

**Connecticut; Appropriations; General  
Obligation; General Obligation  
Equivalent Security; Moral Obligation;  
Note**

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## Credit Profile

US\$450.0 mil taxable GO bnds ser 2017A due 01/15/2028

*Long Term Rating* A+/Negative New

US\$400.0 mil GO BANs ser 2017A due 09/14/2018

*Short Term Rating* SP-1+ New

## Rationale

S&P Global Ratings has assigned its 'A+' rating and negative outlook to the State of Connecticut's \$450 million taxable general obligation (GO) bonds (2017 series A). At the same time, S&P Global Ratings has affirmed its 'A+' rating on the state's approximately \$18 billion of GO debt outstanding, its 'A' rating on state appropriation-secured debt, and its 'BBB+' rating on state moral obligation debt. The outlook on all long-term debt is negative.

S&P Global Ratings has also assigned its 'SP-1+' short-term rating to Connecticut's series 2017A \$400 million GO bond anticipation notes (BANs), due Sept. 14, 2018. The BANs are also secured by a GO pledge, but are expected to be retired from proceeds of a future long-term GO bond issue.

The GO rating on Connecticut reflects our view of the following factors:

- The state's high income levels;
- A diverse economy;
- Ongoing revenue nearly matching ongoing expenditures, when including the effect of tax increases;
- Active monitoring of revenues and expenditures to identify and correct midyear budget gaps, as exemplified by midyear budget adjustments made in fiscal years 2015, 2016, and 2017, and expected to be made to address a new small mid-2018 budget gap that has recently been projected; and
- Adequate operating liquidity, despite negative generally accepted accounting principles (GAAP) fund balances.

Offsetting factors, in our opinion, include:

- Above-average debt, high unfunded pension liabilities, and large unfunded other postemployment benefit (OPEB) liabilities, all of which create what we believe are significant and growing fixed-cost pressures that restrain Connecticut's budgetary flexibility, as evidenced by a four-month delay in enacting the fiscal 2018-2019 biennium budget;
- Recent population declines and slow economic growth, combined with continued gradual job losses that are forecast for the well-paying financial sector, and which are expected to contribute to weak revenue growth over the next several years and lead to difficult budget-balancing decisions beyond the current biennium; and
- A history of cyclical budget performance, and currently weak financial reserves available to cushion against the next economic downturn.

The state enacted a bi-partisan 2018-2019 biennium budget four months late into the fiscal year that began July 1, 2017. The delay arose from a need to close large budget gaps resulting from a combination of weak income tax revenue growth; increased pension, OPEB, and Medicaid costs; and a resistance in the legislature to additional tax increases after several rounds of tax hikes in preceding bienniums. Resulting budget gaps were solved with the help of a new labor agreement that will produce savings in the current biennium, but will also require a 3.5% wage increase in each of fiscal years 2020 and 2021, as well as prohibit layoffs for four years and extend nonwage benefit provisions to 2027. Other gap-closing measures include a new hospital provider tax, designed so that hospitals will be held harmless for the tax increase after the effect of increased federal reimbursements; cuts in aid to local governments (in Connecticut local governments provide kindergarten to grade 12 [K-12] education); and cuts to higher education.

In total, the state originally projected a fiscal 2018 general fund budget gap of \$2.3 billion before budget-closing actions, or a large 13% of originally projected revenue. These actions involved \$1.7 billion of increased revenues and \$675 million of decreased expenditures. Gap-closing measures included \$700.0 million of workforce savings; \$343.9 million of new revenue from the hospital provider tax resulting in \$448.4 million of increased federal reimbursements, which will be offset by \$586.2 million in increased payments to hospitals; \$327.8 million of suspended sales tax transfers to a municipal revenue-sharing account; \$172.8 million of fund transfers into the general fund; \$159.6 million in education-related grant cuts to localities; \$68.4 million in reductions to higher education; and \$35.3 million of tobacco tax increases, among other items.

Connecticut estimates one-time budget items in fiscal 2018 add up to only \$173 million, or just 0.9% of revenue, which we view as essentially near structural balance, assuming no further revenue deterioration. Fiscal 2018 gap-closing actions largely carry over similarly to fiscal 2019. However, without reauthorization of the reductions in local aid in fiscal 2020 and a renewal of the hospital provider tax, the state projects a structural deficit of \$1.2 billion would rise up in fiscal 2020 due to nonrecurring items. However, if these two areas were reauthorized it would lower the projected 2020 structural gap to \$371 million, or 2% of projected revenue.

The state calculates \$5.5 billion of combined fixed costs for debt service, pension, and OPEB in fiscal 2018, totaling 29% of budgeted general fund expenditures, a slight increase from 28% in 2017, with \$91 million of this representing additional deposits into an OPEB trust fund beyond pay-as-you-go OPEB funding. Adding in \$2.6 billion of budgeted 2018 Medicaid payments would bring fixed costs up to 43% of 2018 expenditures. In addition, adding \$1.3 billion of other entitlement spending reported by the state in fiscal 2017 would bring the total fixed cost percentage up to 50%. In our view, fixed costs are high and could potentially squeeze remaining unrestricted budget areas such as local aid, higher education, and to a lesser extent transportation, in the event of future budget gaps. A January pension agreement with the state employee union has helped control fixed cost growth in the near term by smoothing out what would have been a potential spike in pension payments over the next few years and pushing amortization of some unfunded pension liabilities payments into later years. At the same time, it conservatively lowered the state employees' retirement system assumed rate of return to a more conservative 6.9% from 8.0% (see "Connecticut's Recent Pension Agreement With Unions Could Be Mildly Positive For the State," published Jan. 23, 2017, on RatingsDirect). The lower return assumption, as well as a drop in the teacher retirement system assumed rate of return to 8.0% from 8.5%, has had the effect of raising actuarial liabilities, offset by a strong 13.6% investment return realized for the one year through September 2017.

Despite the recent budget enactment, the state comptroller has subsequently projected a mid-2018 revenue shortfall of \$208 million, or 1.1% of fiscal 2018 budgeted expenditures, absent corrective measures. State law requires the governor to propose deficit mitigation measures when a proposed deficit is 1% of expenditures or larger. We anticipate that the state will enact new midyear budget measures to eliminate the operating deficit, particularly as the new projected midyear deficit is about the same size as the fiscal year-end 2017 budget stabilization fund (BSF) balance of \$213 million, or a relatively slim 1.2% of 2017 expenditures. Nevertheless, Connecticut projects weekly total cash balances of \$1.5 billion-\$2.6 billion in fiscal 2018, with the exception of several weeks in December when cash will be drawn down for capital projects from bonds whose sale was delayed by the late enacted budget. The state has no plans for external cash flow financing.

On a GAAP basis, the state had a general fund balance deficit of \$614 million at the end of fiscal 2016, the last audited year, or 3.3% of expenditures.

Despite budget travails, the state still ranks first in per capita income at 141% of that of the U.S. in 2016. The economy continues to grow, although more slowly than that of the nation, despite a 0.2% population decline in 2016. Connecticut has regained about 73% of the jobs lost in the last recession. IHS Markit forecasts real gross state product growth of 1.6% in 2017, 1.8% in 2018, and 1.8% in 2019. Loss of jobs in the well-paying financial sector has contributed to revenue weakness, but the remaining above-average proportion of jobs in this sector still represents a wealthy tax base, and financial sector employment has started to slowly grow again in 2017. State defense industries could also do well if federal defense spending escalates. Connecticut retains legal authority to make cuts in local aid, although further large cuts may be politically difficult. The state has been making full actuarial pension contributions for five years, and has been operating with near structural balance, despite the need for multiple midyear budget corrections.

At the same time, we view state long-term liabilities as high and growing. We calculate tax-backed debt at 9.0% of personal income at fiscal year-end 2016, the last audited fiscal year, and unfunded pension liabilities are also high at 13.9% of personal income as of a 2017 Governmental Accounting Standards Board (GASB) 67 basis, a small decrease from the year before due to good pension investment performance, while the state's combined pension-funded ratio on a GASB basis is low at 46%, but an improvement in 2017 from 41% in 2016 due to strong investment returns. We view the state unfunded OPEB as high at \$21.9 billion, or 8.8% of income, although it has declined and stabilized in recent years due to partial funding of an OPEB trust fund. However, state debt and pension ratios are approaching levels that could each trigger a one-notch downgrade under our state rating criteria.

We believe pending federal tax reform's disallowance of certain state and local tax deductions on federal tax returns could have a potential disproportionate effect on high tax states, such as Connecticut (see "U.S. Tax Reform: Legislation Lay Groundwork For Reshaping The Federal-State Fiscal Relationship," published Dec. 4, 2017.)

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 '2.3' to Connecticut.

## Outlook

The negative outlook represents a one-in-three chance we could lower the rating during our two-year outlook horizon. The outlook reflects what we believe to be increasing constraints on achieving long-term structural balance, highlighted by Connecticut's delay in enacting a fiscal 2018-2019 biennium budget. These budget constraints include revenue weakness because of slow economic growth and recent population decline and reduced revenue-raising flexibility after substantial tax increases were instituted in the past two biennium budgets. We believe several recent high profile relocations of various business headquarters out of state have reduced political willingness for further broad-based tax increases. At the same time, we believe there is less expenditure flexibility following implementation of reductions in state aid to localities; implementation of a recent labor agreement that reduced costs, but also created fixed pay schedules and prohibits layoffs over the next four years; and rising fixed-debt service, pension, and OPEB expenditures. Should economic growth come in below the budget forecast and lead to further significant midbiennium budget gaps that appear politically difficult to close, we could lower the rating. Although Connecticut has been operating with close-to-structural balance, we are concerned that potential future state aid cuts could also diminish the state's long-term economic attractiveness should they materially impact local property tax rates, municipal services, or the quality of local education. However, if economic growth comes in at or above the state's budget forecast, fixed costs could conversely contribute to favorable operating surpluses that improve Connecticut's fiscal posture and allow us to revise the outlook on the state to stable.

## Government Framework

The government framework, including fiscal policy and intergovernmental funding within which each state taxes, spends, and issues debt, influences Connecticut's ability to manage through economic cycles.

A key feature of Connecticut's governmental framework is a balanced budget requirement. A voter-approved amendment to the state constitution provides that the amount of general budget expenditures authorized in any fiscal year shall not exceed the estimated amount of revenue for that fiscal year. In developing its budget, Connecticut operates under a constitutional expenditure cap that limits spending growth to the greater of personal income growth or the inflation rate, unless the governor declares a state of emergency, or three-fifths of each house of the legislature votes to exceed the limit due to extraordinary circumstances. The expenditure cap excludes certain pension payments, debt service, and federal grants and matching payments. There is no statutory or constitutional prohibition against borrowing for operating purposes. Connecticut is authorized to issue GO debt, special tax obligation debt, and special obligation and revenue debt. Debt outstanding, authorized and payable from the general fund, is limited by statute to 1.6x total general fund tax receipts. Cancellation of debt authorization must be considered by state statute when Connecticut's debt approaches 90% of the state debt limit.

There are no constitutional or statutory provisions providing for, or precluding, a priority of payment for GO debt service over other claims of the state. Funds for debt service are "deemed to be appropriated" and, as part of the contract between bondholders and Connecticut, the state must appropriate all amounts necessary for the punctual payment of principal and interest.

Connecticut, which is not a voter-initiative state, has the autonomy to raise taxes and has adjusted its tax structure over time. It has relatively broad service responsibilities with about 28% of 2017 budgetary expenditures tied to education funding and other resources shared with local government units. Although it has legal flexibility to adjust funding to local governments, we believe it might be politically difficult to make large municipal aid cuts, in light of the recent four-month budget impasse following large proposed cuts in municipal aid by the governor. The state has previously avoided sharp midyear reductions in these areas in recent years. (In Connecticut, municipalities are in charge of K-12 education.) A recent court case, currently on appeal, has ruled that Connecticut's method of funding schools is unconstitutional under the state's constitution. However, the court ruled that the state was providing adequate overall funding, but not distributing school aid in an equitable manner. The court case is still ongoing.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a '1.9' score to Connecticut's governmental framework.

## **Financial Management**

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

State statutes and internally developed policies guide budget management, long-term financial planning, capital planning, debt management, and investing.

We consider Connecticut's management practices strong under our financial management assessment (FMA) methodology. An FMA of strong indicates that, in our opinion, practices are robust, well embedded, and likely sustainable.

Beginning Oct. 15, 2009, the Office of Policy and Management (OPM) and the legislature's Office of Fiscal Analysis (OFA) have been required by statute to issue consensus revenue estimates each year. An update to the estimate is required by Nov. 10, Jan. 15, and April 30 of each year, and must cover a five-year period. In addition to its internal resources, Connecticut bases its revenue estimates for budget forecasting on a number of outside data sources and economic forecasting firms. The state's long-term financial planning includes a three-year forecast for the legislature in addition to the biennial budget. The financial plan is updated annually and submitted to the legislature by Nov. 15.

The state also produces a five-year capital improvement plan as part of the November update. State statutes require monthly revenue and expenditure forecasts measured against the budget. The OPM and the Office of the Comptroller generate monthly reports projecting year-end surpluses or deficits. State statutes also prescribe investment of state funds. Dedicated staff monitors investments and generates monthly reports. Connecticut also holds quarterly meetings with the investment advisory commission. The state has a swap management policy and other debt policies that guide amortization and issuance. Connecticut statute authorizes a budgetary reserve fund at a maximum of 15% of general fund appropriations (raised from 10% in the recent legislative session). The statute prescribes that the state must transfer all unappropriated general fund surpluses into the budget reserve fund, and that the fund can only be drawn on to fund operating deficits. However, the budgetary reserve was at 1.1% of expenditures at the end of fiscal 2017, and we believe it will remain near this level during the current biennium.

## **Budget Management Framework**

Connecticut maintains a formal schedule for updating revenues and expenditures on a monthly basis, and this is done by both OPM and the comptroller. If the comptroller reports a projected general fund deficit of greater than 1%, the governor is required to file a deficit mitigation plan. Although the governor might reduce appropriations, this is limited to 5% of total appropriations and 3% of any fund, with any additional reductions requiring legislative approval. Legislative deliberation relating to interim budget adjustments has contributed to a delay in addressing budget gaps at times. The state is allowed to end the year in a deficit, which has periodically been addressed with deficit bonds. However, statutory provisions provide that any new budget deficit after fiscal 2013 must be funded in the ensuing fiscal year budget. Gap-closing solutions in previous bienniums have relied on significant nonrecurring measures and structural solutions.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '2.0' to Connecticut's financial management.

## **Economy**

The state continues to maintain strong income levels, although Connecticut's population has dropped in each of the past three years and its economy has been growing slowly since the Great Recession.

Connecticut experienced a 0.5% loss in population from 2013-2016, to 3.58 million, including a 0.2% loss in 2016. Its 10-year compound annual population growth rate was 0.17%, compared with 0.80% for the nation, according to the U.S. Census Bureau. However, the state's age dependency ratio of nonworking age population-to-total population of 59.1% was slightly better than that of the nation's 61.3% in 2016.

The state's average seasonally adjusted unemployment rate in 2016 was 5.1% versus 4.9% for the U.S., according to the federal Bureau of Labor Statistics (BLS). The preliminary state unemployment rate in October 2017 was 4.5%. We believe the state's economy exhibits some moderate cyclicalities due to exposure to the financial sector. IHS Markit has reported that the important financial industry, with its well-paying jobs, shrank from 2008-2014, before increasing 1.1% in 2015, holding steady in 2016, and increasing 1.5% year-over-year as of October 2017. In 2016, the well-paying financial activities sector comprised 7.7% of state payroll employment, compared with 5.7% for the nation, according to the BLS. Other major sectors include education and health services (19.6% for the state compared with 15.7% for the U.S.); trade, transportation, and utilities (17.8% for the state, 18.9% for the U.S.); government (14.1% for the state, 15.7% for the U.S.); professional and business services (13.0% for the state, 13.9% for the U.S.); and manufacturing (9.3% for the state, 8.5% for the U.S.). Key employers include Sikorsky Aircraft Corp., Electric Boat (maker of nuclear submarines), Pratt & Whitney, Yale University, and Foxwoods Resort Casino, as well as insurance companies and financial sector firms. Jackson Laboratories agreed to build a \$1.1 billion research facility in 2011. Recently, General Electric decided to move its headquarters to Boston, while Aetna Inc. (which might be bought by CVS Health) has announced a move of its headquarters from Hartford to New York City.

Connecticut income levels are strong in our opinion. State per capita income of \$69,311 in 2016 was 141% of that of

the U.S., and GDP per capita of \$73,643 in 2016 was 129% of that of the nation. However, GDP growth has been below that of the U.S. for some time. One-, five-, and 10-year compound annual state GDP growth rates were 0.96%, 0.20%, and negative 0.28%, respectively, compared with 1.54%, 1.96%, and 1.14% for the nation. Connecticut also experienced greater decline in GDP than the nation during the recession, although annual growth was stronger than that of the U.S. in 2007 and 2008 before the recession.

IHS Markit forecasts nominal personal income growth of 1.6% in calendar 2017, 3.2% in 2018, and 4.0% in 2019. Midyear revenue shortfalls against budget in recent years were attributable in part to a downsizing in Connecticut's forecast total personal income tax growth rate and capital gains tax among wealthy individuals.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a '2.2' to Connecticut's economy.

## **Budgetary Performance**

State statutes create what we view as a favorable budget reserve fund structure from a legal standpoint, although since fiscal 2014 Connecticut has allowed reserves to be drawn down to what we view as minimal levels, with no plans to replenish reserves through at least fiscal 2019, based on legislative and executive budget proposals. The budget reserve was \$212.9 million at fiscal year-end 2017, or 1.2% of expenditures. In fiscal 2017, the state had to make \$164 million of midyear budget corrections, primarily due to weak income tax growth in capital gains, an ended afterward with a small \$22.7 million operating deficit, covered by a transfer from the state's BSF.

Connecticut originally estimated it would need to close a fiscal 2018 general fund budget gap of about 13% of revenues before budget-closing actions. Since then, a new labor agreement and cuts to local aid and higher education have decreased costs. The new labor agreement cuts employee benefits and freezes salaries for two years and provides significant 2018-2019 biennium budget savings. However, in our view it reduces state expenditure flexibility by also prohibiting layoffs through fiscal 2021 and locking in 3.5% salary increases in each of fiscal years 2020 and 2021, although the state could still somewhat reduce labor costs through attrition.

State statutes authorize the BSF's maximum level at 15% of general fund appropriations (raised from 10% in the last legislative session). However, at fiscal year-end 2017, the BSF held an amount equal to about 1.2% of 2017 general fund spending, and we anticipate similar BSF levels during the current biennium.

We consider Connecticut's liquidity as good. The state reported a total cash position of \$1.5 billion as of Nov. 18, 2017. Connecticut projects a weekly cash position that runs throughout each current fiscal year, and currently projects generally from \$1.5 million-\$2.6 billion in week ending cash, with the exception of this December when delayed bonding for capital projects, as a result of the late state budget, is expected to temporarily cause the total available cash to dip to \$830 million.

The state sold \$560 million in GAAP funding bonds in fiscal 2014 to improve its fiscal year-end general fund balance on a GAAP basis, which helped boost liquidity and allowed Connecticut to transition into GAAP-based budgeting. However, the fiscal 2016 showed a large increased divergence between budgetary unreserved fund balances (\$116.1 million) and the GAAP unreserved balance (negative \$998.9 million), primarily due to increased payables not



recognized under budgetary accounting. As part of proposed fiscal 2018-2019 budget balancing proposals, certain costs relating to the transition to GAAP, have been delayed.

In previous years, Connecticut had been able to access external debt markets to sell deficit funding bonds when it ended in a deficit budgetary position in order to maintain adequate liquidity. The state has no current plans for external cash flow borrowing.

We consider Connecticut to have a diverse revenue mix. On a budgetary basis, 51% of fiscal 2017 total general fund revenues were derived from personal income tax, while 24% came from sales tax.

The state has had a history of making timely midyear budget adjustments, including multiple midyear allotment rescissions imposed by the governor in fiscal 2015, and another rescission in September of that fiscal year to close fiscal 2016 projected midyear gaps, as well as additional legislatively enacted adjustments in December 2015 and March 2016. At the end of fiscal 2016, the legislature passed fiscal 2017 budget cuts of \$847.2 million, and additional revenue measures of \$136.3 million. Fiscal 2017 ended with a \$22.7 million general fund operating deficit, or 0.1% of expenditures.

Connecticut uses consensus revenue forecasting to produce a five-year revenue forecast for budgeting purposes. We believe the state has substantial legal authority to cut expenditures, but cyclical revenue trends and high costs in such areas as pension and OPEB may somewhat limit state flexibility. Connecticut considers OPEB benefits as a contractual right of employees.

We believe state budgetary performance has shown cyclical trends, with the state at times issuing deficit financing notes. The state's deficit financing economic recovery notes from the last recession will mature on Jan. 1, 2018, relating to an original deficit financing of \$915.8 million in 2009. State reserve levels over time indicate cyclical financial performance. The state's BSF was as high as 8.0% of general fund appropriations at fiscal year-end 2008, before dropping to 0.6% at fiscal year-end 2010, and rising most recently to 3.0% at fiscal year-end 2014. Fiscal 2017 ended with a 1.1% balance.

Connecticut estimates that one-time revenue in its originally enacted 2016 budget totaled about 0.8% of budgeted revenues, while we estimate midyear adjustments increased one-time items by about another 0.8%. The state estimated only about 2% of fiscal 2017 revenues consisted of one-time items following passage by the legislature of midbiennium revisions, while the state estimates one-time budget items of only 0.9% of budget in fiscal 2018.

The 2018-2019 consensus revenue forecast projects an economic growth rate for personal income tax (PIT) growth in fiscal 2018 of 2.1% for withholding, and negative 1.5% for estimates and finals (including capital gains tax), compared with IHS Markit's projected personal income growth forecast of 1.6% for the full calendar 2017 and 3.2% in calendar 2018. PIT has been particularly difficult to forecast in recent years due to the progressive nature of the state income tax, the dependence on top taxpayers, and the proportion of variable capital gains tax realized by top taxpayers. The state has attributed recent years' less-than-forecasted revenue largely to fluctuation in capital gains tax. In our view, a degree of dependence on top taxpayers, who contribute a greater share of capital gains tax, contributes to cyclicity. The state estimates that millionaires comprising 0.7% of income tax filers contributed 30.4% of total state income tax collections in 2015.

A positive inclusion in budgets since fiscal 2012 has been full funding of the annual actuarially required state retirement system pension contribution, which we calculate at a relatively low 46% on a combined actuarial GAAP basis, using GASB 68 accounting as of the last 2017 GASB valuation. Recent, more conservative actuarial return assumptions have lowered funded ratios. The state employees system currently assumes a 6.9% return assumption, in conjunction, however, with what we see as an aggressive payroll growth assumption of 3.5% per year and a static mortality projection. The teachers' retirement system has also lowered its assumed rate of return from 8.5% to 8.0%.

On a GAAP basis, the most recent audited fiscal year (2016) ended with a \$424 million decline in the total general fund balance position (which includes the BSF) to a negative \$614 million, or negative 3.3% of general fund expenditures and transfers out. This represents a worsening from a negative \$190 million total general fund balance position at fiscal year-end 2015, or negative 1.0% of general fund expenditures and transfers out. The unreserved general fund balance was negative \$998.9 million.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '2.0' to Connecticut's budgetary performance.

## **Debt And Liabilities**

In our opinion, Connecticut's debt burden is high by all measures when compared with that of state peers, in part reflecting debt issued for education and other programs that might be handled at the local level of government in other states. It also includes previous debt issued for state pension liabilities.

We calculate that Connecticut's approximately \$22.3 billion in GO and tax-supported debt at fiscal year-end 2016 puts the state's total tax-supported debt per capita at about \$6,235, a level we consider high. Debt levels have been rising, although we expect them to stabilize as the state reaches its debt cap, and GO debt has declined temporarily recently due to lack of debt issuance as a result of the delayed budget. We calculate debt to personal income as high at 9.0% at fiscal year-end 2016, and tax-supported debt service also high at 13.1% of total GAAP general governmental expenditures, less federal revenue and restricted grants. Tax-supported debt includes GO debt, capital leases, and special tax-supported transportation bonds.

The state's transportation infrastructure program is planned to remedy perceived underinvestment in transportation infrastructure in previous years. The program will take a number of years to ramp up, requiring the hiring of new engineers in the department of transportation and new design work and environmental permits. The new program involves up to \$6.6 billion of additional state bonding in the initial five years, consisting mostly of transportation fund-secured bonds, and a small portion of new GO bonding. The potential exists for substantial further bonding beyond the initial five-year period, pending approval of future related new revenue, although the transportation program also has the potential to get cut back as the result of state budget stress.

On a positive note, at fiscal year-end 2016 the amortization of tax-backed debt outstanding remained rapid at 65% in 10 years under our calculation. Connecticut's debt profile was largely in fixed-rate obligations, with approximately 11% of state GO debt outstanding in 2016, the last audited year, consisting of variable-rate debt. The state terminated a \$280 million interest rate swap agreement on March 1, 2015, and currently has only \$20 million remaining exposure to

swap agreement risk in our opinion. It recently sold a \$300 million variable-rate direct placement GO bond, and a \$135 million direct placement variable-rate GO refunding. However, we do not believe the direct placement debt poses a significant contingent risk, as it does not allow debt acceleration in the event of a default.

On a combined basis, the state's retirement systems had a 45.7% GASB 68-funded ratio at fiscal year-end 2017, improved from 41.4% at fiscal year-end 2016 because of the result of strong investment returns in the most recent year.

Because almost all state pension plan liabilities are attributable to either state employees or state-funded teacher pension plans, GASB 68's accounting breakout of the state-only liability does not appreciably change overall state pension liabilities compared to the state's actuarial report. The State Employees' Retirement Fund (SERF) has recorded a significant net pension liability of \$21.1 billion and a 36.3% GASB 68-funded ratio as of June 30, 2017, improved from 31.7% the year before in part due to a 14.3% fiscal 2017 investment return, and the teachers' system had a net pension liability of \$13.5 billion and a 55.9% GASB 68-funded ratio as of June 30, 2017, up from 52.3% the year before.

The state has also released non-GAAP actuarial reports as of a June 30, 2017, valuation. The actuarial valuations, using a market valuation of assets, show the five-year pension investment returns have been 8.6% through September 2017. The report also shows that SERF's higher unfunded liabilities as the result of the lower rate of return assumption were offset to some degree by a change to a longer 25-year amortization period for the unfunded liability from 17 years. This change to the amortization period will go into effect for the fiscal year ending June 30, 2018.

Connecticut did not fund the full actuarial annual required contribution (ARC) in fiscal years 2008-2011, but has effectively funded the full ARC/actuarially determined contribution (ADC) since. The SERF previously used the projected unit credit actuarial cost method, which is not aligned with the GASB standards, but a recent agreement with employee unions will switch SERF to the GAAP-compliant entry age normal actuarial method. The change in rate of return assumptions and move to entry age normal valuations is expected to help amortize the unfunded liability in the future, even though annual state contributions are expected to continue to increase in the next several years because of the recent agreement (see "Connecticut's Recent Pension Agreement With Unions Could Be Mildly Positive For the State," published Jan. 23, 2017). As a result, of previous underfunding, investment underperformance, and implementation of a more conservative actuarial return assumption, unfunded liabilities to personal income is what we view as high at 13.9%, although improved from 15.0% the year before due to strong investment performance.

The state's pension bond sale in 2008 contained a covenant to maintain full ARC/ADC funding for the teachers' pension system, and we anticipate that Connecticut will continue to fully fund the ADC for both the SERF and the teachers' system, although part of the contribution could be made to come from local governments. However, in recent years pension contributions have not been greater than the sum of pension service costs, interest costs, and the amortization component.

Connecticut's OPEB liability is significant compared with that of other states (see "Rising U.S. State Post-Employment Benefit Liabilities Signal An Unsustainable Trend," published Sept. 7, 2016), but recent actions to reduce the liability and pre-funding of an OPEB trust have resulted in a relatively stabilized unfunded liability. The unfunded OPEB was \$21.9 billion for the combined OPEB in the most recent SERF valuation as of June 30, 2015, and the teachers' system

valuation as of June 30, 2016, or \$6,120 per capita. Connecticut's OPEB trust fund is currently small at \$230 million, but the state is scheduled to make increased contributions in fiscal 2018, beginning with a \$132.6 million step-up matching contribution to equal increased employee contributions. Pay-as-you-go costs for funding state employee retiree health costs were \$566.4 million in fiscal 2016, which was in contrast to the sizable \$1.6 billion actuarial annual OPEB cost in 2016.

The unfunded state employee OPEB liability had been a larger \$26.6 billion at June 30, 2008. The lower liability is attributable to a change in the discount rate due to the creation of a trust fund, lower liabilities resulting from changes in plan design negotiated with the State Employee Bargaining Agent Coalition, and various healthcare cost-containment initiatives. Before the plan changes and updated actuarial report, OPEB costs had been forecast to rise sharply, reaching approximately \$45 billion by fiscal 2017.

Connecticut is also statutorily required to fund one-third of teacher pension OPEB costs, plus the shortfall left after employer and employee contributions. The teachers' unfunded OPEB was \$3.0 billion as of June 30, 2016, almost unchanged from \$3.0 billion in 2012, with no assets in the OPEB trust fund relating to teachers' retirement health care.

On a scale from '1.0' (strongest) to '4.0' (weakest), S&P Global Ratings assigned a score of '3.5' to Connecticut's debt and long-term liabilities.

Ratings Detail (As Of December 7, 2017)		
Connecticut GO		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Ed Fac Auth		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut approp		
<i>Long Term Rating</i>	A/Negative	Affirmed
Connecticut GO		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut GO		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut GO		
<i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO bnds ser 2016C due 05/15/2034		
<i>Long Term Rating</i>	A+/A-1/Negative	Affirmed
Connecticut GO bnds ser 2016E due 10/15/2017-2029, 2032-2036		
<i>Long Term Rating</i>	A+/Negative	Affirmed
<i>Unenhanced Rating</i>	NR(SPUR)	

Ratings Detail (As Of December 7, 2017) (cont.)		
Connecticut GO (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (AGM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed

Ratings Detail (As Of December 7, 2017) (cont.)		
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SECMKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (BAM) (SEC MKT) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO (FGIC) <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Connecticut GO <i>Long Term Rating</i>	A+ /Negative	Affirmed
Connecticut GO <i>Long Term Rating</i>	A+ /Negative	Affirmed
Connecticut GO <i>Long Term Rating</i>	A+ /Negative	Affirmed
Connecticut GO <i>Long Term Rating</i>	A+ /Negative	Affirmed
Connecticut GO <i>Long Term Rating</i>	A+ /Negative	Affirmed
<b>Connecticut GO</b> <i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
<b>Capital City Economic Dev Auth, Connecticut</b>		
Connecticut Capital City Economic Dev Auth (Connecticut) GOEQUIV <i>Long Term Rating</i>	A+ /Negative	Affirmed
Connecticut Capital City Economic Dev Auth (Connecticut) GOEQUIV <i>Long Term Rating</i>	A+ /A-1 /Negative	Affirmed
<b>Connecticut Hlth &amp; Educl Facs Auth, Connecticut</b>		
Connecticut Connecticut Hlth & Educl Facs Auth (Connecticut) rev bnds (Child Care Facs Prog) (ASSURED GTY) <i>Unenhanced Rating</i>	BBB+(SPUR)/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev bnds (Connecticut) (Connecticut State Univ Sys Issue) ser J dtd 06/22/2011 due 11/01/2012-2031		

<b>Ratings Detail (As Of December 7, 2017) (cont.)</b>		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev bnds (State Univ Sys Issue) ser D-1&2 dtd 03/15/2002 due 11/01/2003-2022		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev rfdg bnds (Connecticut) (Connecticut State University System Issue) ser P-1 due 11/01/2036		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev rfdg bnds (Connecticut) (Connecticut State University System Issue) ser P-2 due 11/01/2035		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev rfdg bnds (Connecticut) (Connecticut State Univ Sys Issue) ser K dtd 06/22/2011 due 11/01/2012-20		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) rev rfdg bnds (Connecticut) (Connecticut St Univ Sys Issue) ser L dtd 04/04/2012 due 11/01/2012-2029		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) state supported rev bnds		
<i>Long Term Rating</i>	A/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) APPROP		
<i>Long Term Rating</i>	A/Negative	Affirmed
Connecticut Hlth & Educl Facs Auth (Connecticut) GOEQUIV		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Ed Fac Auth nsg home prog		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Ed Fac Auth (Connecticut) nsg home prog taxable		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hlth & Ed Fac Auth (Connecticut) st univ sys issue		
<i>Long Term Rating</i>	A+/Negative	Affirmed
<b>Connecticut Hlth &amp; Ed Fac Auth rev bnds (Connecticut State Univ Sys Issue) ser D-2 dtd 03/15/2002 due 11/01/2020-2022</b>		
<i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
<b>Connecticut Hlth &amp; Ed Fac Auth (Connecticut) univ issue</b>		
<i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
<b>Connecticut Hsg Fin Auth, Connecticut</b>		
Connecticut		
Connecticut Hsg Fin Auth (Connecticut) state supported spl oblig bnds		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hsg Fin Auth (Connecticut) state-supported spl oblig bnds (Connecticut)		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hsg Fin Auth (Connecticut) state-supported spl oblig bnds (Connecticut)		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hsg Fin Auth (Connecticut) state-supported spl oblig bnds (Connecticut)		
<i>Long Term Rating</i>	A+/Negative	Affirmed
Connecticut Hsg Fin Auth (Connecticut) state-supported spl oblig bnds (Connecticut) (Amt)		

<b>Ratings Detail (As Of December 7, 2017) (cont.)</b>		
<i>Long Term Rating</i>	A+/Negative	Affirmed
<b>Connecticut Hsg Fin Auth spl needs hsg mtg fin prog</b>		
<i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
<b>Connecticut Innovations Incorporated, Connecticut</b>		
Connecticut		
Connecticut Innovations Incorporated (Connecticut) gen fd oblig bnds		
<i>Long Term Rating</i>	A+/Negative	Affirmed
<b>Connecticut Dev Auth (Connecticut) GO</b>		
<i>Unenhanced Rating</i>	A+(SPUR)/Negative	Affirmed
Many issues are enhanced by bond insurance.		



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