed an additional \$250 million from excess capital gains tax revenues, which increased total contributions to about 86% of ARC. Every year the ARC is not funded, it will increase in future years until full ARC funding is reached. The commonwealth has not contributed its full annual ARC since 2011, and we do not expect that it will do so in 2023. Currently, the commonwealth projects it will reach full ARC funding in fiscal 2036, based on increasing ARC contributions 9.63% per year, which will increase annual state contributions from \$2.8 billion in fiscal 2020 to \$4.9 billion in 2026, a substantial increase. We currently calculate Massachusetts' pension contribution for state employees at 81% of the level to meet minimum funding progress, which we view as weak.

Massachusetts has gradually lowered its retirement funds' investment return assumption in recent years, which we view as positive, but which has restrained improvement in its combined pension funded ratio and increased funding needs. The commonwealth lowered its assumed actuarial rate of return from 8.25% prior to 2013 to 7.0% in 2021. However, the currently assumed return level is still above our pension criteria guidance guideline of 6.50%. The commonwealth reported a five-year pension fund rate of return of 12.3% as of fiscal 2021, and a one-year return in 2021 of 29.9%. The combined pension funded ratio of the various state retirement systems' NPL improved to 68.7% in 2021 (from 56.2%) as a result of strong market returns. We expect that the growth in funded ratios will be moderated in the next year as expected returns for 2022 contracts to negative 2.95%. The three-year average was 61%.

The NPL was \$34.9 billion as of a June 30, 2020, measurement date rolled forward by one year to June 30, 2021, or a high \$5,006 per capita and 6.1% of state personal income. We will believe pension ratios will remain weak until the commonwealth reaches annual ARC funding, which would be in 2026 under its current funding schedule, assuming Massachusetts meets its actuarial return and other assumptions.

Using the commonwealth's actuarial methodology and actuarial asset smoothing methods (not GASB), the funded ratio for the combined state employees', teachers', and Boston teachers' pension funds improved to 62% from 51% in fiscal 2020. If Massachusetts continues to increase pension contributions by 9.63% per year, the commonwealth calculates under its actuarial assumptions that it would have a combined funded ratio of 64.4% in 2025.

Massachusetts' current plan assumes 9.63% per year growth in commonwealth annual pension contributions to reach full amortization of the commonwealth's unfunded liability by fiscal 2036, four years ahead of Massachusetts' statutory requirement, assuming actuarial assumptions are met. However, from a funding standpoint, the commonwealth has continued to calculate its contribution by setting funding targets based on percentage increases to contributions rather than adjusting for increases necessary to keep level amortization of the liability. This translates into a back-loaded amortization of the liability.

Furthermore, the commonwealth continues to establish its contribution levels on a three-year lagged budgetary basis, although actuarial valuations are conducted each year. This policy of only adjusting the pension contribution schedule

every three years can cause Massachusetts to fall below full ADC funding when actuarial assumptions miss actual experience, such as missed investment returns, or actuarial assumptions themselves have been changed, such as the recent lowering of assumed rates of return. While a three-year lag in resetting pension contributions could provide Massachusetts with a more predictable funding schedule, we believe it also exposes the commonwealth to the risk of never catching up to full ADC funding if its actuarial assumptions prove too aggressive.

In its most recent three-year funding schedule reset, Massachusetts updated its planned pension contributions to the above-mentioned 9.63% per year, up from previously scheduled 8.9% annual increases, and 7.0% annual increases in the three-year plan before that. In fiscal 2023, the commonwealth projects it will contribute \$3.7 billion, or 88% of the \$4.2 billion ARC, to its two main employees' retirement system. As part of our criteria, we look to the ratio of active-to-inactive members to determine how mature the system is and how it compares with the national average. For Massachusetts State Retirement Board and Massachusetts Teachers' Retirement System, the ratios of active-to-retirees are 1.40 and 1.36, respectively, and nearly in line with the national average. Experience studies are only conducted every six years as per statute, which we view as a weakness. Although the commonwealth updates portions of the studies more frequently, it has done this as needed rather than on a set schedule.

#### Other postemployment benefits

The state has sizable OPEBs but has made good funding progress in reducing its OPEB liabilities by putting money aside in an OPEB trust fund.

As of June 30, 2021, Massachusetts' retirement trust had a \$18.4 billion net unfunded OPEB liability, which we consider sizable, at \$2,639 per capita, although OPEBs were cut significantly a few years ago due to various reform measures that were being phased in and to deposits to an OPEB trust fund. The OPEB trust funded ratio is relatively low at 10.7% of OPEB liabilities.

Deposits to the trust fund enable a somewhat higher assumed actuarial discount rate under a blended interest rate assumption that assumes lower rates after trust fund assets are depleted, and which lowers actuarial unfunded liabilities. Massachusetts has dedicated a portion of tobacco settlement revenues toward its OPEB trust fund to provide a permanent funding source, which we consider a credit positive, although exact deposits have deviated from formula depending on the year of the enacted budget. The portion of tobacco settlement money dedicated to the OPEB trust fund was scheduled to increase in 10% increments each year, until it reaches 100%, although the incremental increase in contributions has been revised since 2016. The actual percentage of tobacco settlement revenue deposited in the OPEB trust fund in 2018, 2019, 2020, 2021, and 2022 was 10%, 30%, 10%, 10%, and 10%, respectively, and budgeted for 10% in 2023. In fiscal 2020, legislation suspended the transfer of capital gains tax into the OPEB trust.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '3.5' to Massachusetts' debt and liability profile.

## Related Research

- Through The ESG Lens 3.0: The Intersection Of ESG Credit Factors And U.S. Public Finance Credit Factors, March 2, 2022

Ratings Detail (As Of October 7, 2022)		
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts Bay Transp Auth sales tax		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts Bay Transp Auth sales tax		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts Bay Transp Auth CP		
<i>Short Term Rating</i>	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
<i>Short Term Rating</i>	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
<i>Short Term Rating</i>	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
<i>Short Term Rating</i>	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
<i>Short Term Rating</i>	A-1+	Affirmed
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GASTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised

**Ratings Detail (As Of October 7, 2022) (cont.)**

Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
Massachusetts GO (wrap of insured) (FGIC & BHAC) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (AGM)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (AGM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (AMBAC)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (BAM)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised

Ratings Detail (As Of October 7, 2022) (cont.)		
Massachusetts GO (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (BAM) (SECMKT)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (CIFG)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (FGIC)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (FGIC) (National)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (MBIA) (National)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts GO (SYNCORA GTY)		
<i>Unenhanced Rating</i>	AA(SPUR)/Positive	Outlook Revised
Massachusetts MISCTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
Massachusetts MISCTAX		
<i>Long Term Rating</i>	AA+/Positive	Outlook Revised
<b>Massachusetts Bay Transp Auth, Massachusetts</b>		
Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) GOEQUIV		
<i>Long Term Rating</i>	AA/A-1/Positive	Outlook Revised
<b>Massachusetts Development Finance Agency, Massachusetts</b>		
Massachusetts		
Massachusetts Dev Fin Agy (Massachusetts) GO		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
<b>Massachusetts Bay Transp Auth, Massachusetts</b>		
Massachusetts		
Massachusetts Bay Transp Auth, Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) ales tax		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
<b>Massachusetts Bay Transp Auth, Massachusetts</b>		
Massachusetts		
Massachusetts Bay Transp Auth, Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) sales tax		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised
<b>Massachusetts Bay Transp Auth, Massachusetts</b>		
Massachusetts		
Massachusetts Bay Transp Auth, Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) sales tax		
<i>Long Term Rating</i>	AA/Positive	Outlook Revised

**Ratings Detail (As Of October 7, 2022) (cont.)**

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax

*Long Term Rating* AA/Positive Outlook Revised

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax

*Long Term Rating* AA/Positive Outlook Revised

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax

*Long Term Rating* NR/NR Withdrawn

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax

*Long Term Rating* AA/Positive Outlook Revised

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax

*Long Term Rating* NR/NR Withdrawn

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax (AGM) (MBIA)

*Unenhanced Rating* AA(SPUR)/Positive Outlook Revised

**Massachusetts Bay Transp Auth, Massachusetts**

Massachusetts

Massachusetts Bay Transp Auth, Massachusetts

Massachusetts Bay Transp Auth (Massachusetts) sales tax (MBIA) (National)

*Unenhanced Rating* AA(SPUR)/Positive Outlook Revised

**Massachusetts Dept of Transp, Massachusetts**

Massachusetts

Metropolitan Hwy Sys, Massachusetts

Massachusetts Dept of Transp (Massachusetts) GO

*Long Term Rating* AA/Positive Affirmed

**Massachusetts Dept of Transp, Massachusetts**

Massachusetts



**Ratings Detail (As Of October 7, 2022) (cont.)**

Metropolitan Hwy Sys, Massachusetts  
 Massachusetts Dept of Transp (Metropolitan Hwy Sys) GO  
*Long Term Rating* AA/Positive Outlook Revised

**Massachusetts Dept of Transp, Massachusetts**

Massachusetts  
 Metropolitan Hwy Sys, Massachusetts  
 Massachusetts Dept of Transp (Metropolitan Hwy Sys) GO  
*Long Term Rating* AA/Positive Outlook Revised

**Massachusetts Dept of Transp, Massachusetts**

Massachusetts  
 Metropolitan Hwy Sys, Massachusetts  
 Massachusetts Dept of Transp (Metropolitan Hwy Sys) GO  
*Long Term Rating* AA/Positive Outlook Revised

Many issues are enhanced by bond insurance.

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