MOODY'S INVESTORS SERVICE

CREDIT OPINION
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Massachusetts (Commonwealth of)

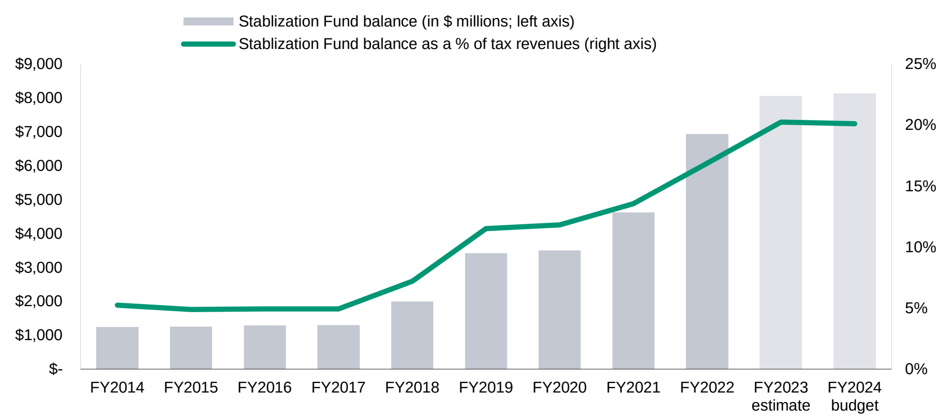
Update to credit analysis

Summary

Massachusetts' (Aa1 stable issuer rating) strong credit position relies on it economic profile, which is driven by a diversified and highly educated employment base centered on jobs in high growth, knowledge industries that pay above-average wages. Massachusetts has largely recovered coming out of the pandemic, but has slightly slipped relative to the nation as tech jobs are showing contraction and net migration turned negative for the commonwealth through the pandemic. Favorably, Massachusetts is in a strong financial position the commonwealth built up a rainy day reserve to a historic high, capitalizing on strong revenue growth over the last several years (Exhibit 1).

Long-term liabilities and associated fixed costs remain some of the highest among states. The commonwealth's continued adherence to strong governance practices, including adequate funding of these liabilities, remains a central credit consideration.

Exhibit 1
Fiscal 2023 reserve balance to increase further despite softening revenue



Source: Massachusetts Office of the Comptroller, Massachusetts Information Statement September 2023

Credit strengths

- Large economy focused on important knowledge sectors that pay above-average wages such as healthcare, education and technology
- Strong financial management practices, particularly willingness to close budget gaps quickly through spending cuts, revenue increases and use of reserves
- Growing rainy day reserve balance nearing statutory cap which provides a healthy buffer in the event of an economic downturn

Credit challenges

- Combined debt and pension liabilities that are among the highest in the state sector relative to revenue, resulting in elevated fixed costs that limit budget flexibility
- Weakening demographic profile
- Above average exposure to hurricane risk and sea level rise given most of commonwealth gross domestic product generated in coastal counties

Rating outlook

Massachusetts' stable outlook reflects our expectation that the commonwealth will continue its trend of strong financial management, taking proactive measures to navigate challenges that could emerge if the economy slows over the near term.

Factors that could lead to an upgrade

- Moderated debt and pension burdens relative to peers
- Sustained high reserve levels and establishment of stronger constraints for their use

Factors that could lead to a downgrade

- Protracted structural budget imbalance
- Reserves or liquidity that falls below adequate levels
- Growth in leverage and fixed costs relative to state revenue

Key indicators

Exhibit 2

	2020	2021	2022	State Medians (2021)
Economy				
Nominal GDP ($billions)	585.2	641.3	688.4	264.2
Real GDP, annual growth	-2.8%	6.6%	2.0%	5.5%
RPP-adjusted per capita income as % of US	121%	122.4%		96.6%
Nonfarm employment, annual growth	-8%	3.9%	4.1%	2.7%
Financial performance				
Available balance as % of own-source revenue	18.0%	24.2%	30.1%	27.2%
Net unrestricted cash as % of own-source revenue	14.8%	34.7%	40.4%	63.0%
Leverage				
Total long-term liabilities as % of own-source revenue	356%	377.6%	303.7%	155.0%
Adjusted fixed costs as % of own-source revenue	17.4%	16.5%	13.1%	6.6%

Source: Massachusetts' audits and information statements, Moody's Investors Service

Profile

The Commonwealth of Massachusetts is the 16th-largest state by population, with an estimated 7 million residents as of the 2022 census. Its gross domestic product, at $688.4 billion in 2022, ranks 12th among the states. Per capita income was 130% of the national average in 2022, the second highest in the country.

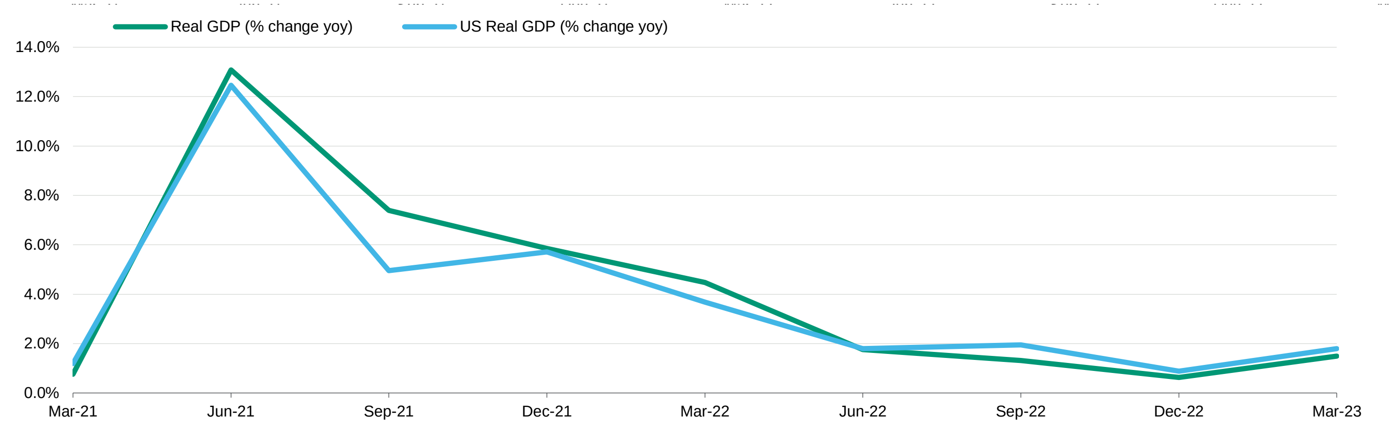
Detailed credit considerations

Economy

Massachusetts is typically an above-average performer for the New England region because of a highly educated workforce, above-average labor force participation rate, and a concentration of high-wage jobs in high-tech and healthcare, as well as higher education. The commonwealth has fully recovered total employment, but faces headwinds stemming from weak demographic trends, including negative net migration and an aging population, as well as Moody's expectation of below-trend growth in 2024, which is needed for inflation to sustainably decline. This, along with an expectation that the tech industry will shed jobs, will temper Massachusetts' economic trajectory over the next year. Commonwealth real GDP growth has slipped slightly relative to the US coming out of the pandemic (Exhibit 3).

Exhibit 3

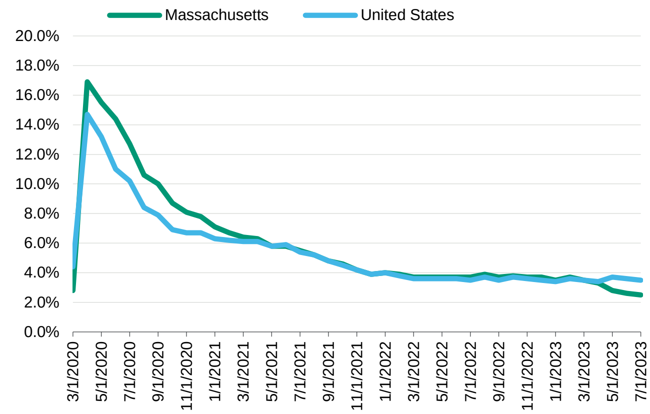
Real GDP growth has slowed as inflation persists, but Massachusetts has been tracking closely with the US



Source: US Bureau of Economic Analysis; Moody's Analytics

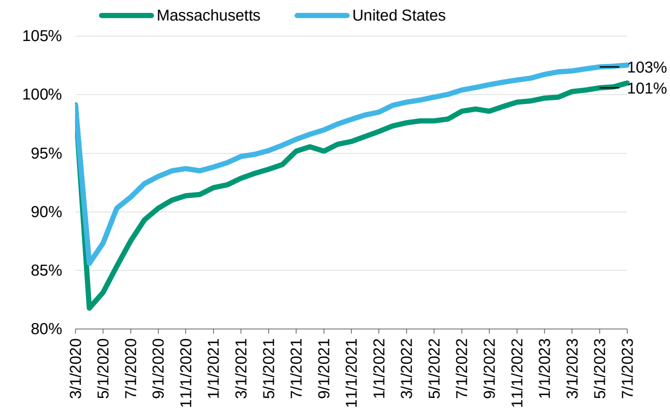
The commonwealth's unemployment rate as of August 2023 was down to 2.6%, reflecting a tight labor market and compared favorably to the US rate of 3.8% (Exhibit 4), and employment is above its pre-pandemic level, but recovery is less than for the US as a whole (Exhibit 5). Retail trade and leisure and hospitality employment are yet to recover, while professional and business services, construction, transportation and wholesale trade have exhibited strong employment gains.

Exhibit 4
Unemployment dipped below US through summer 2023



Source: US Bureau of Labor Statistics

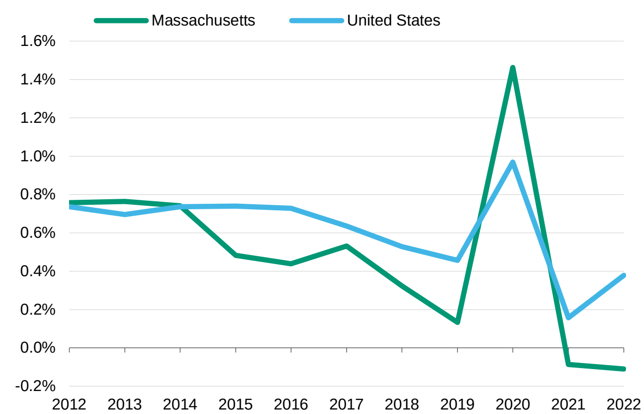
Exhibit 5
But, employment recovery has not been as robust as the nation as a whole



Source: US Bureau of Labor Statistics

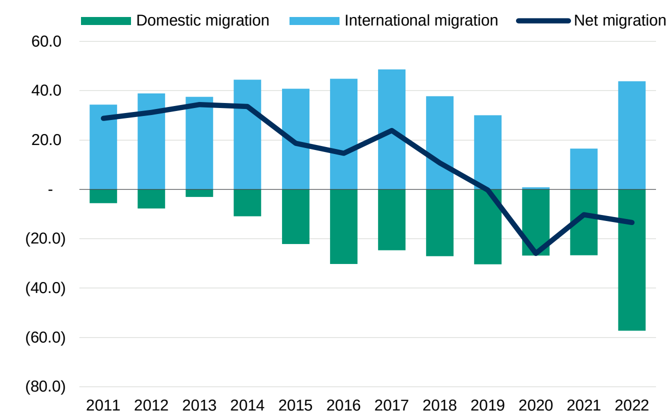
Over the course of the pandemic from April 2020 through July 2022, Massachusetts lost population following years of gains (see Exhibit 6). The population decline was largely because of negative domestic net migration among working age population, a negative for employment growth (see Exhibit 7).

Exhibit 6
Population growth turned negative through the pandemic...



Source: US Census Bureau

Exhibit 7
...driven by negative net migration



Source: US Census Bureau

The commonwealth's economy is dominated by high wage sectors like financial and business services, including high tech, higher education and healthcare given its numerous prominent universities and highly educated workforce. The high tech sector is likely to reduce employment, with several large firms already having announced layoffs. High interest rates also dampen biotech and related important sectors as funding reduces.

Financial performance

Massachusetts is experiencing softening tax revenue receipts, but this was proceeded by high revenue growth in fiscal years 2021 and 2022, which were bolstered by significant federal stimulus aid and led to substantial increases to the commonwealth's stabilization fund. Based on the recently adopted fiscal 2024 budget, the stabilization fund will modestly increase further in 2024, remaining at a historic high and near the statutory cap.

Massachusetts adopted a fiscal 2024 budget two months into the new fiscal year, continuing a recurring theme of late budgets. The 2024 budget incorporates revenue projections from the January 2023 consensus revenue estimate. The official revenue estimate projects growth of a modest 1.6% in fiscal 2024, bringing total tax revenue to $40.4 billion. In addition. $1 billion is projected to be collected from the additional 4% tax on incomes over $1 million. Through September 2023, three months into fiscal 2024, general revenue was essentially flat, up 0.9%, and 1.8% below benchmark. The year to date revenue results come on the heels of a new tax relief package, expected to cost an estimated $519 million in fiscal 2024, though tax relief was preemptively included in the budget.

Massachusetts is largely reliant on personal income taxes, at about 41% of governmental own-source revenue, followed by sales taxes at about 16%., and corporate taxes at 9%. The state has in a place a flat income tax at 5%, though in 2022 voters approved what is known as the Fair Share Amendment, or "millionaires tax", which adds an additional 4% tax on incomes over $1 million. This will mean greater reliance on high income earners, which can be volatile. The additional revenue, expected to generate $1 billion in fiscal 2024, will be applied to education and transportation projects, as stipulated in the voter authorization.

The 2024 budget includes increased revenue dedicated to Massachusetts's major expense categories, which includes include Medicaid and health & human services, followed by education and direct local aid. The commonwealth funds primary and secondary education at an above-average amount per pupil relative to other states, but this expense category still only accounts for 10% of governmental spending. Medicaid consumes just under a third of the budget, though about half of this expense is covered through federal matching funds. Health and human services expenses account for 15-20% of the budget historically, and are also offset by a third to a half with federal grants. The Department of Health and Human Services administers health and safety initiatives to various groups, including elder affairs, children and families, mental health, public health, veterans' services and persons with disabilities.

Medicaid enrollment ballooned to over 2 million people, up from 1.6 million, during the pandemic because of the continuous enrollment requirement tied to the additional 6.2 percentage point federal medical assistance percentage (FMAP), which expired at the end March 2023. States have twelve months to disenroll uneligible people from the Medicaid rolls, and are receiving phased down additional FMAP through December 2023. While Massachusetts will see a decline in Medicaid enrollment, the proposed fiscal 2024 budget includes a 7% increase for health and human services expenses, to account for rising healthcare costs and the time it will take to disenroll people no longer eligible for the program.

Liquidity

The commonwealth has taken advantage of the strong revenue growth in fiscal 2021 and 2022 to build up reserves in its stabilization fund, Massachusetts' rainy day reserve. Despite a slight tax revenue decline in fiscal 2023 relative to 2022, the stabilization fund is projected to increase substantially increase for 2023, and modestly increase further for 2024, bringing the balance to over $8.1 billion or over 20% of projected tax revenue (see Exhibit 1 on front page). Commencing in fiscal 2024, the allowable stabilization fund balance at fiscal year end is 25.5% of total budgeted revenues for that year, up from 15%. If the stabilization fund balance exceeds the allowable limit, the excess amounts are to be transferred to the tax reduction fund.

There are several mechanisms in place to continue to transfer funds to the stabilization fund. Statutorily-defined budget surplus is to be transferred in, as well as 90% of capital gains tax above $1 billion, CPI-adjusted since 2014. The legislature may override these requirements, which it has done during times of fiscal stress.

Outside of the stabilization fund the commonwealth has multiple sources of alternate liquidity, providing even more budgetary buffer should the need arise. The commonwealth has a $200 million note purchase agreement with RBC Capital Markets, LLC (A3 stable) which expires February 2024 and a $500 million line of credit opened at the beginning of the pandemic, which expires in March 2026. The line of credit was reduced from its original $1.75 billion, and is secured with a syndicate of banks lead by Bank of America, N.A. (Aa2(cr)/P-1(cr)). None of the these facilities have any balances outstanding.

The commonwealth has had a practice of issuing revenue anticipation notes (RANs) annually since 2009, and issued $1.5 billion in Revenue Anticipation Notes in fiscal 2021 that have been repaid. With the strong revenue performance and large influx of federal aid through the pandemic, no RANs were issued in fiscal years 2022 or 2023.

Leverage

Massachusetts' high balance sheet leverage relative to revenue reflects in part the fact that the commonwealth borrows on behalf of several governmental entities, including for transit and education and fully covers teacher pension liabilities. The adjusted net pension liability (ANPL) makes up the largest share of Massachusetts' leverage (Exhibit 5), almost double its net tax supported debt. Much of the fluctuation in the ANPL can be attributed to movement in the assumed rate of return, therefore the ANPL is likely to decline further over the next few years given the high interest rate environment which will keep Moody's assumed discount rate elevated. Debt is likely to remain elevated, as the state maintains its ongoing capital investments.

Fixed costs continue to be a significant budget driver for the commonwealth. In 2022 combined debt service, pension and other post employment benefits (OPEB) employer contribution costs were over 15% of own-source revenue, compared to the sector median of 5.9% (Exhibit 8).

Exhibit 8

Massachusetts' combined debt, pension & OPEB leverage is above average among states

$ millions	2020	2021	2022	50-state median (2022)
Net tax-supported debt	$46,173	$47,667	$48,688	$5,300
Other long-term liabilities	3,031	2,907	2,627	600
Adj. net pension liability	88,289	115,469	98,367	12,500
Adj. net OPEB liability	16,327	16,958	14,274	1,400
Total leverage as % of own-source revenue	**356.0%**	**377.6%**	**303.7%**	**131.0%**

Source: Massachusetts' ACFR, Information Statements, Moody's Investors Service

Exhibit 9

Massachusetts' fixed costs are above-median; pension contribution exceeded tread water level in 2022

(% own-source revenue)	2020	2021	2022	50-state median (2022)
Implied Debt Service	7.7%	6.8%	6.2%	1.8%
Other Long-Term Liabilities Carrying Cost	0.5%	0.4%	0.4%	0.3%
OPEB Contribution	1.1%	1.1%	1.2%	0.4%
Pension tread water	8.0%	8.1%	5.4%	1.9%
Pension contribution	6.7%	6.7%	7.3%	3.5%
Total fixed costs (tread water)	17.4%	16.5%	13.1%	4.8%
Total fixed costs (contribution)	16.0%	15.2%	15.1%	5.9%
Tread water shortfall	1.3%	1.4%	-2.0%	-1.9%

Source: Massachusetts' ACFR, Information Statements, Moody's Investors Service

Legal security

Massachusetts pledges its full faith and credit for the payment of principal and interest of general obligation bonds, which includes unrestricted revenue but does not come from a dedicated property tax levy. We note that state law limits annual tax revenue growth and does not exempt debt service payments from this limitation.

Massachusetts also has several special tax bond programs which are limited obligations secured by specific revenue streams (see Exhibit 7 below).

Debt structure

Net tax-supported debt reached $48.7 billion for fiscal 2022 (Exhibit 9), comprised primarily of general obligation bonds, which account for two-thirds of debt and special tax debt for transportation and convention centers, about 10%. Massachusetts debt also includes sales tax backed debt for other underlying entities, the Massachusetts Bay Transportation Authority and the Massachusetts School Building Authority, which accounts for about a quarter of debt.

Per the 2024-2028 capital investment plan, the commonwealth plans to invest $5.5 billion in fiscal 2024, funded through $2.9 billion in general obligation bonds, as well as federal funds, cash and other sources. Per policy, the annual borrowing limit is structured to keep debt service costs on the commonwealth's direct debt within 8% of budgeted revenue.

The capital improvement plan incorporates the $16.2 billion transportation bond bill that was adopted in 2020, and funds MassDOT, as well as $5.1 billion in capital improvements for Massachusetts Bay Transportation Authority (MBTA rated Aa2 stable) over several years. Additionally, MassTRAC, signed into law in 2022, includes $11.4 billion in additional investment transportation infrastructure and included within this is $400 million dedicated to MBTA's projected related to safety concerns.

Most of Massachusetts' debt is fixed rate. The commonwealth had about $966 million of general obligation variable rate debt outstanding or 2% of fiscal 2022 net tax supported debt, with $741 million of the variable rate unhedged. The last interest rate swap was terminated as of March 2023, therefore as of fiscal 2023, all variable rate debt was unhedged.

Exhibit 10

Net tax supported debt modestly increased in fiscal 2022

Security	Fiscal 2022 debt (in $ 000)	Pledge	Rating
General obligation/Leases			
GO and GO related:			Aa1/STA
GO	$ 27,726,823	Commonwealth full faith and credit	Aa1/STA
Contract Assistance	3,279,071	Commonwealth full faith and credit	Aa1/STA
MBTA Prior Obligations	110,210	Commonwealth full faith and credit	Aa1/STA
Capital leases	946,044		N/A
Special Tax			
MSBA sales tax (senior and sub)	$ 6,323,688	Dedicated statewide sales tax	Aa2/Aa3/STA
CTF	3,991,082	Gas taxes and registry fees	Aa1/STA
GANs	602,749	Federal highway funds and sub lien on gas taxes and registry fees	Aa2/STA
Convention Center	453,675	Hotel occupancy tax; rental car surcharge; sales tax and sightseeing surcharge	A1/STA
MBTA sales tax & assessment (senior and sub)	5,254,769	Dedicated statewide sales tax and/or dedicated statewide assessments	Aa2/Aa3/STA
Total net tax supported debt	**$ 48,688,111**		

Source: Massachusetts ACFR, MSBA and MBTA ACFRs, Moody's Investors Service

Debt-related derivatives

The final swap agreement was terminated March 2023, no additional debt-related derivatives are outstanding.

Pensions and OPEB

The commonwealth's unfunded pension and OPEB liabilities are some of the highest in the nation and the state's contributions have historically been below the amount necessary to prevent the current liability from growing, posing a credit challenge over the longer term. In fiscal 2022, the state's contribution to pension plans exceeded the tread water contribution amount.

Based on the commonwealth's fiscal 2022 pension data, Massachusetts' adjusted net pension liability (ANPL) was $98.4 billion or 182% of own-source revenue. The 50-state median ANPL to revenue is 80%, with the commonwealth ranking fifth highest in the nation. Massachusetts ANPL is among the highest in the state sector in part because it is responsible for K-12 teacher pensions in addition to state employees. When including unrecognized teacher pension liabilities to state ANPL's (shown in our pension medians report), Massachusetts moves more toward the median for the state sector.

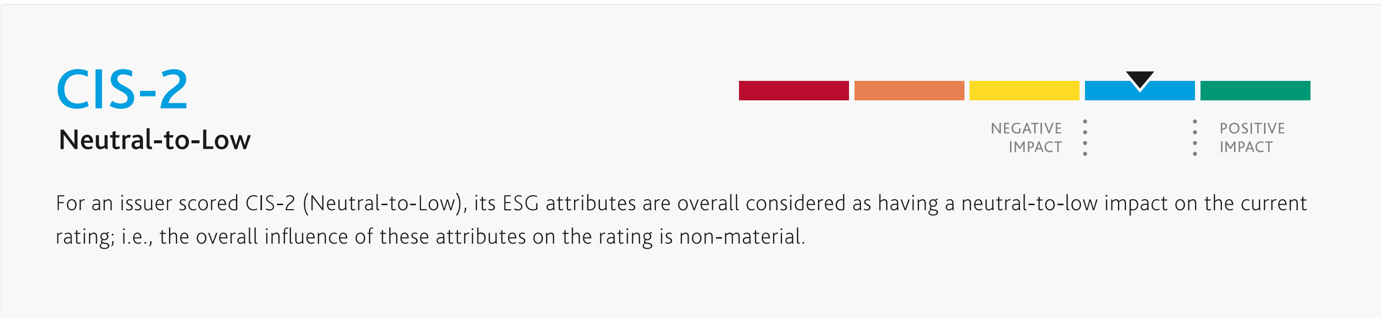
Contributions to the pension plan are set by statute, and based on the current funding plan, fall below actuarially determined amounts and historically below a "tread water" level that would prevent the liability from growing, though in 2022 the contribution exceeded this amount for the first time because of a $250 million supplemental deposit from general revenue and $126 million from capital gains taxes as required by statute. The secretary of Administration and Finance must, by law, file a proposed funding schedule with the legislature every three years that demonstrates the unfunded liability will be amortized by 2040. The most recent funding schedule for payments into the pension liability fund was filed in January 2023. The payment schedule was based on the January 2022 valuation report, as well as the reduced discount rate of 7%, down from 7.25%. Contributions will increase by 9.63% per year through fiscal 2028 with the remaining unfunded actuarial liability amortized on a 4% annual increasing basis thereafter until fiscal 2036.

Moody's adjusted post employment benefit (OPEB) liabilities for Massachusetts were $14.3 billion as of fiscal 2022. At 26.4% of own-source revenue, the commonwealth's adjusted net OPEB liability is above the state median of 8.8% of own source revenue. In 2008 the state created a trust fund to account for its other post-employment benefit (OPEB) plan. The state contributions are set by statute, though the trust fund also receives annual distributions, primarily from tobacco settlement proceeds and capital gains taxes.

ESG considerations

Massachusetts (Commonwealth of)'s ESG Credit Impact Score is Neutral-to-Low CIS-2

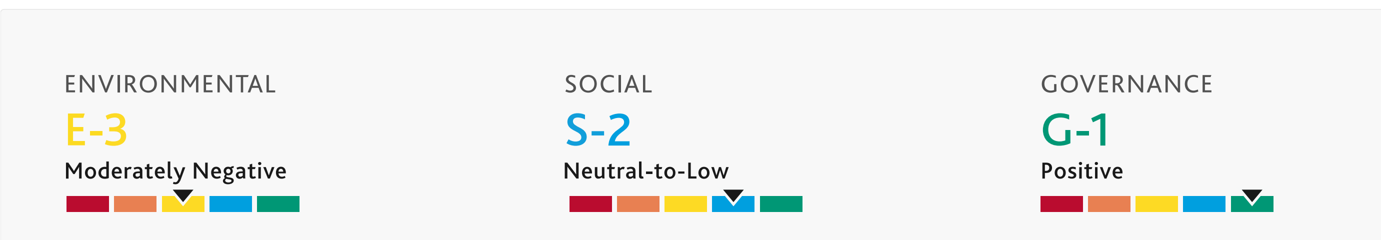
Exhibit 11
ESG Credit Impact Score



Source: Moody's Investors Service

Massachusetts' credit profile is not materially impacted by environmental, social and governance factors. Moderately negative exposure to climate risks are offset by a neutral impact from social factors and strong governance attributes.

Exhibit 12
ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

Massachusetts' E issuer profile score is moderately negative (**E-3**). The primary driver of the score is the commonwealth's exposure to physical climate risks, namely hurricanes and resulting flooding, as well as sea level rise. Other factors in our assessment of Massachusetts' environmental risks are considered to have a neutral to low impact on its credit profile. The commonwealth is far along in transitioning its energy generation to renewable sources, and its economy is largely reliant industries that are not carbon-intensive, nor do they rely on the natural capital of the commonwealth. According to Moody's ESG solutions, almost all of the state's projected population over the next twenty years, and 95% of state GDP are exposed to hurricanes, and about half of the state's GDP is vulnerable to flooding. The vast majority of the commonwealth's economic activity is concentrated along its coastline, particularly in the city of Boston (Aaa stable), which drives up the commonwealth's vulnerability to these physical climate risks.

Social

While Massachusetts benefits from a highly educated workforce, high income levels, and labor force participation significantly higher than the nation, it is likely to continue its trend of lagging population growth, reflected in its S issuer profile score of neutral-to-low (**S-2**). The state population is aging, too. The median age in the commonwealth is now 39.6 years, exceeding the national median age of 38.2 years. The state's percentage of working age residents is 39%, approximating the rate of the US, but this portion of the population has been shrinking. The number of prime working age residents, or people 25 to 54 years old, declined by 0.8% between 2000 and 2020. This is a contrast to the US 1.1% growth rate of working age residents over the same period.

Governance

Massachusetts' governance practices are generally very strong, reflected in its positive G issuer profile score (**G-1**). These practices include consensus revenue estimating, multiyear financial plans/five year forecast. Late budgets are common in Massachusetts, but the delays typically result from a multilayered approval process that requires three separate budgets to be combined into one final document. Interim budgets are put in place to ensure continuing operations and payment of debt service.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Rating methodology and scorecard factors

Exhibit 13

	Measure	Weight	Score
Economy			
Resident Income (PCI Adjusted for RPP / US PCI)	122.4%	15%	Aaa
Economic Growth (5-year CAGR real GDP - 5-year CAGR US real GDP)	0.4%	15%	Aaa
Financial performance			
Financial performance	Aaa	20%	Aaa
Governance/Institutional Framework			
Governance/Institutional Framework	Aaa	20%	Aaa
Leverage			
Long-term liabilities ratio (adjusted long-term liabilities / own-source revenue)	303.7%	20%	A
Fixed-costs ratio (adjusted fixed costs / own-source revenue)	13.1%	10%	Aa
Notching factors			
Very limited and concentrated economy			0
Scorecard-Indicated Outcome			Aa1
Assigned rating			Aa1

Source: US Bureau of Economic Analysis, State ACFRs, Moody's Investors Service

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