January 15, 2018

Oklahoma Debt Affordability Study 2017

Office of the State Treasurer • Treasurer Ken Miller • Andrew Messer, State Bond Advisor

Executive Summary

This report is prepared in accordance with Title 62 O.S. § 34.200-1, requiring the State Bond Advisor in cooperation with the Office of Management and Enterprise Services to produce annual debt affordability studies (Study).

In addition to the State Bond Advisor's annual report and the Comprehensive Annual Financial Report this Study provides the Governor and the Legislature with an additional tool to contextualize state debt and assess the impact of future debt issuance on the state's fiscal position. The Study assists this endeavor by providing information and analysis that can be utilized by policymakers for the cost-effective management of the state's capital investments.

The state has two structural limits in place to prevent debt from unduly straining the state budget. The first is the constitutional requirement that general obligation bonds must be approved by a vote of the people and must be secured by a specific revenue source. The second is the statutory debt service limit that prohibits the state's net-tax supported debt service from exceeding 5% of general revenue.

Due in part to these limits Oklahoma has a relatively low tax-supported debt and debt service burden. Voters have not approved a general obligation bond issuance since 1992. Those bonds are scheduled to be retired in 2018 leaving the state with no pure general obligation debt.

Instead the state has preferred to use the Oklahoma Capitol Improvement Authority to issue lease-revenue bonds to address the state's capital needs. The state also issues non-tax supported debt through various state governmental entities with the authority to issue bonds secured exclusively through a specific revenue source that do not represent an obligation of the state.

The study projects the state's debt position under various scenarios to provide context and demonstrate how changes in the market and state revenue can influence the affordability of existing debt and ability to issue additional debt.

For fiscal year 2018 the state has approximately $1 billion in excess par value debt capacity. Oklahoma is projected to add debt capacity over the next five fiscal years even assuming conservative growth in general revenue and issuance of all authorized debt.

A comparison of debt metrics relative to peer states illustrates Oklahoma is a low debt state ranking below the national average and the region according to almost every metric.

Pension liabilities represent perhaps the state's largest outstanding obligation and are included to present a more comprehensive examination of the state's fiscal position. Oklahoma's commitment to funding pension contributions has improved funded status of the state's systems significantly, but the state still ranks below the national median in many pension liability metrics.

Oklahoma's general obligation credit rating was downgraded by Fitch Ratings Service and Standard & Poor's in 2017. Credit analysts cited structural imbalance of the state budget as a leading factor in their decision to lower the state's credit rating. The lower rating will increase borrowing cost to the state over time making debt issuance a less cost-effective tool for policymakers.

Oklahoma State Debt Profile

The State of Oklahoma issues primarily two kinds of tax-supported debt. General obligation (GO) bonds and Lease-Revenue bonds.

General Obligation Bonds

The state constitution requires voter approval of all state GO bonds and further requires that they are backed by a specific tax in addition to the pledge of the full faith, credit and taxing power of the State.

As of December 31, 2017, Oklahoma has one remaining GO bond issue with a balance of $28,530,000. This issue has a final maturity date of July 15, 2018 after which Oklahoma will have no outstanding governmental purpose GO bonds.

Lease-Revenue Bonds

The second type of tax-supported debt issued by the state is lease-revenue bonds. These are primarily issued through the Oklahoma Capitol Improvement Authority (OCIA). Lease-revenue bonds are secured by lease contracts between state agencies occupying or utilizing the facilities and OCIA.

Authorizations for OCIA to issue debt are usually accompanied by language indicating the legislature's intent to appropriate sufficient funds to make lease payments.

As an infrequent issuer of GO bonds, the state relies more heavily on lease revenue bonds through the OCIA to finance capital projects. Currently there are 18 OCIA series of obligations with an outstanding balance on December 31, 2017 of $1,068,047,000.

Master Lease Program

The third significant source of secondarily tax-supported debt is issued through the Oklahoma Development Finance Authority (ODFA) Higher Education Lease Programs. These obligations are mostly secured from revenue sources within higher education institutions but are ultimately backed by state appropriations to the Oklahoma State Regents for Higher Education.

The Master Lease Programs allow ODFA to issue obligations secured by a master lease with the Regents and sub-leases with participating state institutions of higher education. There are two separate programs: one for financing personal property and one for real property.

The bulk of outstanding debt is through the real property program with a total of $810,500,000 as of December 31, 2017.

The state's statutory debt service limit excludes master lease program issues because they are generally supported first by non-appropriated revenues and would only impact the general revenue fund in the event that pledged revenue sources were insufficient.

Lease-Purchase obligations

A smaller component of tax-supported debt is state agency lease-purchase financings. These lease-purchase arrangements are usually for equipment and small office buildings utilized by health and human services related agencies and the state ensures these are conducted in a financially secure manner by limiting the types of transactions that are eligible and requiring several layers of oversight and approval. As of December 31, 2017 the total outstanding balance for lease-purchase obligations is $10,082,000.

Oklahoma Industrial Finance Authority

The Oklahoma Industrial Finance Authority (OIFA) is constitutionally authorized to issue GO bonds for the purpose of making industrial development loans. Their authority is limited to $90 million and their outstanding GO bond balance is $40 million as of December 31, 2017.

Security for GO bonds issued under this authorization are initially provided by loan repayments and then OIFA reserves. The state provides the ultimate guarantee.

Oklahoma Development Finance Authority

ODFA is constitutionally authorized to issue $100 million in GO bonds to provide support for the Credit Enhancement Reserve Fund (CERF) program.

The CERF program provides guarantee of debt service payments on approved economic development loans. The program lowers the cost of borrowing to spur economic development and ODFA has never issued debt under their authority. However, the debt is backed by their authority and thus CERF issues represent a contingent liability to the state. As of December 31, 2017, the total outstanding CERF commitment is $33,353,000.

Oklahoma Water Resources Board

The Oklahoma Water Resources Board also has constitutional authority to issue GO bonds to provide credit enhancement for loan programs. However, it has never issued bonds pursuant to their authority nor do they anticipate doing so in the future.

The state's outstanding tax-supported debt position as of December 31, 2017 is shown below.

State of Oklahoma Outstanding Tax-Supported Obligations

As of December 31, 2017

Type of Obligation	Par Amount
General Obligation - Governmental Purpose	$ 28,530,000
General Obligation - OIFA Loan Program	40,000,000
- Subtotal General Obligation	$ 68,530,000
Oklahoma Capitol Improvement Authority	$ 1,068,047,000
Oklahoma Development Finance Authority:	
- Conduit Issues	$ 152,667,000
- Master Equipment Lease Program	97,275,000
- Master Real Property Lease Program	810,500,000
- Subtotal ODFA issues	$ 1,060,442,000
Direct Agency and Campus Lease Obligations	$ 11,247,000
Gross Tax-Supported Debt	**$ 2,208,266,000**

(Continued on next page.)

Less:	
- Self-supporting bonds[1]	$ (106,388,000)
Net Tax-Supported Debt	**$ 2,101,878,000**

[1] This figure Includes the OIFA loan program, ODFA non-CERF issues and lease-backed bonds that are secured by non-appropriated revenues. figure does not include master lease program obligations.

Revenue Bonds

Revenue bonds finance income-producing projects and are secured by a specified revenue source. These bonds do not represent a debt to the state and are not supported by the full faith, credit or taxing power of the state.

Historically, revenue bond programs have been the largest borrows in the state and since they derive their funding from fees or other sources of revenue they have a greater capacity to service debt than other state agencies.

As of December 31, 2017 the principal balance of outstanding from the state's largest revenue bond issuers is $5,919,522,000.

State of Oklahoma's Largest Revenue Bond Issuers Outstanding Debt

As of December 31, 2017

Issuer		Outstanding Debt
Oklahoma Turnpike Authority	$	1,581,315,000
Grand River Dam Authority		982,330,000
Oklahoma Water Resources Board		785,350,000
University of Oklahoma Revenue Bonds1		900,100,000
Oklahoma Municipal Power Authority		645,120,000
Oklahoma State University Revenue Bonds		382,170,000
Oklahoma Student Loan Authority		259,946,000
Oklahoma Housing Finance Agency[1]		244,356,000
University of Oklahoma Health Sciences		138,835,000
Total:	**$**	**5,919,522,000**

*Debt shown in this table is secured solely by the specific pledged revenues of the respective programs. The State of Oklahoma has no legal obligation to pay debt service on thses bonds.

[1]OHFA outstanding balance is as of September 30, 2017 and includes multifamily & Single family programs.

Authorized but Unissued Debt

In addition to outstanding obligations Oklahoma has authorized the issuance of obligations that have not been issued. Some authorizations such as the Oklahoma Water Resources Board (OWRB) constitutional authorization to issue GO bonds are utilized as a credit enhancement for OWRB revenue bonds and are therefore not anticipated to ever be issued.

However, most outstanding authorizations grant OCIA the authority to issue debt for specific state agency projects. These authorizations should be considered when examining that state's overall debt position and debt capacity.

As of December 31, 2017 there are seven unissued OCIA authorizations totaling $298,555,000. Issuance of authorized obligations impact the state's overall bonded indebtedness and reduce capacity to issue new debt under the 5% statutory debt service limit. Therefore these should be included in any examination or projection of state debt burden.

Outstanding OCIA Authorizations for Issuance of Tax-Supported Obligations

As of December 31, 2017

Year	Measure	Agency		Amount
2004	HB1112	Wildlife Conservation Commission	$	30,000,000
2007	HB2341	Dept. of Tourism		9,000,000
2010	SB1488	Dept. Mental Health		6,000,000
2015	HB2237	Native American Cultural and Educational Authority		25,000,000
2016	HB3168	State Capitol Repair		125,000,000
2017	HB2389	Dept. of Health (Lab)		58,555,000
2017	HB2387	Office of Juvenile Affairs		45,000,000
Total Authorized:			**$**	**298,555,000**

Oklahoma State Debt Profile

Debt Service Capacity limit

Oklahoma has imposed a statutory limit on total annual debt service payments from the General Revenue Fund. As stipulated in 62 O.S. Section 34.200, total annual debt service subject to the limit may not exceed 5% of the five year average of the of the general revenue fund.

In the event that the 5% calculation is exceeded the state is prohibited from incurring additional tax-supported debt until additional capacity is available. The calculation excludes debt issued under the master lease program, as these are primarily secured through fees or other non-appropriated revenue sources.

Linking the debt service capacity to general revenue growth is intended to ensure debt service payments do not become a strain on the state budget and impact the ability to fund core government services. By averaging the general revenue fund over five years it allows for gradual changes to debt capacity and reduces the risk volatility when state revenues deviate from projections.

For fiscal year 2018 the maximum debt service subject to statutory limit is $272,082,000 and debt service is $179,068,000. Leaving the state with excess debt service capacity of $93,014,000 providing significant flexibility to issue obligations and remain below the 5% statutory limit.

State of Oklahoma
Calculation of Annual Debt Service Limit
(as of December 31, 2017)

Fiscal Year	Certified General Revenue	Five- Year Average
2013	5,604,069,000	
2014	5,628,158,000	
2015	5,726,699,000	
2016	5,204,842,000	
2017	5,044,394,000	$ 5,441,633,000
Annual Debt Service Limit[1]		$ 272,082,000
Current D.S. subject to limit[2]		$ 179,068,000
Excess Capacity		$ 93,014,000

[1] Equal to 5% of the five-year average of Certified General Revenues.

[2] FY' 2018 debt service as of 12/31/2017.

Projection Assumptions

The following assumptions were applied to the issuance of authorized but unissued debt and to estimate additional debt capacity for new issues of tax-supported debt over the next five years.

1. All debt will be issued as 20-year obligations
2. Interest (coupon) rate is assumed to be 5%
3. There will be no refunding's of outstanding debt
4. Authorized but unissued debt will be issued from FY'18-FY'22 in equal allotments
5. The General Revenue Fund is assumed to grow at a rate of 2% through FY'22.
6. Net-tax supported debt service is debt service subject to the statutory 5% limit calculation

Projection of Available Par Debt Capacity FY'18-FY'22

Based upon the forgoing assumptions the estimated available par value debt capacity for FY'18 is $1,099,448,000 and additional debt service capacity is $88,223,000.

A slight increase in debt service in FY'19 will reduce the state's excess debt service and par value debt capacity.

However, in FY'20-FY'22 the state will see a significant increase in available capacity as outstanding debt is retired and debt service declines.

Oklahoma is projected to add a total of $618,227,000 in par value debt capacity from baseline FY'18 capacity for a total of $1.7 billion in available par value capacity by FY'22 if no additional debt is issued.

(Projected) Debt Service and Par Value Capacity FY'18-FY'22

Fiscal Year	5-Year Average GR	Statutory 5% Debt Limit	Net-Tax Supported Debt Service*	Excess Debt Service Capacity	Excess Par Value Debt Capacity
2018	$ 5,441,633,000	$ 272,082,000	$ 183,859,000	$ 88,223,000	$ 1,099,448,000
2019	5,434,477,000	271,724,000	196,301,000	75,423,000	939,936,000
2020	5,444,776,000	272,239,000	145,400,000	126,838,000	1,580,687,000
2021	5,458,086,000	272,904,000	139,016,000	133,888,000	1,668,540,000
2022	5,598,941,000	279,947,000	142,116,000	137,831,000	1,717,675,000

*Assumes additional debt issued for 20 years at 5% interest rate

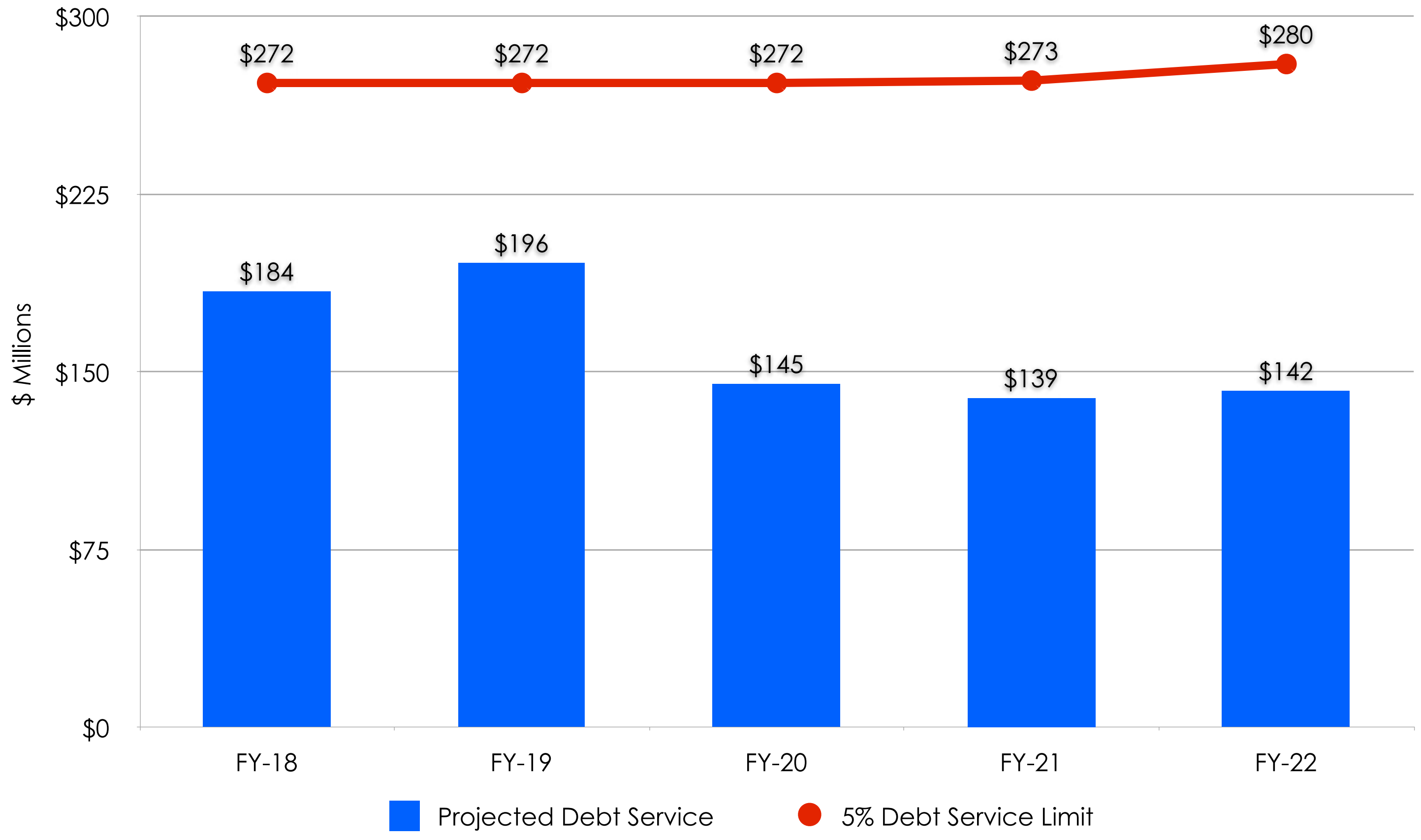
Projection of Debt Service Capacity

Debt service capacity projections provide a useful tool to estimate the state's ability to issue debt to meet capital needs in the future. Accounting for the authorized but unissued debt illustrates the impact that the issuance of authorized but unissued debt will have on debt capacity and provides policymakers with information to evaluate future debt issuance.

Debt service will remain well below the 5% statutory debt limit through FY'22 providing significant additional debt capacity.

After a slight increase in debt service in FY'19 total net-tax supported debt service is projected to decline and remain at approximately 50% of capacity. The decline in this ratio over the next five years provides policymakers with the flexibility to utilize debt to address state capital needs.

Net Tax-Supported Debt Service vs. 5% Statutory Debt Limit (Projected)



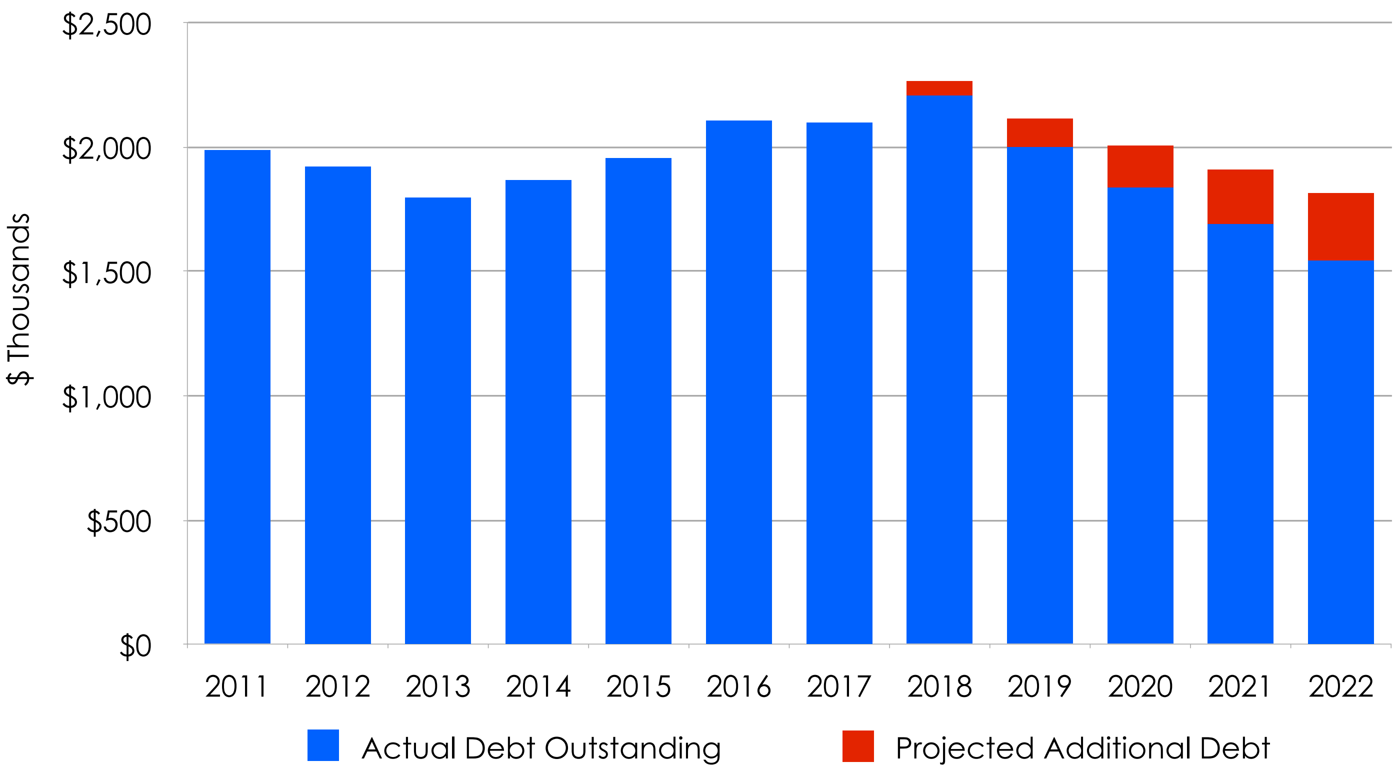
Projected Net-Tax Supported Outstanding Principal

As illustrated in the chart below, outstanding net-tax supported debt is projected to increase in FY'18 and then steadily declines through FY'22. The state has historically structured debt to be repaid quickly with the state's projected outstanding debt in FY'22 projected to be at its lowest level since FY'13.

FY'19 is projected to provide no additional debt capacity as debt service is scheduled to slightly increase from FY'18 and projected general revenue increases are not sufficient to add debt capacity under the statutory 5% debt service limit.

State of Oklahoma Net Tax-Supported Debt Outstanding

2011-2022 (Projected)



Sensitivity Analysis

Sensitivity analysis measures the degree to which fluctuations in state revenues and interest rates impact the capacity of the state issue debt for capital needs.

If actual revenue differs from projections the level of additional debt capacity will be directly impacted, assuming all other factors remain constant. The effect on debt capacity based upon different revenue assumptions is summarized in the table below.

If general revenue is 90% of projections over the next five years the state will add $356,7201,000 par value debt capacity. When compared to an additional $618,227,000 under 100% general revenue projections the 10% deviation in general revenue from projections would reduce the state's additional par value debt capacity by $261,506,000 or 42% over the next five years.

Fiscal Year	GR @ 90% of Projections	GR @ 95% of Projections	GR @ 100% of Projections
2019	-	-	-
2020	$ 341,065,000	$ 411,152,000	$ 481,239,000
2021	15,656,000	51,755,000	87,853,000
2022	-	12,315,000	49,135,000
Total Additional Debt Capacity	**$ 356,721,000**	**$ 475,222,000**	**$ 618,227,000**

Debt capacity analysis assumes a 5% interest rate for the issuance of all authorized and unissued debt. The table below illustrates the effect of interest rates on debt capacity assuming general revenue is at 100% of projections.

Fiscal Year	Interest Rates @ 4%	Interest Rates @5%	Interest Rates @ 6%
2019	-	-	-
2020	$ 524,802,000	$ 481,239,000	$ 442,921,000
2021	95,806,000	87,853,000	80,858,000
2022	53,583,000	49,135,000	45,223,000
Total Additional Debt Capacity	**$ 674,191,000**	**$ 618,227,000**	**$ 569,002,000**

*Assumes authorized but unissued debt will be issued at 5%

Debt Metric Comparison

A comparison to peer group ratios is useful in providing context to Oklahoma's debt position. The selected peer group is composed of states contiguous with Oklahoma as well as states that are similar in population. And a few states where included because they are rated "triple A" by all three major credit rating agencies.

Oklahoma's debt burden is very modest as illustrated by the comparison. Only Colorado and Indiana have lower debt per capita and only Colorado has a lower net-tax supported debt as a percentage of personal income.

By any metric Oklahoma ranks lower than the national median in net-tax supported debt and could increase its debt burden to invest in capital projects without materially impacting its relative debt position to other states.

The information contained in the comparison is from Moody's Investors Service 2017 state debt medians report.

Oklahoma Net Tax-Supported Debt Comparative Ratios 2017

State	Ratings (S&P/Moody's/Fitch)	Debt Per Capita	Net Tax-Supported Debt as % of Personal Income	Debt as % of State GDP	Net Tax-Supported Debt ($ Thousands)	Debt Service Ratio
Arkansas	AA/Aa1/NR	$ 588	1.50%	1.48%	$ 1,757,229	2.3%
Colorado	AA/Aa1/NR	$ 353	0.70%	0.62%	$ 1,954,579	2.5%
Connecticut	AA-/Aa3/AA-	$ 6,505	9.70%	9.20%	$ 23,265,534	13.3%
Georgia	AAA/Aaa/AAA	$ 992	2.50%	2.05%	$ 10,228,974	6.2%
Indiana	AAA/Aaa/AAA	$ 310	0.80%	0.61%	$ 2,056,661	1.2%
Kansas	AA-/Aa2/NR	$ 1,575	3.40%	3.06%	$ 4,579,718	2.8%
Louisiana	AA-/Aa3/NR	$ 1,615	3.70%	3.16%	$ 7,559,921	3.6%
Missouri	AAA/Aaa/AAA	$ 579	1.40%	1.20%	$ 3,528,926	3.4%
Mississippi	AA/Aa2/AA	$ 1,847	5.20%	5.22%	$ 5,519,778	6.3%
New Mexico	AA+/Aa3/NR	$ 1,260	3.30%	2.81%	$ 2,623,075	4.0%
Oklahoma	AA/Aa2/AA	$ 365	0.80%	0.77%	$ 1,432,084	2.7%
Oregon	AA+/Aa1/AA+	$ 1,842	4.40%	3.46%	$ 7,540,513	4.9%
Texas	AAA/Aaa/AAA	$ 383	0.80%	0.66%	$ 10,681,942	2.7%
Utah	AAA/Aaa/AAA	$ 824	2.10%	1.70%	$ 2,513,135	5.9%
National Median		**$ 1,006**	**2.50%**	**2.23%**	**$ 4,701,762**	**4.1%**

Pension Liability Discussion

Pension liabilities have begun to receive greater attention from ratings agencies and many states as they represent long-term obligations that compete with other priorities for limited resources.

In FY'11 the combined funded status of Oklahoma's seven retirement systems was 55.9%, prompting legislative changes to improve the fiscal health of the systems. Reforms included requiring cost of living adjustments be fully funded prior to enactment and increasing the age at which some participants are eligible to retire. These reforms contributed to the enhanced funding status of the state's pension systems which, in aggregate, improved to 75.4% in FY'17.

Five of the state's seven pension systems funded status exceeds 80%. However, the state's largest plan, the Teachers Retirement System as well as the Firefighters System remain below 66% funded status. Despite recent improvements continued contributions that meet or exceed the actuarially determined contribution will be necessary to continue the progress and keep the systems on a sustainable path.

Actuarial Funded Status of Oklahoma Pension Systems

Retirement System	Funded Ratio July 1, 2010	Funded Ratio July 1, 2016
Teachers	47.9%	65.7%
Public Employees	66.0%	93.2%
Firefighters	53.4%	65.9%
Police	74.9%	98.7%
Law Enforcement	73.6%	87.4%
Judges	81.3%	11.1%
Department of Wildlife	81.5%	86.3%

Oklahoma's adjusted net pension liability, as defined by Moody's Investors Service, is lower than most states across various metrics for measuring the level of pension liabilities. And contribution levels relative to state revenue are amongst the highest in the nation.

However, Oklahoma does rank higher, at 13th, in pension assets as a percentage of state revenues. As assets grow larger to fund liabilities, it is anticipated that pension assets will continue to exceed state revenues.

Pension asset investments risk should be considered when evaluating the state's overall debt burden as investment losses. Due to market volatility, this could require the state to increase contributions to mitigate investment losses.

While Oklahoma ranks very low in debt burden ratios the state is close to the national median in adjusted net pension liability metrics. When debt service and pension contributions are combined Oklahoma's combined total payments as a percentage of state revenue exceed the national median.

Oklahoma has made significant progress in reducing the unfunded accrued actuarial liability of the state's retirement systems in recent years yet pension obligations continue to represent one of the state's largest long term liabilities and will require sound fiscal management to avoid placing a strain on the state budget.

As state policymakers evaluate the debt position of the state and when to utilize debt to finance capital needs, pension obligations should be considered as a long term obligation that competes with other priorities for limited resources.

State of Oklahoma
Adjusted Net Pension Liability (ANPL) Rankings

	ANPL $ billions	ANPL as % of State Revenues	ANPL as % of Personal Income	ANPL as % of State GDP	Pension Assets as % of State Revenue	Debt Service + Pension Contribution + OPEB as % of State Revenue
Oklahoma	$10.16	79.7%	4.5%	4.40%	128%	11.9%
Rank	29th	28th	30th	28th	13th	N/A
National Median	**$9.73**	**82%**	**6.0%**	**2.23%**	**92.1%**	**8.8%**

*Moody's Investors Service Sector In-Depth 13 September 2017 (numbers and rankings based upon FY'16)

*ANPL is Adjusted Net Pension Liability

* Rankings: 1^{st} represents the highest percentage/dollar figure and 50^{th} the lowest.

State Credit Review

Credit ratings are the assessments made by ratings agencies of a governmental entity's ability and likelihood to repay debt in a timely manner. Credit ratings are an important factor in the public credit markets and can influence the state's cost of borrowing.

Oklahoma's general obligation debt rating was downgrade from AA+ to AA by Standard and Poor's and Fitch Ratings Agency in 2017. Credit analyst have long warned that a misalignment between recurring revenues and expenditures creating an ongoing budget gap is a credit risk that could lead to a downgrade. The decreased levels of reserve funds and weakness in the energy sector were also contributors to the rating downgrade.

The cost of a downgrade is not immediately ascertainable but will lead to higher borrowing cost over time. Oklahoma's tax-supported bond issuer ratings are provided in the table below.

Oklahoma Tax-Supported Issuer

Bond Ratings

As of December 31, 2017

Tax-Supported Bonds	Fitch Ratings	Moody's	S&P
General Obligation Bonds	AA	Aa2	AA
OCIA Lease Revenue Bonds	AA-	Aa3	AA-
ODFA Master Lease Program	AA-	Aa3	AA-

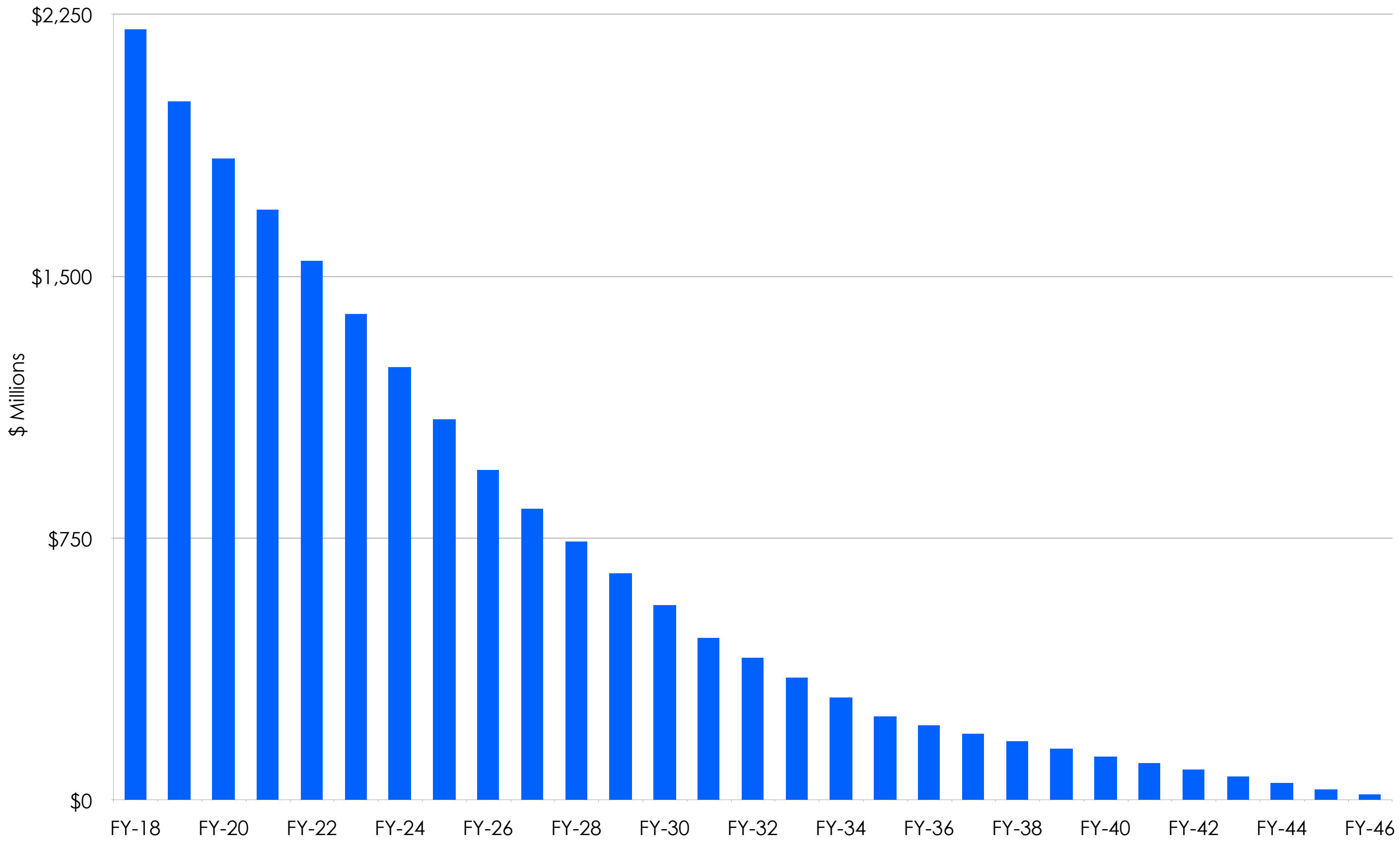
Important Debt Management Structures and Practices

Despite credit downgrades in 2017, Oklahoma has several positive debt management practices and structures in place that credit analyst consistently cite as credit strengths. Including low debt burden, below average pension liabilities, and an effective constitutional reserve fund.

Debt Retirement

One practice that has allowed Oklahoma to maintain a low debt burden is quickly repaying debt. As illustrated in the chart, 66% of currently outstanding debt will be repaid within 10 years, and 93% within 20 years. The rate of principal redemption provides considerable flexibility in debt structuring and marketing and is a credit positive practice.

State of Oklahoma (Current) Tax-Supported Debt Principal Redemption



Constitutional Reserve Fund

Oklahoma's constitutional "rainy day" fund is an important stabilization tool and provides additional support to the state budget during periods of weak financial performance.

The rainy day fund consists of deposits of all general revenue funds collected in excess of the 100% certified estimate and can only be accessed when specific criteria are met.

As illustrated by the chart Oklahoma's rainy day fund has been a positive structural feature allowing the state to build significant reserves in positive economic conditions and use those reserves to manage budgetary shortfalls during periods of weakness.

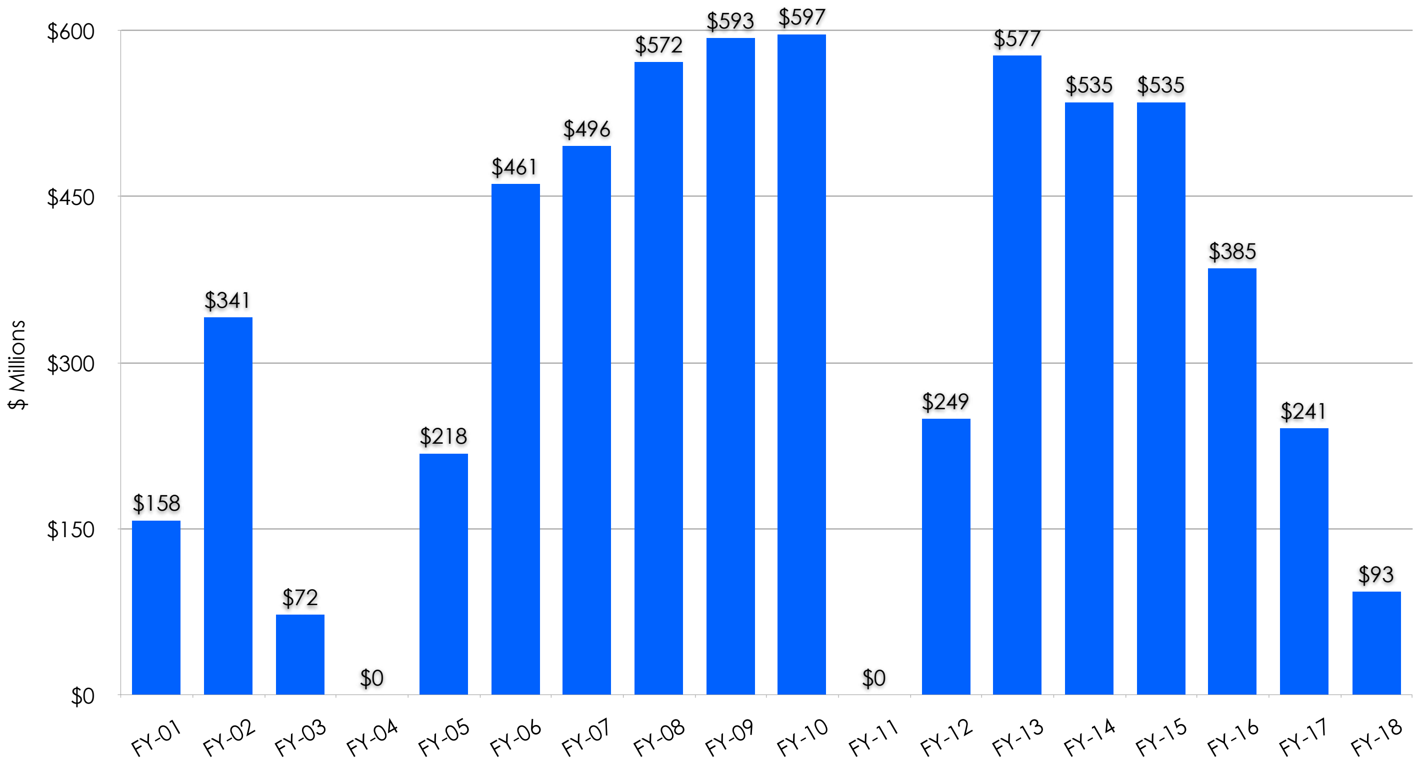
Despite not receiving a significant deposit since FY'12 the fund has maintained a balance to support the state budget over the last three fiscal years.

Conclusion

Credit ratings impact the overall cost of debt issuance and therefore debt capacity. With Oklahoma's general obligation debt receiving a downgrade for the first time in decades the cost of borrowing will increase all other factors being constant. However, Oklahoma has many credit strengths that if combined with a solution to the state's budget imbalance could lead to an improvement to the state's credit over time.

Available Constitutional Reserve Fund Balance

FY-01 – FY-18



(Available balance at beginning of FY.)