CREDIT OPINION
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Massachusetts (Commonwealth of)

Update to credit analysis

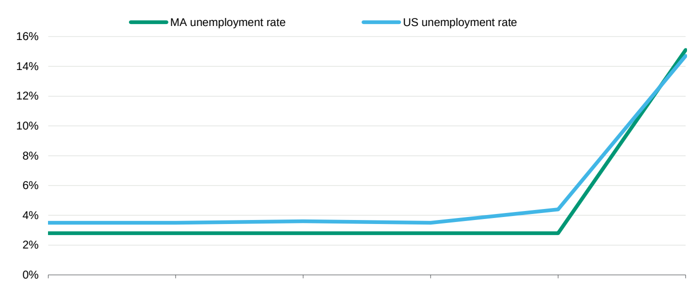
Summary

Massachusetts' (Aa1 stable) healthy reserves and ability to access alternate sources of liquidity are important factors as it works to balance budgets while also funding key priorities with uncertain revenue. The commonwealth's usually strong economy is feeling the national impact of the coronavirus-induced economic shutdown with elevated unemployment claims and a current unemployment rate slightly higher than the US (see Exhibit 1). Massachusetts pre-pandemic strengths, including a well-educated work force with high wage jobs, will help it navigate sectorwide challenges associated with rising unemployment claims.

Debt and pension liabilities remain among the highest in the nation, driven upward by borrowing paid for with statewide taxes that in most other states would be done by local governments, in particular for school construction (Massachusetts School Building Authority; senior lien Aa2 stable) and for mass transit (Massachusetts Bay Transportation Authority, sales tax senior lien Aa2 stable). These costs limit budget flexibility, a key issue as the commonwealth tries to figure out how to fund key health and education priorities with delayed and declining revenue. Massachusetts' governance practices are generally very strong, which we expect will continue and will be central to navigating the economic downturn.

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 Massachusetts. 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 Massachusetts changes, we will update our opinion at that time.

Exhibit 1
Massachusetts' unemployment rate slighted exceeded the national rate as of April



Source: US Bureau of Labor Statistics

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

» Adequate reserves and commitment to maintain them at levels that provide a healthy buffer for the current economic downturn

Credit challenges

» Combined debt and pension liabilities that are sixth highest in the nation relative to GDP, resulting in elevated fixed costs that limit budget flexibility

» Aging demographic profile with overall population growth that lags the nation

» Above average exposure to climate risks with most of its 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 credit challenges that are emerging as the country enters into an economic downturn.

Factors that could lead to an upgrade

» Moderated debt and pension burdens, especially relative to peers

» Continued growth of reserves and establishment of stronger constraints on their use

» Established trend of structural budget balance

Factors that could lead to a downgrade

» Protracted structural budget imbalance

» Reserves or liquidity that falls below adequate levels

» Growth in leverage relative to state GDP or rising fixed costs relative to state revenue

Key indicators

Exhibit 2

Massachusetts (Commonwealth of)	2015	2016	2017	2018	2019	50-State Median (2018)
Operating Fund Revenues (000s)	$32,946,934	$33,414,744	$33,910,836	$36,483,673	$39,090,431	$11,520,082
Available Balances as % of Operating Fund Revenues	7.7%	7.4%	6.6%	8.7%	13.9%	7.4%
Nominal GDP (billions)	$502.9	$519.4	$540.8	$569.5	$595.6	$236.9
Nominal GDP Growth	6.2%	3.3%	4.1%	5.3%	4.6%	4.7%
Total Non-Farm Employment Growth	1.9%	1.9%	1.3%	1.2%	1.0%	1.1%
Fixed Costs as % of Own-Source Revenue	20.3%	23.1%	22.8%	20.7%	NA	8.1%
Adjusted Net Pension Liabilities (000s)	$53,989,121	$65,193,204	$80,449,143	$81,227,853	NA	$12,209,760
Net Tax-Supported Debt (000s)	$39,008,274	$40,753,424	$41,744,847	$42,193,311	$43,136,088	$4,146,966
(Adjusted Net Pension Liability + Net Tax-Supported Debt) / GDP	18.5%	20.4%	22.6%	21.7%	NA	7.7%

Source: Massachusetts FY15-FY19 CAFRs; US Bureau of Labor Statistics; Us Bureau of Economic Analysis; Moody's Investors Service

Profile

The Commonwealth of Massachusetts is the 15th largest state by population, boasting nearly 6.9 million residents in 2019. Its 2019 gross domestic product, reaching $595.6 billion, ranks 11th among the states. Per capita income was 131.7% of the national average in 2018, second highest in the US.

Detailed credit considerations

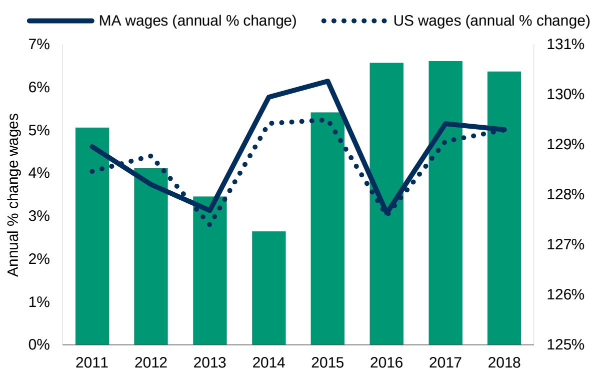
Economy

Massachusetts pre-pandemic strengths will help the commonwealth navigate sectorwide challenges associated with rising unemployment claims.

In the years leading up to the pandemic Massachusetts economy benefited from its well-trained labor pool, experiencing strong wage growth, increasing an average 1.7% annually over the last 10 years, outpacing the US rate of 1.2% (see Exhibits 3 and 4). These wages supported the commonwealth's consistently high per capita income, which most recently reached 131.7% of the US average, the second-highest rate among states. Gross domestic product growth outpaced the US in 2019, but just like the nation as a whole, job growth continued at a more tempered pace because of a nearly fully tapped workforce.

Exhibit 3

Massachusetts' wages and per capita income consistently outpace the US...



Source: US Bureau of Labor Statistics; US Bureau of Economic Analysis

Exhibit 4

... in part because of the high level of educational attainment in the commonwealth

Educational attainment in 2018	MA	US
Percent of population 25 years or over with:		
High school degree	23.3%	26.9%
Associates degree	7.6%	8.6%
Bachelors degree	24.4%	20.0%
Graduate or professional degree	20.1%	12.6%
High school graduate degree or higher	*90.8%*	*88.3%*
Bachelors degree or higher	*44.5%*	*32.6%*

Source: US Census

Beginning in March 2020 the governor declared a state of emergency because of the growing coronavirus risks, followed by a suspension of all elective medical procedures as of March 18 and a shelter-in-place advisory on March 23. While schools will remain closed for the rest of the academic calendar year, the governor recently laid out a phased reopening plan. Manufacturing and construction companies were allowed to resume operations on May 18, important components of the economy at 11% of nonfarm employment, but well below the 22.1% that education and health services comprise.

Since the shelter-in-place order began Massachusetts' unemployment rate jumped to 15.1% as of April 2020, slightly above the US rate of 14.7% for the same time period. Since the state started to curb economic activity in early March, unemployment insurance claims reached just over 20% of total February 2020 nonfarm employment. Initial unemployment insurance claims peaked at the end of March and have declined each week through the middle of May. The surge in current unemployment insurance claims is not unique to Massachusetts, with the commonwealth joining at least eight other states seeking federal assistance to pay unemployment claims.

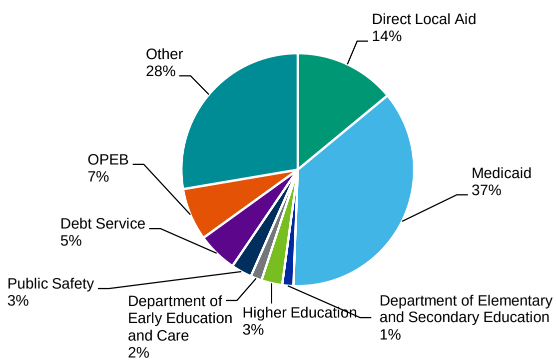
Finances and liquidity

Massachusetts' prudent build up of reserves, and new sources of alternate liquidity, will aid the state as it navigates declines and delays in its key tax revenue.

Massachusetts is heavily reliant on income and sales taxes to fund its operations, which is projected to account for over 80% of total tax revenue in 2020. These revenue fund the commonwealth's key expenditures: education and Medicaid (see Exhibit 5). Through April 2020 sales taxes continue to exceed last year's collections, 3.4% over fiscal 2019 year-to-date amounts, in large part because collections earlier in the year posted over 5% growth. Income taxes, however, are -11.5% down from last year, resulting in total tax revenue falling -7.7% below budgeted estimates (see Exhibit 6). Much of these revenue are expected to be recouped, with receipts delayed following Massachusetts' decision push back its income tax filing date to be in lock step with the US government. To help bridge the near-term gap in tax revenue the commonwealth secured a $1.75 billion line of credit with a syndicate of banks lead by Bank of America, N.A. (Aa2(cr)/P-1(cr)).

Exhibit 5

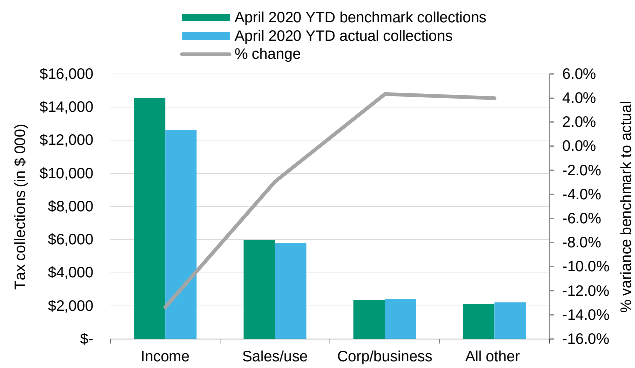
Majority of spending on key line items of healthcare and education...



Source: Massachusetts Information Statement, February 2020

Exhibit 6

...making spending cut decisions difficult as the commonwealth faces a -7.7% year-to-date negative budget variance across its tax revenue



Source: Massachusetts April Monthly Revenue Collections Report

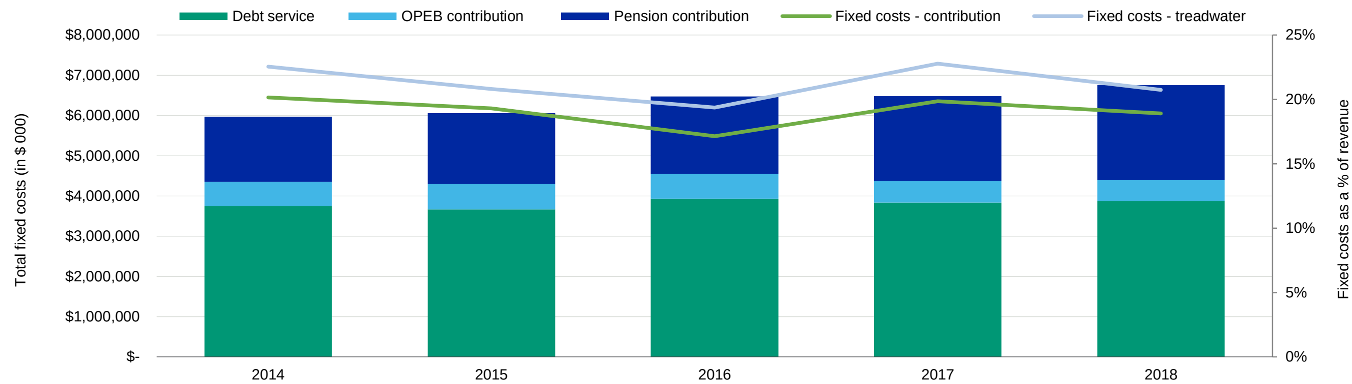
The governor filed a supplemental appropriations bill for up to $1.0 billion of additional spending in fiscal 2020 for coronavirus-related expenditures. The commonwealth expects the federal government will reimburse it for most of these expenditures. Additional spending adjustments may be made for fiscal 2020.

A perennial late budget adopter, the fiscal 2021 plan will likely prove to be exceedingly difficult to enact on time as the impact and duration of the coronavirus pandemic remains unclear. The governor proposed his fiscal 2021 budget in January, proposing a spending increase of 2.3% over projected fiscal 2020 totals, excluding transfers to the Medical Assistance Trust Fund. The legislature is crafting its proposal now, though this process is likely to continue into the beginning of the next fiscal year as the commonwealth looks to what additional aid may be coming from the federal government.

Fixed costs continue to be a significant budget driver for the commonwealth. In 2018 combined debt service, pension and other post employment benefits (OPEB) employer contribution costs were 18.9% of revenue, well above the 7.5% sector median. Compounding the situation, the commonwealth under contributes to its pension plans. Those contributions are not enough to “tread water” or prevent its net pension liability (NPL) from growing even if investment returns meet all the actuarial assumptions associated with the plan. The contributions were about 78% of our tread water benchmark. Fixed costs as a percent of revenue would have been 20.7% in 2018 had the mark been met (see Exhibit 7).

Exhibit 7

Fixed costs comprise nearly 20% of revenue; if the commonwealth contributed its tread water amount fixed costs would rise slightly to just over 20%



Source: Massachusetts FY14-FY18 CAFRs, Moody's Investors Service

High fixed costs are partly attributable to the Commonwealth's absorption of certain costs covered by local governments in most other states. But regardless of the reason for the elevated cost, steep fixed costs reduce the commonwealth's budgetary flexibility, exposing the state to difficult budgetary decisions as it faces steep revenue declines. Favorably, the commonwealth is moderately prepared to handle a recession, with its diversified revenue structure, as well as moderate expenditure flexibility and reserves, balancing out the aforementioned high costs.

LIQUIDITY

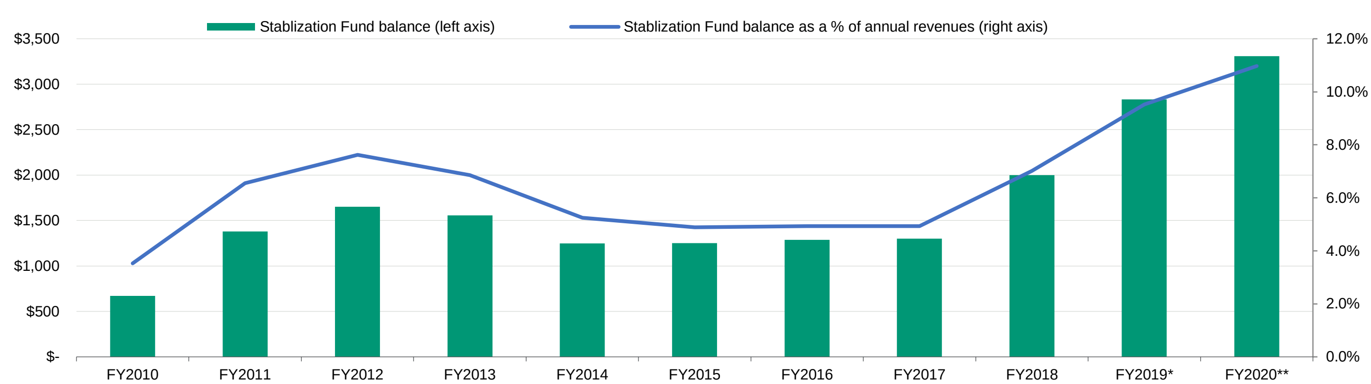
The commonwealth has taken advantage of the ongoing economic expansion, using increasing tax revenue to rebuild reserves, including a sizable deposit in the most recent fiscal year that will help buffer the credit during this economic slowdown.

After suspending certain deposits into reserves in fiscal 2015 and 2016 to close operating deficits, the commonwealth embarked on a commitment to rebuild its rainy day balance. The result has been to nearly double the amount of funds set aside, largely because of strong capital gains revenue since fiscal 2018.

The commonwealth ended fiscal 2019 with a stabilization fund balance of $3.4 billion, with net inflows of $1.4 billion representing a 71% gain over fiscal 2018 year-end balance. The increase was primarily driven by deposits of surplus capital gains tax revenue and end of year operating surplus. The balance was projected to grow to nearly $4.0 billion or 13% of projected tax revenue (see Exhibit 8). The commonwealth has not yet announced how it plans to close its projected budget gap for fiscal 2020, but the use of reserves remains an option that could reduce this figure.

Exhibit 8

Recent replenishment of reserves was well-timed; 2020 balance is unlikely to grow to budgeted amount



*Fiscal 2019 balance is estimated **Fiscal 2020 balance is budgeted

Source: Massachusetts Information Statement, February 2020; Massachusetts Fiscal 2020 Enacted Budget

Debt and pensions

The commonwealth's high debt burden reflects its focus on funding necessary maintenance, modernization and growth capital plans at both the state and local level. Given recent capital plans, we expect the commonwealth to continue issuing debt for key priorities, but the overall economy will continue to provide a solid foundation for paying the long-term costs.

Net tax-supported debt reached $43.7 billion for fiscal 2019 according to Moody's state debt medians report, comprised primarily of general obligation bonds (55%) but also includes sales tax backed debt for other underlying entities (23%). The state's debt levels ranked second-highest among the 50 states on a per capita basis. Debt is elevated in part because of the commonwealth's practice of financing projects for local governments, including a robust school district capital bonding program and debt for the Massachusetts Bay Transportation Authority. Per the governor's fiscal 2020 five-year capital investment plan, the state expects to issue up to $2.43 billion of general obligation bonds.

DEBT STRUCTURE

Massachusetts had $2.6 billion of general obligation variable rate debt outstanding or 5.9% of fiscal 2019 net tax supported debt, with nearly $1.5 billion of the variable rate bonds unhedged. Liquidity facilities contain a mix of three- and five-year term-out provisions that, considering the strength of Massachusetts' market access, should provide ample time to refinance, if necessary. Inclusive of the full amount of the commonwealth's commercial paper program and its note purchase agreement, the variable and short-term debt is 6.8% of total net tax supported debt.

DEBT-RELATED DERIVATIVES

The commonwealth's closely managed derivatives portfolio is manageable because of liquidity that is sufficient to handle unforeseen circumstances related to its swap agreements. The agreements are floating-to-fixed hedges with a total notional amount of $1.1 billion across general and special obligation debt. The mark-to-market value was -$119.6 million as of November 30, 2019.

PENSIONS AND OPEB

The commonwealth's unfunded long-term liabilities are some of the highest in the nation and the state's contributions are consistently below the amount necessary to prevent the current liability from growing, posing a credit challenge over the longer term.

Based on the commonwealth's fiscal 2018 pension data, Massachusetts' adjusted net pension liability (ANPL) was $81.2 billion or 228% of revenue. The 50-state median ANPL to revenue is 92%, with the commonwealth ranking sixth highest in the nation. The commonwealth participates in three pension plans, of which the most significant is the State Teachers Contributory Retirement System. Massachusetts is among approximately twelve states that take responsibility for directly funding teacher pensions.

While the commonwealth contributes more than the full amount of its actuarially determined contribution annually, the state's contributions are consistently below an amount necessary to prevent the unfunded liability from growing each year, reaching only 78% of our "tread water" benchmark in fiscal 2018. Massachusetts law requires that the schedule of pension contributions be updated every three years. Pursuant to a new triennial schedule adopted in January 2020, pension payments will increase by approximately 9.6% in fiscal 2021.

In 2008 the state created a trust fund to account for its other post-employment benefit (OPEB) plan. The commonwealth's reported OPEB liability as of fiscal 2018 was $16.7 billion, slightly above Moody's adjusted net OPEB liability of $15.9 billion. The state contributions are set by statute, though the trust fund also receives annual distributions, primarily from tobacco settlement proceeds.

ESG considerations

Environmental

The US states sector overall has low exposure to environmental risks because of states' large and diverse economies, revenue-raising ability and federal government support for disaster recovery costs. Massachusetts' environmental risk exposure is above average, however, because the vast majority of its economic activity is concentrated along its coastline, with notable exposure to storms, flooding and future sea level rise.

According to the Bureau of Labor Statistics, close to a quarter of Massachusetts' wages are earned in hurricane storm surge flood zones and nearly 85% of the exposure is located in zones vulnerable to the two lowest categories of storms. This exposure reflects the state's economic engine, Boston (Aaa stable) and its location on the coast. Altogether, more than 80% of the commonwealth's GDP is located in its coastal counties, far exceeding the 50-state median of 38.6% and ranking Massachusetts' economy more at risk by this measure than Florida (Aaa stable) or California (Aa2 stable).

Massachusetts' risk of storm damage, flooding and rising sea levels on a relative basis because of climate change also ranks highly compared to other states. According to data from Moody's affiliate Four Twenty Seven, Massachusetts counties' average projected rate of change in five climate risk factors, when weighted by county GDP, is third highest in the nation, behind Florida and Rhode Island (Aa2 stable). While none of the state's counties (or cities) fall into the highest exposure category of the Four Twenty Seven data, its heavy GDP concentration in the moderate-risk Boston area results in a higher overall climate change exposure ranking versus most other states.

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. The funds would be used for strategic land acquisition and other resiliency projects across the state.

Social

Social issues, such as demographics, labor force, income and education, are key influencers of all state economies, financial and leverage trends and governance stability. The commonwealth benefits from a highly educated workforce and elevated income levels. This contributes to the state's attractiveness to businesses looking to relocate or expand, especially in the greater Boston region, which helps boost the state's economy.

Population growth is likely to continue its trend of lagging 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 state population grayed over this period, too. The median age in the commonwealth is now 39.4 years or 16th highest in the nation, exceeding the national median age of 38.2 years. The state's percentage of working age residents is 40%, 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 3.9% between 2000 and 2018. This is a striking contrast to the US 4.6% growth rate of working age residents over the same period.

Governance

Governance is a material consideration for the sector and all of the state’s ratings. Massachusetts’ governance practices are generally very strong, including consensus revenue estimating, multiyear financial plans/five year forecast. We expect strong governance practices will continue and will be central to navigating the economic downturn.

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.

Reserves have been growing significantly in recent years, as the commonwealth is required to deposit the entire year-end surplus and any tax revenue from excess capital gains into the Stabilization Fund, with 5% of the excess capital gains taxes deposited then transferred to the State Retiree Benefits Trust Fund and 5% transferred to the commonwealth's Pension Liability Fund. The commonwealth is also required to deposit certain one-time settlements and judgments into the Stabilization Fund.

The governor has the authority to cut expenses for executive agencies without legislative approval if there is a revenue shortfall. To address the aforementioned climate change concerns, the state is conducting vulnerability preparedness planning with its municipalities and looking for ways to fund multiple resiliency projects across the commonwealth to mitigate the risks.

Rating methodology and scorecard factors

The US States and Territories methodology includes a scorecard, which summaries the 10 rating factors generally most important to the state and territory credit profiles. Because the scorecard is a summary, and may not include every consideration in the credit analysis for a specific issuer, a scorecard-indicated outcome may or may not map closely to the actual rating assigned.

Massachusetts' Aa1 rating is one notch higher than its scorecard-indicated outcome, because it incorporates the long-term economic growth that has provided the commonwealth with a strong base for paying its outsized liabilities, as discussed in this credit opinion.

Exhibit 9

US states and territories rating methodology scorecard

Massachusetts (Commonwealth of)

Rating Factors	Measure	Score
Factor 1: Economy (25%)		
a) Per Capita Income Relative to US Average [1]	132.3%	Aaa
b) Nominal Gross Domestic Product ($ billions) [1]	$595.6	Aaa
Factor 2: Finances (30%)		
a) Structural Balance	Aa	Aa
b) Fixed Costs / State Own-Source Revenue [2]	20.7%	Baa
c) Liquidity and Fund Balance	Aa	Aa
Factor 3: Governance (20%)		
a) Governance / Constitutional Framework	Aa	Aa
Factor 4: Debt and Pensions (25%)		
a) (Moody's ANPL + Net Tax-Supported Debt) / State GDP [2] [3]	20.9%	A
Factors 5 - 10: Notching Factors [4]		
Adjustments Up: None	0	
Adjustments Down: None	0	
Rating:		
a) Scorecard-Indicated Outcome		Aa2
b) Actual Rating Assigned		Aa1

[1] Economy measures are based on data from the most recent year available.
[2] Fixed costs and debt and pension measures are based on data from the most recent debt and pensions medians report published by Moody's.
[3] ANPL stands for adjusted net pension liability.
[4] Notching factors 5-10 are specifically defined in the US States and Territories Rating Methodology.
Source: US Bureau of Economic Analysis, State CAFRs, Moody's Investors Service

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