S&P Global Ratings

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Massachusetts; Appropriations; CP; General Obligation; General Obligation Equivalent Security; Joint Criteria; Sales Tax

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Credit Profile		
US$150.0 mil GO bnds consolidated loan ser 2016I due 12/01/2035		
Long Term Rating	AA+/Negative	New
US$150.0 mil GO bnds consolidated loan ser 2016H due 12/01/2026		
Long Term Rating	AA+/Negative	New
US$100.0 mil GO rfdg bnds (Sifma Index Bnds) ser 2017A due 02/01/2019		
Long Term Rating	AA+/Negative	New
US$88.49 mil GO rfdg bnds (Sifma Index Bnds) ser 2017B due 02/01/2020		
Long Term Rating	AA+/Negative	New
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed

Rationale

S&P Global Ratings has assigned its 'AA+' rating and negative outlook to the Commonwealth of Massachusetts' $150 million general obligation (GO) bonds consolidated loan of 2016 series H, $150 million GO bonds consolidated loan of 2016 series I, $300 million GO bonds consolidated loan of 2016 series J and $100 million GO SIFMA index refunding bonds of 2017 series A and $88 million GO SIFMA index refunding bonds of 2017 series B. At the same time, S&P Global Ratings affirmed its 'AA+' rating on the commonwealth's approximately $21.8 billion of parity GO bonds outstanding, its 'AA' rating on Massachusetts' appropriation secured debt, and its 'A+' rating on the commonwealth's Boston Housing Authority, Mass.' housing project bonds, West Broadway Homes IV project, series 2003, supported by the state of Massachusetts. The outlook is negative.

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

- Timely monitoring of revenues and expenditures and swift action when needed to make adjustments, with a focus on structural solutions to budget balance;
- Strong financial, debt, and budget management policies, including annualized formal debt affordability statements, and multiyear capital investment and financial planning;
- Adequate budget stabilization fund (BSF) balance;
- High wealth and income levels; and
- Deep and diverse economy, which continues its steady recovery.

S&P Global Ratings believes the commonwealth's high debt burden and high unfunded pension and other postemployment benefit (OPEB) liabilities are offsetting considerations to the current rating. Although we believe the commonwealth has been taking steps to more actively manage these liabilities with a focus on cost control and reform in recent years, Massachusetts' total postretirement liabilities remain high and are expected to continue to be a source

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of budgetary pressure in the future as greater contributions are required to keep pace with its funding schedule.

We understand that the proceeds from the consolidated loan of 2016 series H, I, and J are expected to be used to fund various capital projects. The SIFMA index bonds are general obligations of the Commonwealth of Massachusetts and will bear interest at a weekly variable rate equal to the SIFMA index rate, plus or minus a fixed number of basis points determined at time of sale, payable monthly. The interest rate cannot be higher than 11% or less than 0%. The bonds are being issued to refund a portion of SIFMA index bonds outstanding: series 2013A and 2014E. The amortization of the bonds, in conjunction with other variable-rate debt, has been structured by the commonwealth to match the notional amount of a 2005 interest rate swap agreement, which is being used to hedge interest rate risk.

Massachusetts' economy has recovered steadily, outpacing national and regional trends by most measures. Real state GDP rose 2.4% in 2015, compared with 2.0% for the nation. The commonwealth's average annual unemployment rate in 2015 was 5.0% compared with 5.3% for the nation. The state unemployment rate has fallen further to 4.2% as of June 2016, compared with 4.9% for the nation. Employment growth following the financial crisis was strong relative to that of other states and the commonwealth regained its pre-recession employment peak in 2013, according to the Bureau of Labor Statistics. However, IHS Global Insight Inc. forecasts slightly lower state employment growth in 2016, 2017, and 2018 at 1.6%, 1.2%, and 0.8%, respectively, in those years, compared with its forecast of 1.8%, 1.5%, and 1.0% for the U.S in those years. In our view, Massachusetts' economic fundamentals and key anchors, which center on higher education, technology, and health care, should contribute to continued expansion. Income growth has also been strong relative to that of other states, with 2015 per capita personal income ranked second in the U.S. behind that of Connecticut, at 128% of the U.S. average.

We believe Massachusetts' budget has generally been structurally balanced in recent years with good reserves, although two rounds of midyear budget adjustments were needed in fiscal 2015 as well as in fiscal 2016 to end the fiscal year in balance. As of June 2016, state general fund revenues were $484 million short of the revised 2016 budget forecast year-to-date. Management took action to address revenue shortfalls through spending restrictions, payroll caps, use of unneeded fund balances, acceleration of revenue collections (reimbursements), and other year-end closing measures including supplemental appropriations proposed by the governor on July 14, which required legislative approval. Massachusetts attributed fiscal 2016 budget shortfalls to legislative spending overrides of the governor's budget vetoes, a two-day state sales tax holiday, and lower-than-estimated business and individual income tax revenues because of increased tax refunds and lower-than-expected payments with returns and estimated payments. It also indicated that fiscal 2016 general fund expenditures are also slightly exceeding budgeted appropriations, both in Medicaid and non-Medicaid areas, although higher federal cost reimbursements offset most of the increased Medicaid-related expenditures. Total budgeted expenditures and other uses exceeded total budgeted revenues and other uses by $89 million or 0.5% of expenditures. At fiscal year-end 2016, operating funds balances, including the BSF, were $1.48 billion and only 3.6% of budgeted expenditures and other uses based on state projections.

The governor proposed a fiscal 2017 budget that further reduced the use of one-time revenues and made a modest deposit to Massachusetts' rainy-day fund (for more information, see "Massachusetts Governor's Budget Proposal Is Mildly Positive," published Feb. 4, 2016, on RatingsDirect). In our opinion, based on revised revenue projections, we believe Massachusetts is unlikely to make any significant contributions to its BSF based on excess capital gains transfers. A budget gap of $394 million has opened up as of the end of October. Management has identified a mix of recurring and non-recurring measures to close about $294 million of the gap with approximately $100 million of the gap, partly attributable to Medicaid, remaining to be addressed, offset by approximately $40 million in budgeted fund balances. The state is monitoring the budget and still has additional options to address the remaining shortfall, including section 9C spending reductions to executive agencies. Currently the state is projecting ending fiscal 2017 with $1.3 billion in the BSF, but could reduce that to the extent that it is not able to address the remaining shortfall through other measures.

In 2015, the state had budgeted originally a drawdown in its BSF, but with the help of two rounds of mid-fiscal 2015 budget adjustments, it produced an operating surplus, of which $124 million was deposited into the BSF. This was slightly more than the originally budgeted BSF drawdown, producing what we view as a nominal $4 million increase in the BSF. Combined operating fund balances at fiscal year-end 2015, including the BSF, were $1.57 billion, or 4.0% of expenditures and other uses. State tax revenues have been at or slightly above budgeted levels in recent years; midyear shortfalls have largely been the result of above-budgeted spending or nontax revenues coming in below budget, in our opinion.

The commonwealth drew down its BSF by $308 million in fiscal 2014 to end with a total operating fund balance of 3.9% of expenditures, on a budgetary basis. The most recent peak of the BSF was in 2012, when it reached $1.65 billion, or 4.9% of operating expenditures, and when total operating reserves, including the BSF, reached 5.9%.

On a generally accepted accounting principles (GAAP) basis, Massachusetts ended fiscal 2015 (the most recent audited year) with an available assigned and unassigned general fund balance of $1.49 billion, plus a BSF balance of $1.25 billion. This led to a combined balance that we view as strong at 7.5% of general fund expenditures and transfers out.

By most measures, we believe Massachusetts' debt burden remains high compared with that of other states. At fiscal year-end 2015, we calculate GO debt of $20.8 billion and total tax-supported debt of $34.5 billion, producing total tax-backed debt per capita of $5,084, and 8.3% of personal income. The commonwealth reports it had $21.7 billion of GO debt and $3.4 billion in special tax bonds outstanding as of June 30, 2016. Planned debt issuance remains within the parameters of the commonwealth's debt affordability policy and bond cap. A capital and debt affordability committee includes seven voting and eight nonvoting members from the legislature and is charged with formally reviewing the capital investment plan and providing an estimate of debt authorization for each year to stay within certain debt parameters. Massachusetts' current capital plan calls for $2.19 billion of capital debt issuance in fiscal 2017, similar to the amount in last year's capital plan for fiscal 2016. We calculate fiscal 2015 total tax-backed debt service at 7.7% of general governmental spending, a level we view as moderately high.

Other long-term liabilities are also large, in our opinion. We believe state's share of the combined net pension liability for state employees' and teachers' retirement systems of $30.2 billion as of the Jan. 1, 2015, valuation date, or $4,451 per capita, and 7.3% of personal income, is high. This liability is expected to increase to $37.9 billion. Massachusetts continues to fully fund its actuarial annual determined contribution (ADC) based on its own methodology, which is on a lagged statutory basis; on a GAAP basis, it has not fully funded its ARC since fiscal 2011. A decline in the commonwealth's actuarial pension funded ratio as of the Jan. 1, 2015, actuarial valuation date was in part due to lower actuarial return assumptions and new experience data, which we believe show conservative management of pension liabilities.

In our opinion, Massachusetts' unfunded OPEB is also moderately high, at $16.3 billion as of Jan. 1, 2016, net of $760.4 million of actuarial assets in an OPEB trust fund, or $2,402 per capita. Massachusetts intends to make payments to the OPEB trust fund with 5% of excess capital gains tax distributed to the BSF (although this requirement was suspended in fiscal 2015), and a portion of tobacco settlement money that increases in 10% increments each year. In fiscal 2016, the incremental tobacco money increase to the OPEB trust was suspended with the commonwealth contributing 30% of tobacco settlement money, or approximately $77 million, to the OPEB trust fund, contingent on unexpended debt service appropriations.

The commonwealth estimates that its combined budgetary debt service, pension payments, and OPEB payments will be about 12% of budgeted expenditures in fiscal 2016. For fiscal 2017, combined budgetary debt service, pension payments, and OPEB payments increase to 12.7% of budgeted expenditures and other uses. We expect these amounts to increase as the state resets its three-year contribution schedule to reflect reduced assumed rate of return assumptions and weaker market performance in fiscal 2016.

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 '1.9' to Massachusetts, which is consistent with an 'AA' indicative rating. Under our criteria, we can be within one notch off the indicative rating. In our view, Massachusetts still displays several characteristics, such as its strong economy and proactive budget management, that align it better with our 'AA+' rating. Additionally, in our view, the shortfalls that the state is facing are currently manageable and management is making attempts to return to structural balance. Our view of the extent to which these positive characteristics outweigh the pressures arising from the state's long-term liabilities and Massachusetts' need to increase reserves to manage future liabilities could change, leading us to realign our rating with the indicative score. Our negative outlook reflects the potential for this shift.

Outlook

The negative outlook reflects our view that despite a period of economic expansion and generally positive revenue trends, Massachusetts continues to face midyear downward revenue revisions and spending pressures that have resulted in small budgetary gaps and reduced fund balances, even if the budget stabilization reserves have remained fairly stable. We recognize that management has been proactive in closing budgetary gaps, even though the mix of solutions includes some non-recurring measures, and limiting the impact on reserves. We had viewed the policy of setting aside above-trend capital gains tax during good times as a positive budget management tool that could mitigate potential future budget volatility. Conversely, management's decision to suspend these transfers shortly after adopting them, despite positive economic performance, is viewed negatively from a credit standpoint. In our view, continued structural imbalance and reduction of reserves could contribute to a downgrade over the next few months to a year if we believe that financial flexibility is impaired--especially during a period of positive economic growth--and leaves the state less equipped to deal with the next economic downturn. Although we view the commonwealth's decision to lower its pension system's rate of return assumption down to be more in line with national averages, we recognize that required contributions will also increase. Massachusetts' ability to structurally balance its budget and build its reserves is especially important in light of relatively high and rising fixed costs related to debt and retirement funding. We would view significant future underfunding of the actuarial annually determined pension contribution as a potential structural imbalance. Continued budgetary pressure resulting from pension underfunding or weak investment returns could also lead us to lower the rating over the outlook horizon.

Upside scenario

Should the commonwealth demonstrate a renewed commitment to building its reserves, absent rising long-term liability funding pressures, we could revise the outlook to stable. At this point, we don't foresee a scenario within the remaining outlook horizon, where we would raise the rating.

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 accounts for about 35% of total spending while direct local aid accounts for about 13% of originally budgeted 2016 spending. Funding levels for major program areas have been adjusted as needed. Massachusetts voters have approved revenue growth limitations, but these have not negatively affected 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.

An initiative to raise tax rates on those earning more than $1 million by 4% of income has gathered enough signatures for the legislature to consider a referendum. In May 2016, the legislature agreed to the amendment. If at least 25% of the next legislature supports the measure, which we believe is likely, it will appear on the November 2018 statewide ballot.

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 policy limitation as stipulated by the commonwealth's debt affordability policy published annually with its capital investment plan, which is designed to limit debt service on the state's 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 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 our 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 a consensus revenue forecast. It has regularly performed monthly revenue estimates and quarterly budget reviews. Legislation approved in 2008 requires that revenue reports be submitted semimonthly to the legislature.
- It has implemented five-year financial forecasting. We understand that the state will update this annually and integrate it into the budget process.
- A five-year capital improvement plan (CIP; administrative intent, not binding) coordinates every facet of debt issuance. The CIP includes 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, although the process has sometimes changed from year to year.

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 aforementioned 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. Officials also introduced an asset-liability management policy in the most recent fiscal year.

Massachusetts has a statutorily established BSF that prescribes a mechanism for funding, as well as funding levels. 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. A change in 2010 directed capital gains tax revenues of more than $1 billion to the fund, although the state has suspended this in the past two years. Legislation from 2012 indexes the capital gains amount to growth in U.S. gross domestic product. The statute also directs 5% of the excess to the state retiree benefits trust fund and the pension liability fund. We believe this measure has the benefit of enhancing the fund while decreasing budget reliance on this cyclical revenue source. Nevertheless, the commonwealth diverted to the general fund in fiscal years 2015 and 2016 excess capital gains tax that would otherwise have gone to the BSF. Some judgments and settlements must also be deposited to 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.

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 major tax sources of the state were not approved, the legislature can amend an initiative, and a recent initiative rolled back inflation indexing for a gas tax. An initiative to add an extra 4.0% income tax to annual income of more than $1 million a year received enough signatures for the legislature to consider placing it on the November 2018 ballot. This year's legislature gave the initiative its initial approval in May 2016, and it will be placed on the 2018 ballot assuming 25% of the next legislature also approves it, which we believe is likely.

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

Massachusetts' labor market fared relatively well in 2015. According to IHS Global Insight, private-sector payroll gains averaged 1.6%, compared with 1.9% for the U.S. Unemployment rates have declined at a steady pace due to positive employment trends. The average annual unemployment rate for 2015 was 5.0%, which was below the 5.3% rate for the nation, while the state unemployment rate as of September 2016 had fallen to 3.6%, compared with 4.9% for the nation. The U.S. Census Bureau population estimate for Massachusetts in 2015 is 6.8 million, a 0.7% increase from 2014, and a 6.1% increase over the past 10 years, compared with 8.8% for the nation. Population growth has outpaced the region since 2007 but continues to lag the nation and we expect this trend to continue. The commonwealth's age dependency ratio of nonworking age population to working age population at 55.5% in 2014 was better than that of the nation (60.2%).

Massachusetts has always had high income levels. Per capita personal income increased to $61,032 in 2015, or 128% of the national level--a ratio the commonwealth has held consistently for the past seven years. We expect that income will remain well ahead of that of other states based on the nature of the jobs being created and the pace of expansion. IHS Global Insight projects state gross product to rise 1.5% in 2016, 2.2% in 2017 and 2018, and 1.9% in 2019, at rates slightly under, but comparable with, its forecast for the U.S. In 2015, gross state product per capita was 126% of the nation.

The economy has diversified and education and health services now make up the primary employment sectors, accounting for 21.8% of total non-farm employment in 2015 according to the Bureau of Labor Statistics, compared with 15.5% for the nation. This is followed by trade and transport (16.3% versus 19.0% nationally) and professional business services (15.3% versus 13.8%). Cyclical sectors, such as manufacturing and construction, represent only 7.2% and 4.0% of employment, respectively. 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. In addition, its defense-related industries continue to perform well. Massachusetts ranks eighth out of the 50 states by value of federal defense and research contract awards. Any federal fiscal consolidation could affect this part of the economy.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '1.8' to Massachusetts' economy.

Budgetary Performance

The state has established a formal BSF under statutory law that receives excess capital gains taxes over a threshold amount, indexed for inflation. A threshold of $1 billion was in effect for fiscal years 2011, 2012, and 2013. Since then, the threshold is subject to annual adjustment to reflect the average annual rate of growth in U. S. GDP over the preceding five years. 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 OPEB) and an additional 5% transferred to the commonwealth's pension liability fund. However, in fiscal years 2015 and 2016, capital gains taxes that would have otherwise flowed to the BSF paid general fund budget expenditures. The enacted 2016 budget assumes the fiscal 2016 capital gains collections threshold (suspended in fiscal 2016) to be approximately $1.09 billion, with the excess diverted to the general fund instead of the BSF to be approximately $300 million. Although the governor's fiscal 2017 budget proposal included partially resuming a $206 million deposit of capital gains to the BSF, this was still $150 million short of the original statutory formula for deposit of excess capital gains tax. Furthermore, based on revisions to the commonwealth's revenue estimates, Massachusetts does not anticipate making a transfer of excess capital gains unless these exceed current revenue estimates. It estimates the BSF will increase by roughly $11 million to $1.303 billion at the end of fiscal 2017 based on investment earnings, assuming no use of the BSF, to close out fiscal 2017; this is down from estimates of $1.528 billion in the governor's proposed budget.

The fiscal 2017 budget was approved by the governor on July 8, 2016. The enacted budget is based on a revenue estimate that was lowered by $636 million to $26.23 billion (from $26.86 billion) to account for weaker tax collections in fiscal 2016. At $26.23 billion, revenues in fiscal 2017 are expected to grow by a more modest 3.8% from estimated actual collections in fiscal 2016. Total revenues available, including federal reimbursements, beginning fund balances, and interfund transfers total $40.8 billion. Total budgeted expenditures and other uses total $40.9 billion and exceed available revenues by approximately $88 million. In our view, the budget is nearly balanced with some limited use of one-time revenues. Despite Massachusetts being in the eighth year of economic recovery and experiencing positive revenue trends, in our view, budget worries remain regarding growth in MassHealth spending and the slow build-up of the BSF during a period of positive revenue growth, and despite policies that were intended to more aggressively build up reserves to help the commonwealth manage through revenue downturns. As of Oct. 26, 2016, the state has identified additional shortfalls of $294 million, which it plans to address with a mix of one-time and recurring measures. However, it has identified an additional $100 million in additional spending pressures related to MassHealth that it has still not solved for.

The BSF reached a peak of $2.335 billion at fiscal year-end 2007, before being drawn down to $670 million at fiscal year-end 2010 during the Great Recession. The commonwealth subsequently began using excess capital gains tax to build up the fund again to $1.65 billion at fiscal year-end 2012. The BSF stood at $1.25 billion at fiscal year-end 2015, or 3.2% of operating expenditures, following a $124 million deposit after the end of the fiscal year from surplus operating revenues into the BSF, offset by budgeted fiscal 2015 BSF draws, for a net increase of $4 million in the BSF. Total operating reserves at fiscal year-end 2015, including the BSF, were $1.57 billion, or 4.0% of expenditures and other uses, which declined slightly to $1.482 billion at fiscal year-end 2016, or 3.6% of expenditures and other uses. Because the commonwealth has not solved for this remaining gap or dedicated BSFs to address it, we could see ending fund balances decline at fiscal year-end 2017 to $1.25 billion, or 2.9% of total budgeted expenditures and other uses.

We believe the commonwealth is somewhat exposed to cyclical swings in capital gains tax revenue, which Massachusetts projects will constitute about 5% of fiscal 2017 tax revenues. However, we also believe the commonwealth has a good history of making timely midyear budget adjustments when needed. Before the proposed fiscal 2016 budget adjustments of about $311 million, Massachusetts calculated one-time budget items in the budget at $629 million, or only 1.5% of projected expenditures, indicating what we view as near-structural balance, despite the projected small drawdown in overall reserves. Overall reserves declined by $89 million in fiscal 2016 due to expenditures exceeding revenues; however, the BSF reserve increased by $39 million due to transfers related to growth in abandoned property tax revenues.

We view Massachusetts' liquidity as strong, with the help of annual cash flow note borrowing. The commonwealth does not engage in interfund borrowing. It currently projects to end fiscal 2016 with a general fund cash balance of $2.3 billion, and estimates its month-end cash low point in fiscal 2016 will have been February 2017, with a $1.72 million general fund cash balance. In fiscal 2016, the commonwealth issued $1.2 billion in revenue anticipation notes, maturing in April, May, and June 2016. Cash flow notes must be repaid by the end of the fiscal year. Fiscal 2016 ended with a non-segregated general fund cash position of $2.14 billion. For fiscal 2017, the commonwealth is issuing $1.5 billion in cash flow notes. It currently projects ending fiscal 2017 with $2.278 billion in non-segregated cash.

We view Massachusetts' revenue sources as diverse. Income tax was 58% of operating funds tax revenues in fiscal 2015 on a budgetary basis, and sales tax was 23%.

We believe the commonwealth's revenue forecasting is good. Massachusetts prepares quarterly revenue updates and uses a consensus revenue forecast for budgeting purposes. We believe that state budgeting has historically been done with an eye toward long-term structural balance. However, we believe that Massachusetts is a high service state, with expenditures that may be difficult at times to reduce. In particular, Medicaid plus health and human services spending accounts for 48% of the fiscal 2016 budget expenditures, while operating funds' debt service accounts for about 6%. Pension funding costs from operating funds in fiscal 2016 are estimated at $1.97 billion, or 5%, while OPEB costs for current retirees are about another 1%.

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

We calculate total GO bond proceeds outstanding at fiscal year-end 2015, the most recent audited year, at $20.8 billion, and total tax-supported debt at $34.5 billion, including debt issued by state authorities and supported by the statewide sales tax, as well as debt of state agencies supported by annual state contract assistance payments. The commonwealth reports it had $21.8 billion of GO debt outstanding as of July 31, 2016. By most measures, Massachusetts' debt burden remains high compared with that of other states. The variable-rate portfolio is 18% of total GO debt, and the commonwealth actively manages this under formal debt policies. About $1.6 billion, or 7% 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. Massachusetts has a multiyear asset liability management program that could increase its exposure to unhedged variable-rate debt. However, there are no major plans in the near future to significantly expand its unhedged portfolio. In the past several years, the overall portfolio of variable-rate debt has diversified, and put risk has fallen significantly, in our opinion. The commonwealth also has about $960.5 million of direct placement debt, whose structure we do not believe creates an unusual risk to the state. Tax-backed debt per capita is high, in our view, at what we calculate as $5,084 at fiscal year-end 2015 and 8.3% of personal income. We also calculate combined total tax-backed debt service to operating expenditures as high at 7.7% on a GAAP basis.

The current five-year CIP projects debt service to remain below the commonwealth's calculation of 8% of budgeted revenues through fiscal 2020. 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 CIP for fiscal 2017 calls for $2.19 billion of bonding, about level compared with that of recent years, as part of a fiscal 2017 total capital budget of $4.1 billion. Our debt calculation includes special tax bonds supported by statewide tax sources in the ratios we use to assess total tax-supported debt.

Massachusetts continues to gradually lower its investment return assumption for its fiscal 2016, which we view as positive, but which translates into further declines in its combined funded ratio and increased funding needs. An actuarial valuation of the commonwealth's total pension obligation suggests a combined pension funded ratio of 56% funded as of Jan. 1, 2016, from 61% in January 2015 based on market value of assets. The total actuarial funded ratio declined to 57.0% from 59% in 2015. The funded ratio remains far below the actuarial 78.6%-funded ratio in 2008. Based on the state's actuarial calculation (not GASB), its primary government unfunded pension liability was $37.9

billion for the combined state employees, teachers, and Boston teachers' pension funds, and up from $30.2 billion, based on a fiscal 2016 valuation as of Jan. 1, 2015. We calculate this is $5,572 per capita, and 9.2% of personal income, which we consider high. For our analysis, we calculate the three-year average funded level at 63% (2013-2015) using two years of GASB 68 reporting and one year on non-GASB 68 reporting. We expect this average to decline further once the 2016 GASB valuation is incorporated. Massachusetts attributes the relatively low funded ratio to recognition of previous-year investment losses and certain adjustments to actuarial assumptions, optional transfer of Optional Retirement Program members into Massachusetts State Employee Retirement System, and the adoption of an employee retirement incentive program, lowering the investment return assumption to 7.50% in 2016 from 7.75%, which we view as more conservative. Weaker-than-assumed market performance in 2016 and changes to the systems' assumed rate of return, while bringing it more in line with the average for other plans across the nation, are expected to result in increased contributions over the next three-year period if the state is expected to remain on track to fully amortize its liabilities by 2040. The new assumed rate of return of 7.5% remains above the Pension Retirement Investment Trust's (PRIT) 7.05% five- and the 5.69% 10-year average returns. In fiscal 2016, the PRIT provided a 2.3% return on investments, which is well below the assumed rate, and is already factored into the five- and 10-year averages referenced above.

Massachusetts' ARC calculation assumes amortization of its unfunded actuarial liability on a 4% annual increasing basis to reach full amortization of its unfunded liability by fiscal 2040. However, from a funding standpoint, Massachusetts 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 slightly more 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 funding every three years provides greater budgetary predictability at the expense of more timely funding adjustments in recognition of known assumption changes, such as revised assumed rate of return and demographic assumptions. In fiscal 2016, the commonwealth contributed 77% of ARC to its two main employees' retirement system, down from 81% in fiscal years 2014, but up from 75% in 2015. For fiscal 2017, it has budgeted to fund $2.2 billion, or 72%, of the $3.06 billion ARC. As part of our revised criteria, we look to the ratio for active to inactive members to determine how mature the system is and how it compares with the national average. For MSERS and MTRS the ratio of actives to retirees is 1.6 and 1.4, respectively and in line with the 1.5 national average. Experience studies are only conducted every six years per statute, which we view as a weakness. Although the commonwealth does update portions of the studies more frequently, this is not done on a set schedule, but rather as needed.

Massachusetts had a $16.3 billion unfunded actuarial accrued OPEB liability as of Jan. 1, 2016, which we consider sizable, at $4,451 per capita, but down from $16.3 billion recorded in 2012, as various reform measures were phased in and OPEB trust fund deposits have been made. The commonwealth has dedicated tobacco settlement revenues toward its OPEB trust fund to provide a permanent funding source, which we consider a credit positive, although trust fund deposits were made from other sources recently. The portion of tobacco settlement money dedicated to the OPEB trust fund is scheduled to increase in 10% increments each year, until it reaches 100%, although in fiscal 2016 the incremental increase was suspended. In fiscal 2016, the commonwealth contributed 30% of tobacco settlement money, or approximately $77 million, to the OPEB trust fund. For fiscal 2017, the enacted budget suspended the 10%

increase and instead funded the transfer at 10% of tobacco settlement money or $25.7 million, a substantial decline from prior-year requirements. The governor has proposed an amendment that would bring the fiscal 2017 contribution back to 30% or $76 million; however, the legislature has not yet acted on this proposal. The trust had assets of $760.4 million as of Jan. 1, 2016.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '3.4' to Massachusetts' debt and liability profile.

Ratings Detail (As Of November 22, 2016)		
Massachusetts tax exempt comm pap nts ser L due 01/27/2021		
Short Term Rating	A-1+	Affirmed
Massachusetts Bay Transp Auth sr sales tax		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts Bay Transp Auth sr sales tax (AGM) (MBIA)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Bay Transp Auth CP		
Short Term Rating	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
Short Term Rating	A-1+	Affirmed
Massachusetts Bay Transp Auth CP		
Short Term Rating	A-1+	Affirmed
Massachusetts Bay Transp Auth SALESTAX		
Long Term Rating	AA+/A-1/Negative	Affirmed
Massachusetts Bay Transp Auth SALESTAX		
Long Term Rating	AA+/A-1+/Negative	Affirmed
Massachusetts CP A		
Short Term Rating	A-1+	Affirmed
Massachusetts CP B		
Short Term Rating	A-1+	Affirmed
Massachusetts GO VRDBs - C		
Long Term Rating	AA+/A-1+/Negative	Affirmed
Massachusetts GO VRDBs 2000A		
Long Term Rating	AA+/A-1/Negative	Affirmed
Massachusetts GO VRDBs 2000B		
Long Term Rating	AA+/A-1/Negative	Affirmed
Massachusetts GO VRDBs 2006A		
Long Term Rating	AA+/A-1+/Negative	Affirmed
Massachusetts GO (wrap of insured) (ASSURED GTY & AMBAC) (SEC MKT)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO (wrap of insured) (FGIC & BHAC) (SEC MKT)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed

Ratings Detail (As Of November 22, 2016) (cont.)		
Massachusetts GO (AGM) (SEC MKT)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO (BAM) (SECMKT)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO (FGIC)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO (MBIA) (Assured Gty)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts Bay Transp Auth sr sales tax		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts GO		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Boston Hsg Auth, Massachusetts		
Massachusetts		
Boston Hsg Auth (Massachusetts) APPROP		
Long Term Rating	A+/Negative	Affirmed
Massachusetts Bay Transp Auth, Massachusetts		
Massachusetts		
Massachusetts Bay Transp Auth (Massachusetts) var rate gen transp sys bnds 2000A-1 & A-2 ser dtd 03/09/2000 RMKTD dtd 09/30/2011 due 03/01/2030		
Long Term Rating	AA+/A-2/Negative	Affirmed
Massachusetts Bay Transp Auth (Massachusetts) GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts Bay Transp Auth (Massachusetts) GOEQUIV		
Long Term Rating	AA+/A-1/Negative	Affirmed
Massachusetts Bay Transp Auth (Massachusetts) GO (AGM)		

Ratings Detail (As Of November 22, 2016) (cont.)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Bay Transp Auth transp sys bnds (Massachusetts)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Bay Transp Auth (Massachusetts)		
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Dept of Transp, Massachusetts		
Massachusetts		
Massachusetts Dept of Transp (Massachusetts) GO		
Long Term Rating	AA+/A-1/Negative	Affirmed
Unenhanced Rating	NR(SPUR)	Withdrawn
Massachusetts Dept of Transp (Massachusetts) GO		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts Dept of Transp (Massachusetts) GO VRDO 2010A-1		
Long Term Rating	AA+/A-1+/Negative	Affirmed
Massachusetts Dept of Transp (Massachusetts) GO VRDO 2010A-2 A-7		
Long Term Rating	AA+/A-1	Affirmed
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Dept of Transp (Massachusetts) GO VRDO 2010B		
Long Term Rating	AA+/Negative	Affirmed
Massachusetts Dept of Transp (Massachusetts) JOINTCRIT		
Long Term Rating	AA+/A-1	Affirmed
Unenhanced Rating	AA+(SPUR)/Negative	Affirmed
Massachusetts Dept of Transp (Massachusetts) VRDBs 2010A-7		
Long Term Rating	AA+/A-1+/Negative	Affirmed
Massachusetts Dept of Transp, Massachusetts		
Metro Hwy Sys, Massachusetts		
Massachusetts Dept of Transp (Metropolitan Highway System) (VRDO)		
Long Term Rating	AA+/A-1	Affirmed
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Massachusetts Development Finance Agency, Massachusetts		
Massachusetts		
Massachusetts Dev Fin Agy (Massachusetts) GO		
Long Term Rating	AA+/Negative	Affirmed
Univ of Massachusetts Bldg Auth, Massachusetts		
Massachusetts		
University of Massachusetts Bldg Auth (Massachusetts) GO		
Long Term Rating	AA+/A-2/Negative	Affirmed
Univ of Massachusetts Bldg Auth (Massachusetts) GOEQUIV		
Long Term Rating	AA+/A-1+/Negative	Affirmed

Many issues are enhanced by bond insurance.