CAPITAL DEBT AFFORDABILITY ADVISORY COMMITTEE

State of

Vermont

RECOMMENDED ANNUAL NET TAX-SUPPORTED DEBT AUTHORIZATION

September 2021

Prepared by:
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TO: Governor Phil Scott
Susanne Young, Secretary of Administration
Jill Krowinski, Speaker of the House of Representatives
Becca Balint, Senate President Pro Tempore
Alice Emmons, Chair, House Committee on Corrections and Institutions
Joe Benning, Chair, Senate Committee on Institutions
Catherine Benham and Members, Joint Fiscal Committee

FROM: Beth Pearce, Vermont State Treasurer

DATE: September 30, 2021

RE: Capital Debt Affordability Advisory Committee Report for 2021

Pursuant to 32 V.S.A. §1001, I am pleased to submit on behalf of the Capital Debt Affordability Advisory Committee ("Committee" or "CDAAC") its "Recommended Annual Net Tax-Supported Debt Authorization" Report for 2021 ("Report"). This is the second year of the FY 2022-2023 biennium and the Committee is reaffirming its 2-year debt recommendation of $123,180,000, as proposed by the Administration and adopted by the General Assembly in the Capital Bill.

The Committee also discussed general uncertainty related to availability of federal funds for infrastructure needs, supply chain issues, labor shortages and escalating construction costs. The Committee considered all of these items in its current recommendation to maintain the long-term net tax-supported debt level. Our Report contains information on these issues.

This year, the Committee established two working groups, one to review Pay-go approaches and the use of the bond premium, and the second to review metrics used to develop future recommendations for debt affordability. While not statutorily required, the Committee will issue a supplemental report by the end of the calendar year on the findings of these two working groups. The supplemental report will not change the debt authorization recommendation set forth in this Report.

I would like to thank the Committee for its work this year. Please contact me with any questions.

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1. OVERVIEW

Purpose

In accordance with 32 V.S.A., Chapter 13, Subchapter 8 "Management of State Debt," the Capital Debt Affordability Advisory Committee (the "Committee" or "CDAAC") is required to present to the Governor and the General Assembly each year, no later than September 30, an estimate of the maximum amount of new long-term net State tax-supported debt that Vermont may prudently authorize for the next fiscal year. In Sec. 1 of Act No. 104 of 2012, the General Assembly expressed its intent to move to a biennial capital budgeting cycle "to accelerate the construction dates of larger projects and thus create jobs for Vermonters sooner than would be possible under a one-year capital budgeting cycle." In response, starting with its 2012 Report, the Committee has formally presented a two-year debt recommendation.

Committee Duties

The Committee is directed, under VSA 32: 1001 as to the considerations upon which it shall deliberate and report in recommending affordability.

Formal Recommendation

The Committee recommends that the State of Vermont maintains its current authorization of long-term net tax-supported debt for fiscal years 2022 and 2023 in an amount not to exceed $123,180,000, reflecting no change from the previous biennium recommendation of $123,180,000. CDAAC's formal recommended debt authorization complies with the State's triple-A debt affordability guidelines, other than (i) the debt per capita guideline and (ii) the debt as a percentage of personal income in FY 2022 and FY 2023, as described in Section 3, "Debt Guidelines," is consistent with the current expectations of the rating agencies, and demonstrates that the State continues to manage its debt issuance program in a prudent and restrained manner.

As part of the annual review process, CDAAC conducted a comprehensive review of affordability factors and metrics. The Committee reviewed the State's annual cost of debt service as a percentage of revenues, and other debt ratios such as debt as a percentage of gross state product, debt as a percentage of personal income and debt per capita. Based on the review of affordability factors and metrics CDAAC views the biennium recommendation of $123,180,000 as an affordable amount of debt to be issued by the State in fiscal years 2022 and 2023.

The Committee also discussed general uncertainty related to availability of federal funds for infrastructure needs and escalating construction costs and labor shortages in getting to this recommendation and suggests the State seek opportunities to use federal funds for qualified infrastructure projects, to the extent possible.

As stated in past CDAAC reports, the more limited debt issuance among the State's peer triple-A rated states over the past several years and the State issuing more debt than it has been retiring has weakened the State's relative position compared to its peers. The Committee was concerned by this trend, and thus lowered the last biennium recommendation in 2018. Due to the unprecedented economic repercussions from the COVID-19 pandemic, the CDAAC decided to maintain its biennial recommendation consistent with the prior biennial recommendation. As such, the projected debt issuance of $123,650,000 in FY 2022 (related to previously authorized but unissued debt) and the recommended $61,590,000 per year thereafter, the State is only projected to have a marginally higher (0.9%) amount of debt outstanding at the end of the 10-year projection period in fiscal 2032 versus the amount outstanding in the current fiscal year 2022. Thus, the State's overall projected issuance during this time period is slightly in excess of its scheduled aggregate debt retirements. See "Long-Term Net Tax-Supported Debt and Debt Service Projections" on the following pages. Upon careful consideration, including, but not limited, to 32 VSA: 1001; sections (c)(6), (c)(7), (c)(8), (c)(9)(A), and (c)(9)(B), CDAAC opted to maintain the current biennium authorization.

The Committee also formed two working groups. The affordability working group was tasked with reviewing the State's affordability debt metrics and considering the appropriateness of the metrics with respect to other states' debt metrics and rating agency criteria. The second working group was organized to consider the best use of bond premium, the benefits of the State increasing its Pay-go funds and possible sources for deferred maintenance funding. While there is no statutory requirement to do so, CDAAC expects to produce a supplemental report based on its review of the findings from the two working groups, prior to the 2022 legislative session. The supplemental report will focus on longer-term considerations and will not change the current $123,180,000 biennium recommendation. See Section 6, "State Guidelines and Recent Events" for a detailed discussion of CDAAC's analytical approach.

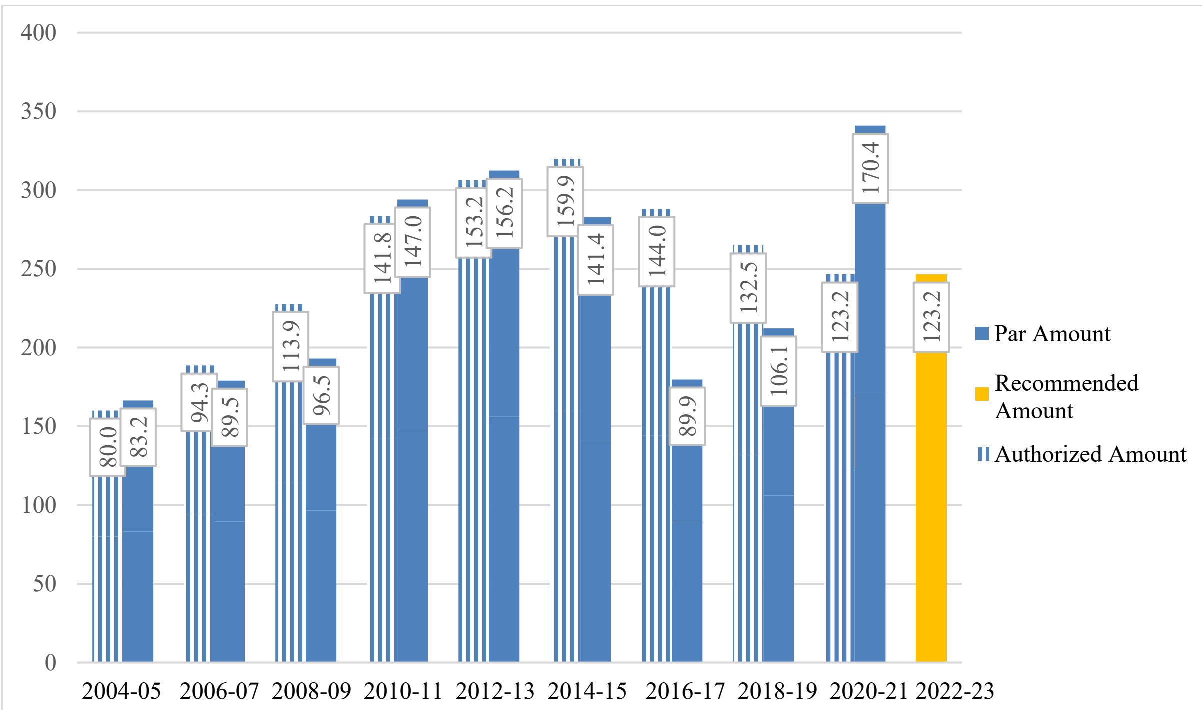
Definition of Vermont's "Long-Term Net Tax-Supported Debt"

As a matter of practice, while the CDAAC legislation refers to an authorization of "net tax-supported debt," the amount of net tax-supported debt for the State has, prior to 2019, meant only general obligation (or "G.O.") and capital leases ("Capital Leases") debt, and prior CDAAC reports assumed only G.O. debt and Capital Leases for purposes of calculating its projected net tax supported debt ratios. However, rating agencies generally consider revenue bond debt repaid from state general revenue sources as part of a state's net tax-supported debt. The Vermont Housing Finance Agency's property transfer tax bonds issued in January 2018 ("VHFA Property Transfer Bonds") are paid through a direct appropriation of State general revenues. Moody's, the only rating agency that was requested to rate the VHFA Property Transfer Bonds, includes these bonds, along with G.O. debt and Capital Leases, as part of the State's net tax supported debt. For these reasons, CDAAC began including the VHFA Property Transfer Bonds as net tax supported debt for authorization and ratio calculation purposes in 2019. As indicated in Section 6, "State Debt Guidelines and Recent Events," the rating agencies also include the State's special obligation transportation infrastructure bonds ("TIBs"), as part of net tax-supported debt; however, unlike the VHFA Property Transfer Bonds, the TIBS are not paid by a direct appropriation of State general revenues and are rather paid from assessments that are segregated revenue dedicated for capital funding and not considered a general revenue source by the State. Nevertheless, after internal analysis and discussion, the State began to treat the TIBs as net tax-supported debt in its debt statement within the 2020 CDAAC Report. In prior CDAAC reports, the "Dashboard Indicators" debt metrics were calculated with and without TIBs. See Section 3, "Debt Guidelines" for further information.

Debt Authorizations and Issuance Amounts

The following chart presents the amounts of G.O. debt that have been authorized and issued by the State since fiscal year 2004 on a biennial basis. As shown below, the State has experienced a significant increase in debt authorizations and issuances over the last eighteen years. For the period from 2004-2015, the biennial issuance approximately doubled; however, in recent years the State has taken steps to reduce its biennial authorization. The 2022-2023 authorization is a 17% reduction from the 2014-2015 biennial authorization amount of $159.9 million. The compound annual growth rate in debt authorizations from 2004 to 2021 has been 2.6%. Including the 2022-2023 recommended authorization amount, the compound annual growth rate in debt authorizations is 2.3%.

STATE OF VERMONT
HISTORICAL GENERAL OBLIGATION. BOND AUTHORIZATIONS AND ISSUANCE BY BIENNIUM][(1)(2)(3)(4)]
(IN MILLIONS OF DOLLARS)



Notes:

(1)Annual issuances do not include refunding bonds. Authorized but unissued debt has been carried forward and employed in subsequent years' bond issuances.

(2)Pursuant to Section 34 of Act 104 of 2011, commencing in fiscal year 2013, premium received from the sale of bonds may be applied towards the purposes for which such bonds were authorized.

(3)The "Authorized" amount reflects the two-year authorized amount of the General Assembly. These amounts exclude any amounts authorized that relate to the principal amount of bonds authorized in prior biennial capital bills but not issued due to the use of original issue bond premium to fund capital projects. The "Recommended" amount reflects the recommended two-year authorization amount of the Committee.

(1)Amount issued in the 2020-2021 biennium exceeds the 2020-2021 biennial authorized amount because of carryforward authorized but unissued debt from the previous biennia.

For fiscal years 2020-2021, the General Assembly authorized $123,180,000 in new general obligation bonds. As of June 30, 2020 there was an aggregate of $144,248,255.48 of authorized but unissued debt. In April 2021, the State issued $82,185,000 2021 Series A Bonds general obligation bonds ("2021A Bonds") leaving $62,063,255.48 in authorized but unissued debt. The 10-year projection of State debt assumes that the State issues in FY 2022 the remaining authorization of $62,063,255.48 ($62,060,000.00, rounded down to the nearest $5,000 denomination) plus $61,590,000 annually from FY 2022 to FY 2032 based on the current biennium authorization of $123,180,000

Capital Funding and Capital Plan

For fiscal years 2022-2023, the General Assembly in the 2021 Capital Bill Act 50 (H.438), authorized $123,180,000.00 in total capital project spending in new general obligation debt. The proceeds of the bonds will be allocated for building community grants, renovation projects and land acquisitions to the Department of Military, the ongoing commitment for Vermont's Clean Water Initiative, needed investments in State-owned buildings and facilities, and other appropriations of the State.

Vermont's Department of Building and General Services prepares an annual report on or before each January 15th to provide information on encumbrances, spending and project progress for authorized capital projects based on reporting received by the agencies that have received capital appropriations. With the passage of 32 V.S.A. § 310 and as amended in 2019, the Administration is required to prepare and revise a ten-year State capital program plan on an annual basis, submitting it for approval by the general assembly. The statute requires the plan to include a list of all recommended projects in the current fiscal year, plus the following nine fiscal years thereafter. The recommendations include an assessment, projection of capital needs, a comprehensive financial assessment, and an estimated cost of deferred infrastructure maintenance in State building and facilities. The Governor's Fiscal Year 2022-23 Proposed Capital Budget includes a 10-year capital project list and information on capital maintenance, including historical spending and projected spending based on the Proposed Capital Budget. All of the funding for capital maintenance is proposed to come from bonding. CDAAC believes that long-term capital planning coupled with projected funding sources will result in a more efficient funding process for State capital projects. The working group that CDAAC established to evaluate the best use of bond premium and the benefits of the State increasing its Pay-go funds has been tasked with reviewing the capital budget and 10-year capital program to provide suggestions regarding the funding for deferred maintenance consistent with CDAAC's past discussions and rating agency guidance as discussed below.

American Rescue Plan Act of 2021

The American Rescue Plan Act of 2021 ("ARPA") is a $1.9 trillion economic stimulus bill signed into law in March 2021 by President Biden to spur the nation's economic recovery from the economic and health effects created by the COVID-19 pandemic. ARPA included $350 billion in relief for state and local governments. In total, the State will receive $2.7 billion in funds from ARPA[1], in which, more than half of the funds will be directed to the State's local governments, federal agencies, education institutions and individuals, among others. ARPA explicitly details that the funds received shall be used for the following eligible uses: (i) revenue replacement for the provision of government services to the extent of the reduction in revenue due to the COVID-19 pandemic, relative to revenues collected in the most recent fiscal year prior to the pandemic; (ii) COVID-19 expenditures or negative economic impacts of COVID-19, including assistance to households, small businesses, and hard-hit industries, and economic recovery; (iii) premium pay for essential workings; and (iv) infrastructure investments in water, sewer and broadband.

Pursuant to State's 2021 Capital Bill (Act 50), it is the intent of the General Assembly, to the extent permitted by federal law and guidance, to use federal funds provided to the State by ARPA, in the

[1] Source: State of Vermont, Agency of Natural Resources. https://anr.vermont.gov/content/arpa-vermont

Coronavirus Capital Projects Fund to carry out critical capital projects for the Executive, Legislative, and Judicial Branches to directly enable work, education, and health monitoring, including remote options, in response to the public health emergency with respect to COVID-19. Recommended project lists are anticipated to be submitted by December 15, 2021.

Proposed Infrastructure Bills

The topic of infrastructure spending continues to be highlighted as a topic of national importance. As of the Committee's meeting on September 29, 2021, the infrastructure bills continued to be debated at the federal level and there was no certainty to if and when the bills would pass. On August 10, 2021, the Senate passed a $1.2 trillion Bipartisan Infrastructure Investment and Jobs Act that includes $550 billion in new spending including $110 billion for roads and bridges, $66 billion for railroads, $65 billion for the power infrastructure, $65 billion for broadband, $55 billion for water infrastructure, $47 billion for cybersecurity and climate change, $39 billion for public transit, $25 billion for airports, $21 billion for the environmental remediation, $17 billion for ports, $11 billion for road safety, $8 billion for western water infrastructure, $7.5 billion for electric vehicle charging station, and $7.5 billion for electric school buses. Based on a fact sheet released by the White House on August 4, 2021, Vermont is expected to receive $2.22 billion (roughly $3,500 per resident) in funds from this legislation over a five year period broken down as follows: $1.4 billion for highways, $225 million for bridges, $77 million for public transportation, $355 million for water infrastructure, $100 million for broadband improvements, $28 million for airport infrastructure, $21 million for electric vehicle charging network, $12 million to protect against cyberattacks, and $6 million to protect against wildfires[1]. The projected estimates that each state will receive is based on allocations of funds in prior legislation and the final legislation, if approved, may change the allocations. Following the passage of the proposed legislation, the bill was sent to the House which following adjustments is expected to vote on it by September 30, 2021.

In addition, President Biden has proposed a $3.5 trillion infrastructure plan entitled the American Jobs Plan. This plan broadens the definition of infrastructure investment beyond typical capital infrastructure and the proposal includes human investments to meet health, social and environmental goals.

ARPA and the infrastructure bills spurred a topic of conversation among the Committee regarding the State's critical infrastructure needs and the opportunity that federal funds may afford in funding some of these needs. As a further consideration, the Committee discussed the strict guidelines and restricted uses of the federal funds available for infrastructure projects and that certain projects, such as construction and maintenance of State buildings, may not qualify for federal infrastructure funds. The Committee further discussed the current uncertainty regarding improving infrastructure due to supply chain issues, labor shortages and escalating construction costs. Ultimately, as stated prior, the Committee considered all of these items in its current recommendation to maintain the long-term net tax-supported debt for fiscal years 2022 and 2023 in an amount not to exceed $123,180,000.

[1] Source: White House Fact Sheet dated August 4, 2021 https://www.whitehouse.gov/wp-content/uploads/2021/08/VERMONT_Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf

2. STATE DEBT

In general, the State has borrowed money by issuing G.O. bonds, the payment of which the full faith and credit of the State are pledged. The State has also borrowed money to finance transportation capital projects by issuing TIBs, the payment of which is not secured by the full faith and credit of the State. The State has also authorized the Vermont Housing Finance Agency (VHFA) to issue bonds to finance affordable housing projects and use a portion of the State's property transfer tax to pay the bonds' debt service. The State also has established certain statewide authorities that have the power to issue revenue bonds, that are not secured by State taxes, for which the State has contingent or limited liability.

As stated above, the Committee has included the State's G.O. debt and Capital Leases as State net tax, but now also recognizes VHFA Property Transfer Bonds, as well as TIBs, as being part of net tax-supported debt.

General Obligation Bonds

The State has no constitutional or other limit on its power to issue G.O. bonds besides borrowing only for public purposes. Pursuant to various appropriation acts, the State has authorized and issued G.O. bonds for a variety of projects or purposes. Each appropriation act usually specifies projects or purposes and the amount of General Fund, Transportation Fund or Special Fund bonds to be issued, and provides that payment thereof is to be paid from the General, Transportation or Special Fund. Currently, the State has outstanding G.O. bonds payable primarily from the State's General Fund.

The State Treasurer, with the approval of the Governor, is authorized to issue and sell bonds that mature not later than twenty (20) years after the date of such bonds and such bonds must be payable in substantially equal or diminishing amounts annually. Under the General Obligation Bond Law, except with respect to refunding bonds, the first of such annual payments is to be made not later than five years after the date of the bonds. All terms of the bonds shall be determined by the State Treasurer with the approval of the Governor as he or she may deem for the best interests of the State.

VHFA Property Transfer Bonds

The VHFA Property Transfer Bonds were issued in January 2018 and are payable from revenues received from a State tax upon the transfer by deed of title to property located within the State. The bonds were issued generally with a level debt service amortization structure and are scheduled to mature in November 2037. The Committee has categorized the VHFA Property Transfer Bonds as net tax-support debt commencing with the 2019 CDAAC Report (see "Definition of Vermont's Long-Term Net Tax-Supported Debt").

Special Obligation Transportation Infrastructure Bonds (TIBs)

The State issued Special Obligation Transportation Infrastructure Bonds in 2010, 2012 and 2013. The debt service of the TIBs are payable from assessments on motor vehicle gasoline and motor vehicle diesel fuel that are segregated apart from all other Transportation Fund revenue, thus the assessments are not considered a general revenue source by the State and the State is not obligated to use any other funds to cover debt service on TIBs. Nevertheless, the TIB revenue is considered tax-revenue of the State and thus the rating agencies consider TIBs as part of net tax-supported debt. Commencing with the 2020 CDAAC Report, the Committee recognized the TIBS as net tax-supported debt (see "Definition of Vermont's Long-Term Net Tax-Supported Debt").

Capital Leases

The State also includes capital leases in its total of net tax-supported debt. A capital lease is considered to have the economic characteristics of asset ownership, and is considered to be a purchased asset for accounting purposes. By comparison, an operating lease is treated as a rental for accounting purposes. A lease is considered to be a capital lease if any one of the following four criteria are met:

1. The life of the lease is 75% or longer than the asset's useful life;
2. The lease contains a purchase agreement for less than market value;
3. The lessee gains ownership at the end of the lease period; or
4. The present value of lease payments is greater than 90% of the asset's market value.

The total amount of Capital Leases as of June 30, 2021, with a fair market value of $8.862 million, is included as net tax-supported debt.

The Government Accounting Standards Board ("GASB") implemented "New Government Lease Accounting Standards ("GASB 87)" in which it updates its definition of a lease, effective for financial reporting periods after December 15, 2019. However, in May 2020, GASB issued Statement No. 95, *Postponement of the Effective Dates of Certain Authoritative Guidance*, that delayed the implementation of GASB 87 by 18 months. It is anticipated that the 2022 CDAAC Report will begin to incorporate the State's financial reporting changes related to its leases based on GASB 87. No changes to the State's Capital Leases are expected to occur.

Current Status

Long-Term Net Tax-Supported Debt outstanding as of June 30, 2021 was $691,916,949. Following the issuance of the 2021A Bonds in the amount of $ $82,185,000, the amount authorized but unissued State general obligation debt as of June 30, 2021 was $62,063,255.48, plus the current biennium authorization of $123,180,000.

General Obligation Credit Ratings

The State of Vermont's triple-A general obligation ratings were downgraded by Moody's Investors Service ("Moody's") to Aa1 and Fitch Ratings ("Fitch") to AA+ in October 2018 and July 2019, respectively and S&P Global Ratings ("S&P") changed the outlook on the State's general obligation bond rating of AA+ to negative from stable in November 2020

Moody's rationale for the 2018 downgrade was as follows:

"The downgrade of the ratings incorporates an economic base that faces low growth prospects from an aging population. At the same time, the state's leverage, measured by debt and unfunded post-employment obligations relative to GDP, is high among states and especially so among the highest rated states. With slower than average growth, Vermont's long-term liabilities will weigh more heavily on its economic base and may manifest in growing cost pressures"

Fitch's basis for the 2019 downgrade was as follows:

"The downgrade of Vermont's IDR (Issuer Default Rating) and GO rating to 'AA+' from 'AAA' reflect Fitch's lowered assessment of the state's revenue framework, in particular, an expectation of slower growth prospects going forward. Fitch considers Vermont's growth prospects to be more consistent with most of its New England peers, which generally face similar economic and demographic headwinds."

S&P's basis for the outlook change was as follows"

"The revised outlook reflects that there is at least a one-in-three chance we could lower our rating on Vermont. We believe the state's economic growth potential is limited by the social risk of its demographic profile, as its population has declined over the past decade (on a cumulative basis) and its population is among the oldest in the nation. At the same time, Vermont's unfunded retirement liabilities have grown, despite the state's history of meeting or exceeding actuarial determined contribution (ADC) levels. Should these trends continue, we expect this juxtaposition could lead Vermont to face heightened budgetary challenges not commensurate with the current rating level."

In April 2021, Moody's, Fitch and S&P affirmed the State's Aa1, AA+ and AA+ general obligation ratings, respectively. The credit agencies were specifically complimentary of the State's handling of the COVID-19 pandemic. Fitch report detailed that the State's rating was a reflection of the *"conservative financial management, positioning the [s]tate well to absorb the budgetary implications of the coronavirus pandemic."* In addition, Moody's commented on the State's reserves and highlighted that *"Despite the disruption to revenue cause by the coronavirus outbreak, Vermont still closed fiscal 2020 with health reserves."*

TIBs Credit Ratings

In 2012, S&P upgraded the State's Special Obligation Transportation Infrastructure Bonds from "AA" to "AA+" with a stable outlook. S&P indicated that the upgrade reflected strengthened debt service coverage, and further intention by the State to maintain coverage at no less than 3x, which is viewed as a strong credit factor. In 2018 and 2020, Moody's and Fitch both affirmed their Aa2 and AA ratings, respectfully, for the TIBs.

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Net Tax-Supported Debt Outstanding

The State's aggregate Long-Term Net Tax-Supported Debt principal amount of debt increased from $678.6 million, as of June 30, 2020, to $691.9 million, as of June 30, 2021, an increase of 2.0% due to the State issuing bonds in fiscal year 2021. The table below sets forth the sources of the change in net tax-supported debt outstanding from fiscal year 2020 to fiscal year 2021 (in thousands).

Net Tax-Supported Debt as of 6/30/20	$678,602
G.O. New Money Bonds Issued	82,185
G.O. Refunding Bonds Issued	71,140
Less: Retired G.O. Bonds	(54,095)
Less: Retired G.O. Refunded Bonds	(82,515)
Less: Retired TIBs	(1,730)
Less: Retired Capital Lease	(295)
Less: Retired VHFA Property Transfer Bonds	(1,375)
Net Tax-Supported Debt as of 6/30/21	$691,917

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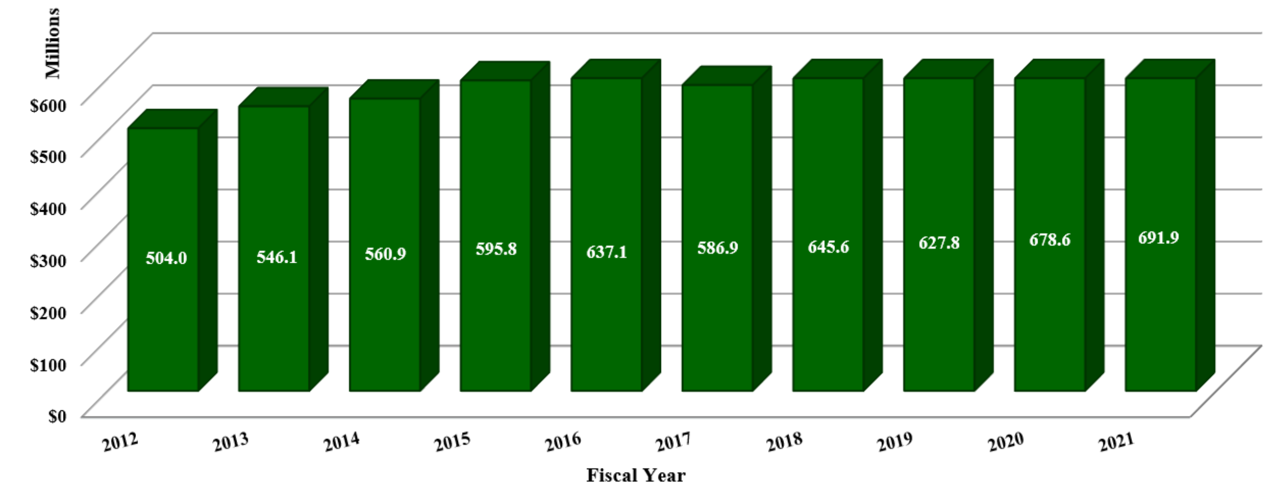
STATE OF VERMONT
Debt Statement
As of June 30, 2021 (In Thousands)

General Obligation Bonds:	
General Fund	$627,314
Transportation Fund	2,396
VHFA Property Transfer Tax Bonds:	
Property Transfer Tax Bonds, Series 2018	$31,635
Capital Leases:	
27 Federal Street, St. Albans	$8,862
Transportation Infrastructure Bonds:	
Special Obligation Transportation Infrastructure Bonds (TIBs)	$21,710
Reserve Fund Commitments[1]:	
Vermont Municipal Bond Bank	$606,205
Vermont Housing Finance Agency	155,000
Vermont Economic Development Authority	181,000
Vermont Student Assistance Corporation	50,000
Vermont Telecommunications Authority[2]	40,000
University of Vermont/State Colleges	100,000
Gross Direct and Contingent Debt	$1,824,122
Less:	
Reserve Fund Commitments	(1,132,205)
Net Tax-Supported Debt	**$691,917**

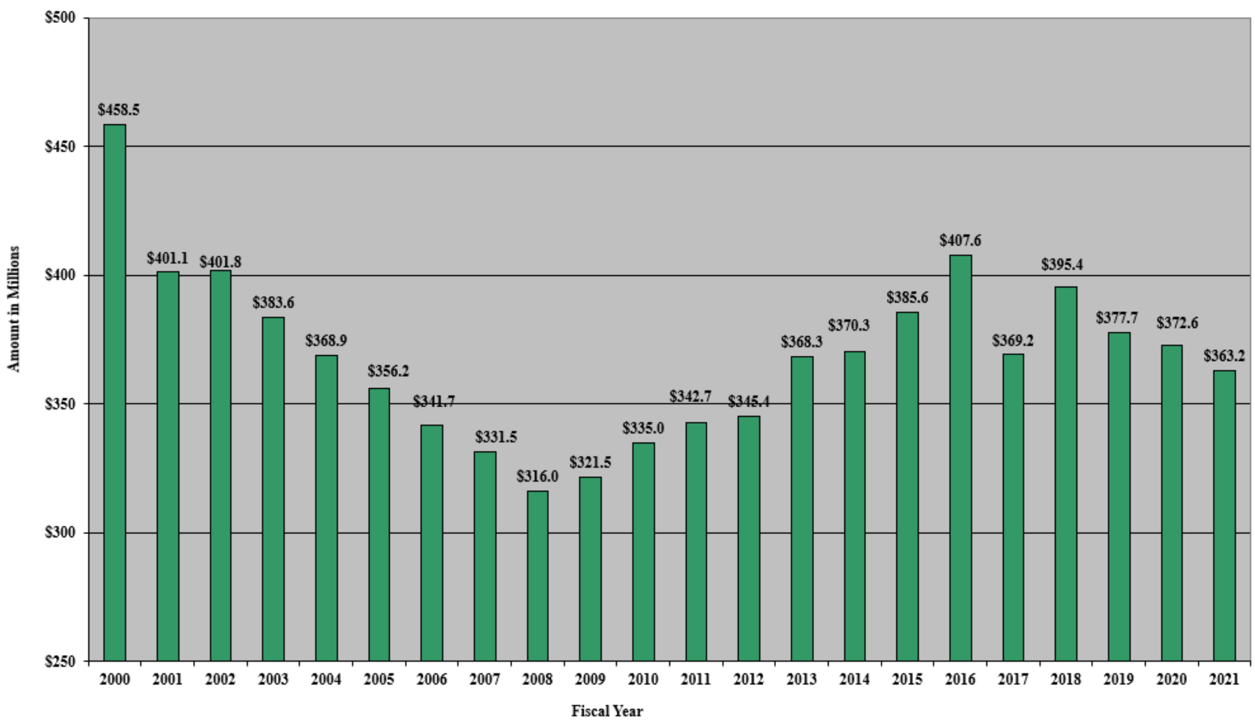
[1]Figures reflect the maximum amount permitted by statute. However, many of the issuers have not issued debt or have not issued the maximum amount of debt permitted by their respective statute. See "Moral Obligation Indebtedness" herein for additional information.

[2]The General Assembly dissolved the Vermont Telecommunications Authority in 2014, however, this amount remains available to the Vermont Telecommunications Authority by statute should it ever be reconstituted.

STATE OF VERMONT
LONG-TERM NET TAX-SUPPORTED DEBT OUTSTANDING FY 2012-2021
(in millions of dollars)



STATE OF VERMONT
GENERAL OBLIGATION DEBT OUTSTANDING, FY 2000-2021
ADJUSTED FOR INFLATION[1,2] (in millions of dollars)



[1]Does not include VHFA Property Transfer Bonds, TIBs and Capital Leases.
[2]Adjusted for inflation to FY 1996.

The table below sets forth the State's existing principal amounts outstanding and annual debt service requirements, as of June 30, 2021, without the issuance of any additional debt. Rating agencies consider Vermont's rapid debt amortization, with almost 72.1% of current principal retired by fiscal year 2032, to be a positive credit factor.

OUTSTANDING NET TAX-SUPPORTED DEBT
(in thousands of dollars)

	NET TAX-SUPPORTED DEBT											
	GO Debt				**Revenue Bonds**							
	General Fund		Transportation Fund		TIBs		VHFA Transfer Tax Bonds		Capital Leases		Total	
Fiscal Year	Principal Outstanding	Debt Service	Principal Outstanding	Debt Service	Principal Outstanding	Debt Service	Principal Outstanding	Debt Service	Principal Outstanding	Debt Service	Principal Outstanding	Debt Service*
2021	627,314	75,794	2,396	541	21,710	2,503	31,635	2,500	8,862	854	691,917	82,191
2022	577,022	72,954	1,978	522	19,925	2,506	30,225	2,498	8,529	873	637,679	79,352
2023	526,195	73,056	1,560	502	18,090	2,502	28,775	2,499	8,157	893	582,777	79,452
2024	476,770	69,375	1,300	327	16,205	2,503	27,280	2,501	7,741	913	529,296	75,619
2025	427,300	67,268	1,040	317	14,260	2,506	25,745	2,496	7,280	933	475,625	73,520
2026	379,745	63,231	780	306	12,265	2,497	24,155	2,502	6,770	954	423,715	69,490
2027	333,855	59,541	520	295	10,200	2,503	22,515	2,500	6,207	976	373,297	65,814
2028	290,150	55,444	260	283	8,070	2,498	20,820	2,501	5,588	998	324,888	61,724
2029	248,460	51,642	-	272	5,865	2,499	19,070	2,498	4,908	1,020	278,303	57,931
2030	208,810	47,933	-	-	3,580	2,503	17,255	2,501	4,164	1,043	233,809	53,980
2031	172,290	43,217	-	-	2,205	1,508	15,375	2,499	3,352	1,067	193,222	48,290
2032	142,040	35,644	-	-	780	1,509	13,420	2,501	2,466	1,091	158,706	40,745

* Totals may not agree due to rounding.

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Long-Term Net Tax-Supported Debt and Debt Service Projections

The State's projected annual Long-Term Net Tax-Supported Debt service and debt outstanding are presented on the following pages and summarized below. The projected debt service, interest rates of 5%, and assumes the issuance $123,650,000 in FY 2022 and $61,590,000 each fiscal year from 2023-2032.

PROJECTED LONG-TERM NET TAX-SUPPORTED DEBT
DEBT SERVICE AND DEBT OUTSTANDING*
(in thousands of dollars)

Fiscal Year Ending	Long-Term Net Tax Supported Debt Debt Service	% Change	Long-Term Net Tax Supported Debt Outstanding	% Change
6/30/2021	82,191	-0.85%	691,917	1.96%
6/30/2022	79,352	-3.45%	761,329	10.03%
6/30/2023	91,815	15.70%	761,837	0.07%
6/30/2024	93,832	2.20%	760,686	-0.15%
6/30/2025	97,430	3.83%	756,265	-0.58%
6/30/2026	98,942	1.55%	750,525	-0.76%
6/30/2027	100,655	1.73%	743,197	-0.98%
6/30/2028	101,799	1.14%	734,798	-1.13%
6/30/2029	103,086	1.26%	725,143	-1.31%
6/30/2030	104,062	0.95%	714,499	-1.47%
6/30/2031	103,145	-0.88%	704,682	-1.37%
6/30/2032	100,218	-2.84%	697,856	-0.97%

* Please see table titled "Historic and Projected Debt Ratios" for projected debt relative to projected Vermont revenues.

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EXISTING AND PROJECTED LONG-TERM NET TAX-SUPPORTED DEBT SERVICE ($000)													
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
	Current	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Est.
FY	D/S*	$123.650M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	D/S
		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	
2022	79,352	0	0	0	0	0	0	0	0	0	0	0	79,352
2023	79,452	12,363	0	0	0	0	0	0	0	0	0	0	91,815
2024	75,619	12,054	6,160	0	0	0	0	0	0	0	0	0	93,832
2025	73,520	11,745	6,006	6,160	0	0	0	0	0	0	0	0	97,430
2026	69,490	11,436	5,852	6,006	6,160	0	0	0	0	0	0	0	98,942
2027	65,814	11,127	5,698	5,852	6,006	6,160	0	0	0	0	0	0	100,655
2028	61,724	10,818	5,544	5,698	5,852	6,006	6,160	0	0	0	0	0	101,799
2029	57,931	10,509	5,390	5,544	5,698	5,852	6,006	6,160	0	0	0	0	103,086
2030	53,980	10,200	5,236	5,390	5,544	5,698	5,852	6,006	6,160	0	0	0	104,062
2031	48,290	9,891	5,082	5,236	5,390	5,544	5,698	5,852	6,006	6,160	0	0	103,145
2032	40,745	9,582	4,928	5,082	5,236	5,390	5,544	5,698	5,852	6,006	6,160	0	100,218

EXISTING AND PROJECTED LONG-TERM NET TAX-SUPPORTED DEBT PRINCIPAL PAYMENTS ($000)													
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
	Current	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Est.
FY	Principal*	$123.650M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	Principal
2022	54,238	0	0	0	0	0	0	0	0	0	0	0	54,238
2023	54,903	6,180	0	0	0	0	0	0	0	0	0	0	61,083
2024	53,480	6,180	3,080	0	0	0	0	0	0	0	0	0	62,740
2025	53,671	6,180	3,080	3,080	0	0	0	0	0	0	0	0	66,011
2026	51,910	6,180	3,080	3,080	3,080	0	0	0	0	0	0	0	67,330
2027	50,418	6,180	3,080	3,080	3,080	3,080	0	0	0	0	0	0	68,918
2028	48,409	6,180	3,080	3,080	3,080	3,080	3,080	0	0	0	0	0	69,989
2029	46,584	6,180	3,080	3,080	3,080	3,080	3,080	3,080	0	0	0	0	71,244
2030	44,494	6,180	3,080	3,080	3,080	3,080	3,080	3,080	3,080	0	0	0	72,234
2031	40,588	6,180	3,080	3,080	3,080	3,080	3,080	3,080	3,080	3,080	0	0	71,408
2032	34,516	6,180	3,080	3,080	3,080	3,080	3,080	3,080	3,080	3,080	3,080	0	68,416

EXISTING AND PROJECTED LONG-TERM NET TAX-SUPPORTED DEBT OUTSTANDING ($000)													
		2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total
	Current	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Issue	Est.
FY	Debt*	$123.650M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	61.590M	Debt
2021	691,917	0	0	0	0	0	0	0	0	0	0	0	691,917
2022	637,679	123,650	0	0	0	0	0	0	0	0	0	0	761,329
2023	582,777	117,470	61,590	0	0	0	0	0	0	0	0	0	761,837
2024	529,296	111,290	58,510	61,590	0	0	0	0	0	0	0	0	760,686
2025	475,625	105,110	55,430	58,510	61,590	0	0	0	0	0	0	0	756,265
2026	423,715	98,930	52,350	55,430	58,510	61,590	0	0	0	0	0	0	750,525
2027	373,297	92,750	49,270	52,350	55,430	58,510	61,590	0	0	0	0	0	743,197
2028	324,888	86,570	46,190	49,270	52,350	55,430	58,510	61,590	0	0	0	0	734,798
2029	278,303	80,390	43,110	46,190	49,270	52,350	55,430	58,510	61,590	0	0	0	725,143
2030	233,809	74,210	40,030	43,110	46,190	49,270	52,350	55,430	58,510	61,590	0	0	714,499
2031	193,222	68,030	36,950	40,030	43,110	46,190	49,270	52,350	55,430	58,510	61,590	0	704,682
2032	158,706	61,850	33,870	36,950	40,030	43,110	46,190	49,270	52,350	55,430	58,510	61,590	697,856

*Includes State General Obligation Bonds, TIBs, VHFA Property Transfer Bonds and Capital Leases.

Net Tax-Supported Debt Service by Fiscal Year

The State's scheduled Long-Term Net Tax-Supported Debt Service requirement ("D/S") for fiscal year 2022 is $79.6 million, 3.4% less than the $82.2 million paid in fiscal year 2021.

STATE OF VERMONT
CHANGE IN NET TAX SUPPORTED DEBT SERVICE (FY 21 – FY 22)
(in $ thousands)

Long-Term Net Tax-Supported D/S Paid in FY 2021[1]	$82,191
Decrease in D/S Requirement FY 2021	(4,856)
D/S Decrease Due to G.O. Refunding in FY 2021	(6,234)
D/S Increase Due to G.O. Debt Issued in FY 2021	8,252
Long-Term Net Tax-Supported D/S Due in FY 2022	$79,352

[1] The net debt service amount shown includes the interest subsidy from the federal government (calculated to be $539,875 during FY 2021), payable on the $38,750,000 2010 Series D-2 bond issue through the entire fiscal year. The State refunded the 2010 Series D-2 Bonds and they are no longer outstanding as of June 30, 2021.

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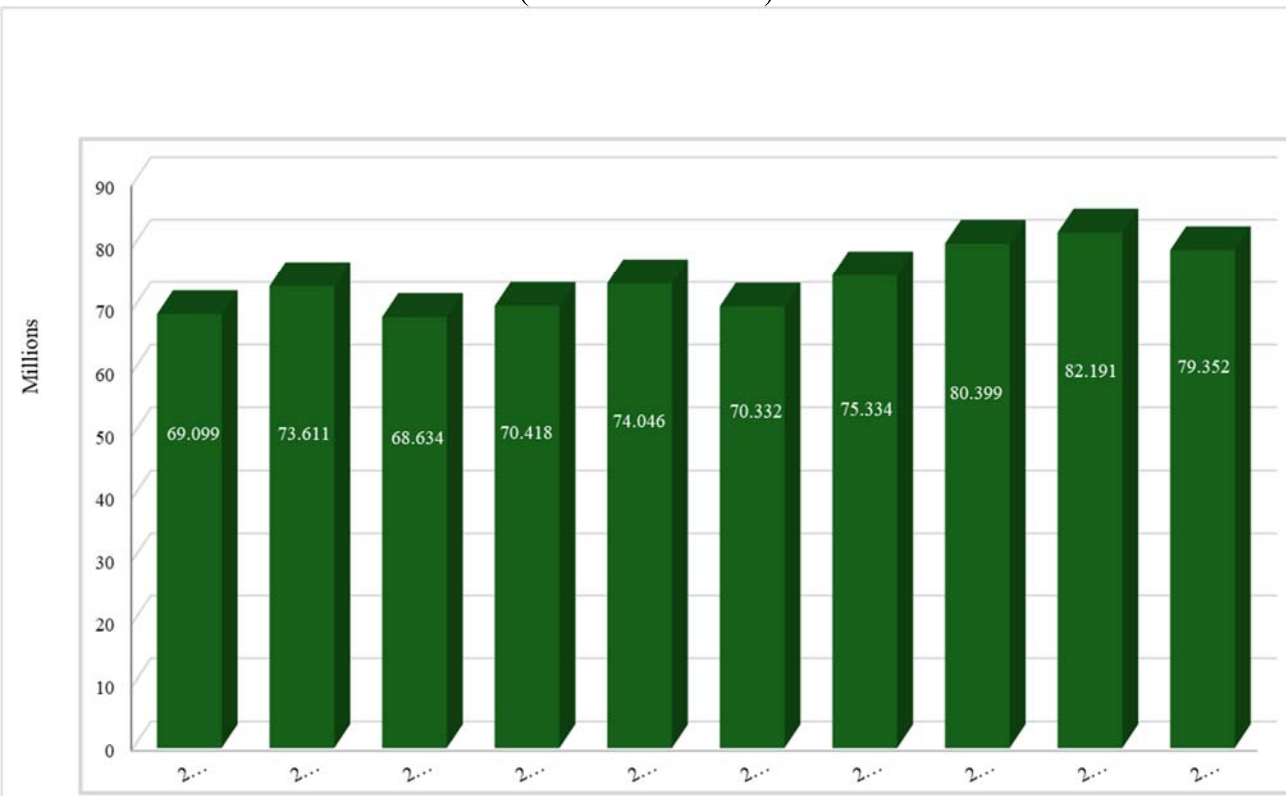
STATE OF VERMONT
HISTORICAL LONG-TERM NET TAX-SUPPORTED DEBT
DEBT SERVICE[1,2]
(millions of dollars)



[1]Consists of G.O. and Capital Leases debt prior to fiscal year 2020, consists of G.O., Capital Leases and VHFA Property Transfer Bonds commencing in fiscal year 2020 and consists of Long-Term Net Tax-Supported Debt commencing in fiscal year 2021. Fiscal year 2014 debt service includes an additional principal amortization of $3,150,000 that was structured to expend bond funded original issuance premium within 12 months of the issue date to satisfy Internal Revenue Service requirements. Going forward this has not been necessary due to the 2012 amendment to 32 V.S.A. § 954 to permit the use of bond premium for capital projects.

[2]See table titled "Historic and Projected Debt Ratios" for debt ratios relative to historic Vermont revenues and economic data.

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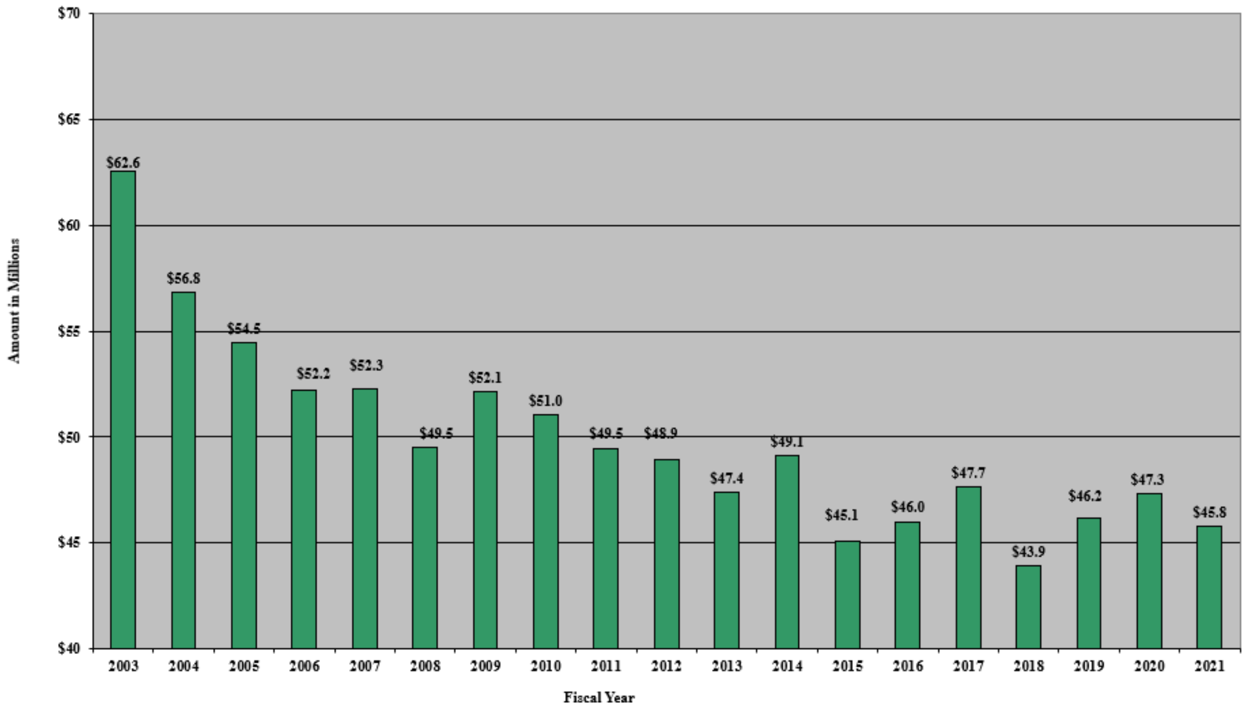
STATE OF VERMONT
GENERAL OBLIGATION DEBT SERVICE, FY 2003-2021
ADJUSTED FOR INFLATION[1,2] (in millions of dollars)



[1]Does not include VHFA Property Transfer Bonds, TIBs and Capital Leases.
[2]Adjusted for inflation to FY 1996.

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Authorized, But Unissued Debt

CDAAC believes the State should work to return to its historical practice to annually extinguish all or a large portion of the authorized amount of debt to avoid a rising residual amount of authorized but unissued debt that could be viewed unfavorably by the rating agencies.

As discussed in Section 6, "State Guidelines and Recent Events, Statutory Change Relating to Use of Bond Premium and Effect on Affordability" effective in fiscal year 2013, 32 V.S.A. § 954 was amended to permit the use of bond premium received from issuance of debt for capital purposes. The effect of this legislative change is that if future bonds are issued with a net original issuance premium, the par amount of bonds will be less than the authorized amount and the difference will become available for additional authorization as "unissued principal." CDAAC believes that the advantage of additional funding capacity associated with this legislative change far outweighs the additional unissued amounts that may result, and that the annual amount of unissued bonds will continue to be manageable.

Moral Obligation Indebtedness

Provided below is a summary of the State's moral obligation commitments as of June 30, 2021:

Reserve Fund Commitments (all figures as of June 30, 2021):

1. Vermont Municipal Bond Bank (d/b/a Vermont Bond Bank) (VBB): The VBB was established by the State in 1970 for the purpose of aiding governmental units in the financing of their public improvements by making available a voluntary, alternate method of marketing their obligations in addition to the ordinary competitive bidding channels. By using the VBB, small individual issues of governmental units can be combined into one larger issue that would attract more investors. The VBB is authorized to issue bonds in order to make loans to municipalities in the State through the purchase of either general obligation or revenue bonds of the municipalities. Municipal loan repayments to the VBB are used to make the VBB's bond payments. On April 19, 2016, the State amended provisions with respect to the State Treasurer's ability to intercept State funding to governmental units that are in default on their payment obligations acquired or held by the VBB all further payment to the governmental unit, until the default is cured. During the default period, the State Treasurer will make direct payment of all, or as much as necessary, of the withheld amounts to the VBB, or at the VBB's direction, to the trustee or paying agent for the bonds, so as to cure, or cure insofar as possible, the default as to the bond or the interest on the bond. The VBB consists of five directors: the State Treasurer, who is a director ex-officio, and four directors appointed by the Governor with the advice and consent of the Senate for terms of two years. As of June 30, 2021, the VBB has issued 74 series of bonds (including refundings) under its general bond resolution adopted on May 3, 1988 (the "1988 Resolution"). The principal amount of bonds outstanding as of June 30, 2021 was $606,205,000, and the principal amount of loans outstanding to municipal borrowers as of June 30, 2021 was $580,152,406. For bonds issued under the 1988 Resolution, the VBB is required to maintain a reserve fund equal to the lesser of: the maximum annual debt service requirement, 125% of average annual debt service, or 10% of the proceeds of any series of bonds. If the reserve funds have less than the required amount, the VBB chair shall notify the Governor or Governor-elect of the deficiency. The General Assembly is legally authorized, but not legally obligated, to appropriate money to maintain the reserve funds at their required levels. Since the participating municipalities have always met their obligations on their bonds the State has never needed to appropriate any money to the reserve fund, and it

is not anticipated that it will need to make an appropriation in the future. Based on the long history of the VBB program, the rating agencies credit assessment of the underlying loans of the portfolio, the G.O. pledge of the underlying borrowers for a high percentage of the loan amounts and the State intercept provision for the payment of debt, it is not anticipated that it will be necessary for the State to appropriate money for the reserve fund. As of June 30, 2021, the VBB has also issued two series of bonds under a new general bond resolution adopted on March 30, 2017 (the "2017 Resolution") for the Vermont State Colleges System ("VSCS") Program. The 2017 Resolution is for VSCS financings only. As of June 30, 2021, the principal amount of bonds outstanding under the 2017 Resolution was $91,845,000. The 2017 Resolution bonds are not supported by a reserve fund. The State Treasurer, the VBB and the Commissioner of the Vermont Department of Finance and Management entered into a State Intercept Memorandum of Agreement to establish procedures with respect to the intercept of State funds described above in regards to the VSCS outstanding bonds. The VBB is exploring structures that may partially reduce reliance on the moral obligation pledge given the strong credit enhancement offered the State intercept program. For additional information about the VBB, see its most recent disclosure document, which can be found on the Electronic Municipal Market Access ("EMMA") system at https://emma.msrb.org/IssuerHomePage/Issuer?id=18CA7C36100779C7E053151ED20AEDDA&type=M

2. Vermont Housing Finance Agency: The VHFA was created by the State in 1974 for the purpose of promoting the expansion of the supply of funds available for mortgages on residential housing and to encourage an adequate supply of safe and decent housing at reasonable costs. The VHFA Board consists of nine commissioners, including ex-officio the Commissioner of the Department of Financial Regulation, the State Treasurer, the Secretary of Commerce and Community Development, the Executive Director of the Vermont Housing and Conservation Board, or their designees, and five commissioners to be appointed by the Governor with the advice and consent of the Senate for terms of four years. The VHFA is empowered to issue notes and bonds to fulfill its corporate purposes. As of June 30, 2021, the VHFA's total outstanding indebtedness was $389,096,290. The VHFA's act requires the creation of debt service reserve funds for each issue of bonds or notes based on the VHFA's resolutions and in an amount not to exceed the "maximum debt service." Of the debt that the VHFA may issue, up to $155,000,000 of principal outstanding may be backed by the moral obligation of the State, which means that the General Assembly is legally authorized, but not legally obligated, to appropriate money for any shortfalls in the debt service reserve funds for that debt. If the reserve fund requirement for this debt has less than the required amount, under the act, the chairman of the VHFA will notify the Governor or the Governor-elect, the president of the senate and the speaker of the house of the deficiency. As of June 30, 2021, the principal amount of outstanding debt covered by this moral obligation was $62,660,627. As of June 30, 2021, the debt service reserve fund requirement for this debt was $4,355,813, and the value of the debt service reserve fund was $4,669,275. Since the VHFA's creation, it has not been necessary for the State to appropriate money to maintain this debt service reserve fund requirement. For additional information about the VHFA, see its most recent disclosure document, which can be found on the EMMA system.

3. Vermont Economic Development Authority (VEDA): VEDA has established credit facilities with two banks to fund loans to local and regional development corporations and to businesses under certain programs. VEDA's debt is a combination of commercial paper and variable and

fixed-rate notes payable. The amount of commercial paper outstanding under this program at June 30, 2021 was $90.0 million. The commercial paper is supported by two direct-pay letters of credit totaling $95 million from one of the banks. The direct-pay letters of credit are collateralized from various repayment sources, including a $12.5 million collateral reserve fund held by a trustee and a debt service reserve fund pledge from the State in an amount of $80 million. VEDA has two variable-rate and two fixed-rate notes payable from a second bank totaling $118 million. The notes are collateralized from various repayment sources, including a $9.7 million collateral reserve fund held by a trustee and a debt service reserve fund pledge from the State in an amount of $75 million. The debt service reserve pledges totaling $175 million are based on a similar structure utilized by both the Vermont Municipal Bond Bank and the Vermont Housing Finance Agency as discussed above. Act No. 79, enacted in June 2019, increased the State's moral obligation commitment for VEDA from $175 million to $181 million, effective July 1, 2019. For additional information about VEDA, see its most recent disclosure document, which can be found on the EMMA system.

4. Vermont Telecommunications Authority (VTA): VTA was created in 2007 to facilitate broadband and related access to Vermonters, and received authorization for $40 million of debt with the State's moral obligation pledge. The passage of Act No. 190 of 2014 created the Division for Connectivity as the successor entity to the VTA. The VTA did not issue any debt prior to ceasing operations on July 1, 2015.

5. University of Vermont and the Vermont State Colleges: Legislation was passed in 2008 to provide a moral obligation pledge from the State to the University of Vermont in the amount of $66 million and to the Vermont State Colleges in the amount of $34 million. No moral obligation pledge bonds have been issued to date. Currently, if bonds are issued, it is not expected that the State will need to appropriate money to the respective reserve funds for these purposes.

6. Vermont Student Assistance Corporation (VSAC): The State has provided $50 million of moral obligation commitment by the State to VSAC. Like VHFA, in 2009, the State authorized increased flexibility for VSAC's use of the moral obligation commitment specifically allowing for "pledged equity" contributions from the State's operating funds and increased flexibility in the use of the traditional debt service reserve structure. In 2011, VSAC issued $15 million of moral obligation supported bonds, of which $1.6 million is outstanding. It is not expected that the State will need to appropriate money to the respective reserve funds for VSAC. For additional information about VSAC, see its most recent disclosure document, which can be found on the EMMA system at http://emma.msrb.org.

Importantly, there has been a notable increase in the State's moral obligation commitments over the past ten (10) years. For the period ended June 30, 2010, the total amount of moral obligation commitment was approximately $976.5 million. Currently, the moral obligation commitment stands at a total of $1,132.205 million, with the VBB and VEDA granted most of the difference. However, the actual amount of moral obligation debt outstanding in the amount of $825.5 million is less than the amount authorized and the total commitment as of fiscal year 2010 ($976.5 million).

See the table below for a summary of the total reserve fund commitments and the outstanding bond amounts:

Reserve Fund Commitments:

State of Vermont
Moral Obligation Commitments and Debt Outstanding
As of July 1, 2021

Issuer Name	Amount Provided In Statute	Actual Par Amount Outstanding
Vermont Municipal Bond Bank	$606,205,000	$606,205,000
Vermont Economic Development Authority	181,000,000	175,000,000
Vermont Housing Finance Agency	155,000,000	62,660,627
Vermont Student Assistance Corporation	50,000,000	1,600,000
University of Vermont	66,000,000	0
Vermont State Colleges	34,000,000	0
Vermont Telecommunications Authority	40,000,000	0
	$1,132,205,000	$845,465,627

As the State's rating has improved, the value of its moral obligation has also grown. It is therefore apparent that there has been greater pressure on the State to raise the size of its existing moral obligation commitments and/or to assign the moral obligation pledges to State borrowers. However, without some form of containment, it is possible that an ever-increasing moral obligation debt load could erode the State's credit position.

On January 22, 2018, S&P published *Issue Credit Ratings Linked To U.S. Public Finance Obligors' Creditworthiness* which updated the moral obligation criteria. The new methodology assesses the obligor's involvement, the intended payment source and whether there are any unusual political or administrative risks in the transaction. S&P then determines the rating by notches off the respective issuer according to the evaluation of the obligor. Several national obligor's have raised their respective ratings with only one notch below their respective issuer by displaying strong relationships within the three areas. There have been no ratings changes for each respective State issuer of moral obligation bonds since the published report.

In accordance with the appropriate provisions from the enabling statute that created CDAAC, the Committee has already been authorized to consider "any other long-term debt of instrumentalities of the state not secured by the full faith and credit of the state, or for which the state legislature is permitted to replenish reserve funds." Therefore, it is appropriate for CDAAC to develop guidelines for Vermont regarding the size and use of the State's moral obligation debt.

In recent years, CDAAC has adjusted its debt affordability guidelines taking into account the comparative debt burden statistics for triple-A rated states throughout the country. Unfortunately, none of the rating agencies prepare comparative data on the respective triple-A rated states on moral obligation or contingent debt. Moreover, there is little consistency among the triple-A rated states regarding the size, nature and role of such debt. The types of contingent debt are quite varied among the states, including state guarantees of local school debt, back-up support for revenue obligations, etc. Because of the mixture of contingent debt applied by triple-A states, it would not be possible to employ guidelines that are similar to the G.O. guidelines that have been utilized by CDAAC in connection with its annual recommendation of long-term G.O. debt to be authorized by the legislature.

There had been, for several years, discussions within CDAAC regarding the establishment of guidelines for limiting the amount of moral obligation debt that the State should authorize. In an accompanying chart, the State's net tax-supported debt statement, consisting of the State's Long-Term Net Tax-Supported Debt outstanding indebtedness, is presented, as of June 30, 2021, at $691,916,949. Using 225% of Long-Term Net Tax-Supported Debt for establishing a limit of moral obligation debt, the State would have had $424,608,135 in additional moral obligation capacity. Using 200% of G.O. debt for establishing a limit of moral obligation debt, the State would have had $251,628,898 in additional capacity. Using a more conservative 195%, the State still has $217,033,051 in additional capacity.

At this point, CDAAC believes that a range of 200-225% is appropriate in determining the amount of moral obligation commitments that should be outstanding in comparison to the State's Long-Term Net Tax-Supported Debt. Since CDAAC has not recommended legislative action to codify any statutory limits on the incurrence of moral obligation debt, CDAAC will continue to monitor the developing size of moral obligation commitments and report the results.

At some point, should a major infrastructure requirement or other critical financing need arise that would be appropriately funded through a financing agency, the State may, as appropriate, consider rescinding the existing but unused moral obligation authority and have it transferred – taking into account the limited availability for the State to provide additional moral obligation capability as a result of the 200-225% administrative limits.

Ultimately, the effect of contingent liabilities and reserve fund commitments on the State's debt affordability is a function of the level of dependency for the repayment of this particular debt on the State's general operating revenues. With respect to this matter, the principle that the rating agencies follow give us relevant guidance: Until such time that the State's guarantee or contingent obligation becomes actual (through a payment or a replenishment obligation being made), then such debt or guarantee is not included in the State's net tax-supported indebtedness. To the extent that the State has not been called upon to pay for the debt components, as envisioned in Subparagraph (5) of the CDAAC legislation, then those items should not become quantifiable factors included in the affordability analysis.

Information on the principal amount and the debt service associated with the moral obligation commitments is found in the comprehensive annual financial statements for each of the entities:

Vermont Municipal Bond Bank*:
http://www.vmbb.org/about/annual-reports-audits/

Vermont Economic Development Authority:
http://www.veda.org/about-veda/annual-reports/

Vermont Housing Finance Authority
http://www.vhfa.org/partners/initiatives/vhfa-publications

Vermont Student Assistance Corporation
https://www.vsac.org/news/annual-reports

*Financials are based on a December 31 year end.

Municipal Debt

In conformance with the standards followed by the rating agencies, this evaluation does not set forth or incorporate any debt obligations of Vermont municipalities. Should any such obligations be required to be payable by the State (e.g., through assumption or support of local debt as part of a financial emergency), a corresponding and appropriate amount related to the State's contribution would then be required to be included in the analysis. At present, no such liability has occurred, and, therefore, none has been included in this review.

Analysis of Types of Debt and Structure

CDAAC annually goes through an extensive analysis to determine the "cost-benefit of various levels of debt financing." The cost-benefit is demonstrated by CDAAC's determination of the amount of debt that the State should annually authorize and still achieve compliance with CDAAC's articulated affordability guidelines. This evaluation is fundamental to CDAAC's responsibility in recommending annually the amount of net tax-supported indebtedness that should be authorized by the State.

Second, with respect to the "types of debt," Vermont and its financing agencies have utilized a great variety of debt types. At present, revenue bonds are sold by the State (TIBs), VSAC, VHFA and VEDA, among others. The State Treasurer's office has looked at a series of options for possible revenue bond issuance, but, because of Vermont's special circumstances, revenue bonds have generally not appeared to be a comprehensive answer to the State's direct infrastructure needs. Notwithstanding the fact that there have been no new revenue bond uses recently for funding Vermont infrastructure requirements, with the exception of TIBs and VHFA Property Transfer Bonds, the State will continue to explore possible opportunities in this respect that would not cause debt load or debt management difficulties for Vermont. CDAAC and the State Treasurer's Office are constantly reviewing prospects for funding of required infrastructure through approaches that will not add to the State's net tax-supported indebtedness.

The maturity schedules employed for State general obligation indebtedness are directly tied to State statute. Moreover, as indicated elsewhere herein, Vermont's current debt repayment for its G.O. bonds allows the State to recapture debt capacity at an attractive pace. Shortening the debt service payments would have the effect of placing more fixed costs in the State's annual operating budget, leaving less funds available for discretionary spending. Lengthening debt payments would increase the aggregate amount of the State's outstanding indebtedness, which would cause Vermont's debt per capita and debt as a percentage of personal income to rise, reducing the State's ability to comply with its affordability guidelines. Notwithstanding these limitations, there may be opportunities for the State in the future to adjust the maturity of its indebtedness to achieve various debt management goals over time.

3. DEBT GUIDELINES

For a number of years Vermont has pursued a strategy to achieve a triple-A rating from all three nationally recognized credit rating agencies. To facilitate this goal, CDAAC and the State have employed conservative debt load guidelines that are consistent with the measures that the rating agencies use to measure debt burden. The most widely-employed guidelines are:

1. Debt Per Capita;
2. Debt as a Percentage of Personal Income;
3. Debt Service as a Percentage of Revenues; and
4. Debt as a Percentage of Gross State Product.

CDAAC notes that Debt as a Percentage of Personal Income and Debt Service as a Percentage of Revenues are generally understood to be the better credit indicators of the State's ability to pay; however, certain rating agencies continue to calculate and monitor the State's Debt Per Capita and Debt as a Percentage of Gross State Product. These guidelines are described in greater detail below. CDAAC has not used Debt as a Percentage of Gross State Product as a specific guideline due to the fact that this measure has a high correlation and tracks the trend of the Debt as a Percentage of Personal Income. Since 2011, CDAAC has tracked this information and included it on the "Dashboard Indicators." This report contains current and historical information on Vermont's Debt as a Percentage of Gross State Product compared to a peer group of other triple-A states. Additionally, as described further, CDAAC utilized Debt Per Capita as a guideline. However, since it is not a direct indicator of affordability, the guideline has been reviewed and analyzed, but it is not the primary factor in determining debt authorizations over the past few years.

At present, CDAAC uses a peer group made up of all states that have at least two triple-A ratings from the national rating agencies (the "Peer Group"). The states within the Peer Group differ throughout the years as rating agencies upgrade or downgrade a specific state's rating. The Committee over time reviews the composition of the Peer Group. Similar to many of the U.S. States since 2014, the majority of the Peer Group reduced their debt levels. See Section 6, "State Guidelines and Recent Events" for additional information, Therefore, the majority of the debt medians for the Peer Group were reduced, as well. This year, the Peer Group's median Debt Per Capita decreased slightly from \$586 in 2020 to \$581 in 2021, median Debt as a Percentage of Personal Income remains unchanged at 1.2% in 2020 and 2021 and median Debt as a Percentage of Gross State Product increased from 1.0% in 2020 to 1.1% in 2021. Vermont modestly increased their debt levels while the majority of the Peer Group maintained their debt levels from the prior year.. As a result, Vermont's slightly reduced debt levels helped the State's relative rankings stay consistent. If the State increases large authorized debt levels in future years, it is at greater risk of continual declines in its relative ranking to its triple-A Peer Group. See "State Guidelines and Recent Events" for more information.

In addition, Moody's, S&P and Fitch review "debt" or "long-term liabilities" as a significant rating factor within each respective rating criterions. Specifically, Moody's and S&P have developed rating scorecards for state issuers which include an assigned specific criteria and weighting for "debt and pensions" or "debt and liability," respectively, as one of their factors in the overall rating of a state. The rationale given by the rating agencies for the score card process is to provide more transparency for state ratings. Also, Fitch's rating criteria has "long-term liabilities" as one of four key rating factors driving state ratings. Please see Section 4, "National Credit Rating Methodologies and Criteria" for additional information.

Debt Per Capita

Since, 2004, the Committee has adopted a guideline for the State to equal or perform better than the 5-year average of the mean and median debt per capita of a peer group of triple-A rated states over the nine-year projection period. The 5-year average of the mean of the Peer Group is $933 and the 5-year average of the median of the Peer Group is $618. Based on data from Moody's, Vermont's 5-year average debt per capita figure is $1,072, which is above the 5-year mean and 5-year median for triple-A rated states. Please see the table titled "Debt Per Capita Comparison" for a detailed view of the Peer Group's Debt Per Capita. As described earlier, this guideline of debt per capita relative to its Peer Group has not been a limiting factor in the Committee's determination of the recommended debt authorization over the past few years.

It should be emphasized that Vermont's debt per capita relative ranking, after improving for a number of years, has slipped. According to Moody's most recent information, the State's relative position among states improved during the period 2003 through 2011 with respect to net tax-supported debt per capita, improving from 16th position in 2003 to 37th position in 2011. From 2011 through 2020 (with a ranking of 26th), the State's position slipped each year, and in 2021, the State slightly worsened its ranking to the 24th position. Rankings are in numerically descending order, with the state having the highest debt per capita ranked 1st and the state having the lowest debt per capita ranked 50th.

Debt as a Percent of Personal Income

The Committee also adopted a guideline for the State to equal or perform better than the 5-year mean and 5-year median of the Peer Group on the basis of debt as a percent of personal income. At present, the target is 1.8% for the median respectively (the five-year average of Moody's Mean and Moody's Median for the Peer Group is 1.8% and 1.4%, respectively). Based on data from Moody's, Vermont's net tax supported debt as a percent of personal income is 2.0%, which is worse than the 5-year mean and the 5-year median for triple-A rated states. Please see the table titled "Debt As % of Personal Income Comparison" for a detailed view of the Peer Group's Debt as a Percent of Personal Income. According to Moody's most recent information, the State's relative position among states improved during the period 2003 through 2010 with respect to net tax-supported debt as a percent of personal income, improving from 17th position in 2003 to 36th position in 2010 where it remained in 2011 and 2012. The State's relative ranking slipped in the years 2013 to 2019 (with a ranking of 26th) and improved in 2020 to a ranking in the 29th position, but slipped again in 2021 to a current ranking in the 27th position. Rankings are in numerically descending order, with the state having the highest debt as a percent of personal income ranked 1st and the state having the lowest debt as a percent of personal income ranked 50th.

Debt Service as a Percentage of Revenues

This guideline does not create a compliance requirement for triple-A rated states. Rather, it is an absolute guideline, not a comparative one. CDAAC's adopted standard is a ratio of no greater than 6% for annual Long-Term Net Tax-Supported Debt service as a percent of the annual aggregate of General and Transportation Funds revenue, as well as the motor vehicle and diesel fuel assessments associated with the TIBs and the dedicated property transfer tax revenues associated with the VHFA Property Transfer Bonds. At present, this ratio equals approximately 4.0%, as can be seen within the table titled "Historic and Projected Debt Ratios." Looking back, Vermont's debt service as a percentage of revenues improved from the 2002-2004 period where it was over

6%, to 5.4% in 2005. Since 2005, the State's debt service as a percent of revenue has been less than 5.1% except for the recession years of 2009 and 2010, where the statistic increased to 5.5% and 5.7%. Although CDAAC has maintained a standard of a 6.0% limit for debt service as a percent of revenues, the effect of the recession on this ratio has been taken into account. CDAAC notices the 0.4% to 0.6% increase in the ratio immediately after the start of the recession and believes that a comparable amount of cushion is appropriate for its final recommendation.

In terms of the debt service projections provided in the table titled "Historic and Projected Debt Ratios", the analysis assumes future interest rates (coupons) on pro forma general obligation bond issues at 5.0% in fiscal year 2022 through 2032.

The CDAAC statute defines operating revenues as General and Transportation Fund revenues based upon the historic general flexibility in their uses of these funds for meeting financial operations of the State. In 2012, Moody's reintroduced a Moody's Median for debt service as a percent of operating revenues ("Debt Service Ratio"), and included the State's Education Fund as part of the State's operating revenue for purposes of this calculation. Because Moody's uses a much larger revenue base in its analysis, Moody's Debt Service Ratio for Vermont, at 2.1%, is substantially lower than the CDAAC guideline, and results in Vermont's comparatively high (favorable) Moody's ranking of 38th out of the 50 states.

Act 11 (H.16), discussed further in Section 6, "State Guidelines and Recent Events, Statutory Change Relating to Revenues and Effect on Debt Service as a Percentage of Revenue," directed 100% of the State Sales & Use Tax and a portion of the Meals and Rooms Tax to go to the Education Fund directly compared to the previous practice of a General Fund transfer to the Education Fund. The 2018 CDAAC used an adjusted General Fund revenue projection for FY 2019 – FY 2029 for the Debt Service as a Percentage of Revenues calculations as if Act 11 did not occur in order to provide comparability to historic results. The 2019 CDAAC Report continued to utilize general and transportation revenues as if Act 11 did not occur. The 2020 CDAAC Report commenced with the inclusion of the post Act 11 General Fund Revenue, as well as the motor vehicle and diesel fuel assessments associated with the TIBs and the dedicated property transfer tax revenues associated with the VHFA Property Transfer Bonds and will continue forward for each annual CDAAC Report. Please see Section 5, "Economic and Financial Forecasts."

Debt as a Percent of Gross State Product

The 2021 Moody's mean and median for debt as a percentage of gross state product for the Peer Group is 1.5% and 1.1%, respectively. Please see the table titled "Debt As % of Gross State Domestic Product Comparison" for a detailed view of the Peer Group's Debt as a Percent of Gross State Domestic Product. (Moody's calculates their 2021 statistics based on 2020 net tax supported debt as a percentage of 2019 state gross domestic product.) Based on data from Moody's, Vermont's 2020 net tax supported debt as a percentage of gross state product is 2.1%, which is higher than the median and the mean for the Peer Group states and the five-year average of the mean and the median of 1.6% and 1.2% for the Peer Group, respectively. According to Moody's most recent information, the State's relative position among states was 30th in 2014, 27th in 2015 and 2016, 25th in 2017, 28th in 2018, 23rd in 2019,26th in 2020 and 25th in 2021.

STATE OF VERMONT
2021 STATES RATED TRIPLE-A BY TWO OR MORE RATING AGENCIES
(as of September 30, 2021)

2021 Triple-A Rated States(1)	Moody's	S&P	Fitch
Delaware	Yes	Yes	Yes
Florida(2)	Yes	Yes	Yes
Georgia	Yes	Yes	Yes
Indiana(3)	Yes	Yes	Yes
Iowa(3)	Yes	Yes	Yes
Maryland	Yes	Yes	Yes
Minnesota(4)	No	Yes	Yes
Missouri	Yes	Yes	Yes
North Carolina	Yes	Yes	Yes
South Carolina	Yes	No	Yes
South Dakota(5)	Yes	Yes	Yes
Tennessee	Yes	Yes	Yes
Texas	Yes	Yes(3)	Yes
Utah	Yes	Yes	Yes
Virginia	Yes	Yes	Yes
VERMONT(6)	No	No	No

(1) Fitch raised Florida, Iowa, Vermont, Tennessee and Texas to triple-A in 2010 as part of their Ratings Recalibration effort. Moody's raised Indiana, Iowa, New Mexico, Tennessee and Texas to triple-A in 2010 as part of their Ratings Recalibration effort. Fifteen states are currently rated triple-A by two or more of the nationally recognized rating agencies as of September 30, 2020.

(2) Moody's upgraded Florida on June 21, 2018.

(3) Indicates issuer credit rating since state does not have any G.O. debt or the rating agency does not provide a rating on the state's G.O. debt.

(4) S&P upgraded Minnesota on July 25, 2018.

(5) South Dakota was rated by S&P as a triple-A state in 2015. Fitch upgraded South Dakota to triple-A in June 2016 and Moody's gave South Dakota an initial triple-A rating in July 2016.

(6) Vermont was downgraded by Moody's to Aa1 in October 2018 and downgraded by Fitch to AA+ in July 2019.

STATE OF VERMONT
MEAN DEBT RATIOS COMPARISON

Per Capita	2017	2018	2019	2020	2021
All States	$1,473	$1,477	$1,493	$1,506	$1,535
Triple-A[1]	901	893	958	950	962
VERMONT	**1,068**	**987**	**1,140**	**1,061**	**1,102**

% of Personal Income	2017	2018	2019	2020	2021
All States	3.0%	2.9%	2.8%	2.6%	2.5%
Triple-A[1]	2.0	1.9	1.9	1.7	1.7
VERMONT	**2.1**	**2.0**	**2.2**	**1.9**	**1.9**

(1) These calculations exclude all Vermont numbers and include only states rated triple-A by two or more of the three rating agencies during the year shown. See table titled "Debt Per Capita Comparison" for complete listing of triple-A states and respective ratings and triple-A time periods.

STATE OF VERMONT
DEBT PER CAPITA COMPARISON

Peer Group States (All states with at least two triple-A rating)
5-Year Average Mean and 5-Year Average Median Excluding Vermont:
MEAN: $933 MEDIAN: $618
5-Year Average Vermont: $1,072

Triple-A Rated States[1]	Moody's Ratings[2]	S&P Ratings[2]	Fitch Ratings[2]	Moody's Debt Per Capita 2017	2018	2019	2020	2021
Delaware	Aaa/Stable	AAA/Stable	AAA/Stable	2,544	2,587	3,206	3,289	3,400
Florida	Aaa/Stable	AAA/Stable	AAA/Stable	961	889	812	780	710
Georgia	Aaa/Stable	AAA/Stable	AAA/Stable	992	986	996	971	987
Indiana	Aaa/Stable	AAA/Stable	AAA/Stable	310	295	270	251	233
Iowa	Aaa/Stable	AAA/Stable	AAA/Stable	228	219	207	150	157
Maryland	Aaa/Stable	AAA/Stable	AAA/Stable	2,122	2,164	2,343	2,323	2,410
Minnesota	Aa1/Stable	AAA/Stable	AAA/Stable	1,480*	1,430	1,415	1,406	1,400
Missouri	Aaa/Stable	AAA/Stable	AAA/Stable	579	532	487	464	413
North Carolina	Aaa/Stable	AAA/Stable	AAA/Stable	659	611	531	586	581
South Carolina	Aaa/Stable	AA+/Stable	AAA/Stable	564	517	503	469	415
South Dakota	Aaa/Stable	AAA/Stable	AAA/Stable	641	694	618	493	482
Tennessee	Aaa/Stable	AAA/Stable	AAA/Stable	322	312	305	292	266
Texas	Aaa/Stable	AAA/Stable	AAA/Stable	383	410	389	379	365
Utah	Aaa/Stable	AAA/Stable	AAA/Stable	824	772	792	720	866
Virginia	Aaa/Stable	AAA/Negative	AAA/Stable	1,486	1,515	1,502	1,677	1,746
MEAN[3]	___	___	___	**901**	**893**	**958**	**950**	**962**
MEDIAN[3]	___	___	___	**650**	**653**	**618**	**586**	**581**
VERMONT	Aa1/Stable	AA+/Stable	AA+/Stable	**1,068**	**987**	**1,140**	**1,061**	**1,102**

(1) States that carry at least two triple A ratings.
(2) Ratings as of September 30, 2021.
(3) These calculations exclude all Vermont numbers.
* Indicates that the state was not rated triple-A thereby two or more of this rating agencies during the year shown and amount not used in calculating the mean or median for the indicated year.

STATE OF VERMONT
DEBT AS % OF PERSONAL INCOME COMPARISON

Peer Group States (All states with at least two triple-A ratings)
5-Year Average Mean and 5-Year Average Median Excluding Vermont:
MEAN: 1.8% MEDIAN: 1.4%
5-Year Average Vermont: 2.0%

Triple-A Rated States	Moody's Debt as % of 2019 Personal Income				
	2017	2018	2019	2020	2021
Delaware	5.4	5.5	6.5	6.1	6.0
Florida	2.2	2.4	1.7	1.5	1.3
Georgia	2.5	2.0	2.3	2.0	1.9
Indiana	0.8	0.7	0.6	0.5	0.5
Iowa	0.5	0.5	0.4	0.3	0.3
Maryland	3.8	3.7	3.8	3.5	3.5
Minnesota	2.9*	2.8	2.6	2.4	2.3
Missouri	1.4	1.2	1.1	0.9	0.8
North Carolina	1.6	1.5	1.2	1.2	1.2
South Carolina	1.5	1.3	1.2	1.0	0.9
South Dakota	1.4	1.5	1.3	0.9	0.8
Tennessee	0.8	0.7	0.7	0.6	0.5
Texas	0.8	0.9	0.8	0.7	0.7
Utah	2.1	1.9	1.9	1.5	1.7
Virginia	2.9	2.9	2.7	2.8	2.8
MEAN[1]	**2.0**	**1.9**	**1.9**	**1.7**	**1.7**
MEDIAN[1]	**1.6**	**1.5**	**1.3**	**1.2**	**1.2**
VERMONT	**2.1**	**2.0**	**2.2**	**1.9**	**1.9**

(1) These calculations exclude all Vermont numbers and include only states rated triple-A by two or more of the rating agencies during the periods shown, as of September 30, 2021.

*Indicates that the state was not rated triple-A by two or more of the rating agencies during the year shown. Amount not used in calculating the mean or median for the year.

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STATE OF VERMONT
DEBT AS % OF GROSS STATE DOMESTIC PRODUCT COMPARISON

Peer Group States (All states with at least two triple-A ratings)
5-Year Average Mean and 5-Year Average Median Excluding Vermont:
MEAN: 1.6% MEDIAN: 1.2%
5-Year Average Vermont: 2.0%

Triple-A Rated States	Moody's Debt as % 2019 Gross State Domestic Product				
	2017	2018	2019	2020	2021
Delaware	3.5	3.5	4.3	4.3	4.4
Florida	2.2	2.0	1.8	1.5	1.4
Georgia	2.1	1.9	1.9	1.7	1.7
Indiana	0.6	0.6	0.5	0.5	0.4
Iowa	0.4	0.4	0.4	0.2	0.3
Maryland	3.5	3.4	3.6	3.3	3.5
Minnesota	2.5*	2.4	2.3	2.1	2.1
Missouri	1.2	1.1	1.0	0.9	0.8
North Carolina	1.4	1.2	1.0	1.0	1.1
South Carolina	1.4	1.2	1.2	1.0	0.9
South Dakota	1.2	1.3	1.1	0.8	0.8
Tennessee	0.7	0.6	0.6	0.5	0.5
Texas	0.7	0.7	0.7	0.6	0.6
Utah	1.7	1.5	1.5	1.2	1.4
Virginia	2.6	2.6	2.5	2.6	2.7
MEAN[1]	**1.7**	**1.6**	**1.6**	**1.5**	**1.5**
MEDIAN[1]	**1.4**	**1.3**	**1.2**	**1.0**	**1.1**
VERMONT	**2.1**	**2.0**	**2.2**	**1.9**	**2.1**

(1) These calculations exclude all Vermont numbers and include only states rated triple-A by two or more of the rating agencies during the periods shown, as of September 30, 2021.

*Indicates that the state was not rated triple-A by two or more of the rating agencies during the year shown. Amount not used in calculating the mean or median for the year.

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STATE OF VERMONT
HISTORIC AND PROJECTED DEBT RATIOS

	Net Tax-Supported Debt Per Capita (in $)			Net Tax-Supported Debt as Percent of Personal Income			Net Tax-Supported Debt Service as Percent of Revenues (5)		
Fiscal Year (ending 6/30)	State of Vermont	Moody's Median	State's Rank (4)	State of Vermont	Moody's Median	State's Rank (4)	State of Vermont (5)	Moody's Median	State's Rank (4)
Actual (1)									
2009	692	865	34	1.8	2.5	35	5.5	n.a.	n.a.
2010	709	936	36	1.8	2.5	36	5.7	n.a.	n.a.
2011	747	1,066	37	1.9	2.8	36	5.1	4.9	n.a.
2012	792	1,117	34	2.0	2.8	36	4.9	4.9	n.a.
2013	811	1,074	33	1.9	2.8	35	4.6	4.9	n.a.
2014	878	1,054	30	2.0	2.6	34	4.7	5.1	n.a.
2015	954	1,012	28	2.1	2.5	31	4.2	5.3	n.a.
2016	1,002	1,027	27	2.1	2.5	30	4.2	4.3	n.a.
2017	1,068	1,006	24	2.2	2.5	27	4.3	4.1	n.a.
2018	987	987	25	2.0	2.3	28	4.0	4.2	n.a.
2019	1,140	1,068	25	2.2	2.2	26	4.1	4.1	n.a.
2020	1,061	1,071	26	1.9	2.0	29	4.3	3.8	n.a.
2021	1,102	1,039	24	1.9	1.9	27	4.0	3.9	n.a.
Current (2)	1,073	n.a.	n.a.	1.8	n.a.	n.a.	4.0	n.a.	n.a.
Projected (FYE 6/30) (3)		State Guideline (6)			State Guideline (7)			State Guideline	
2022	1,179	635		2.0	1.8		3.7	6.0	
2023	1,178	652		1.9	1.8		4.1	6.0	
2024	1,174	669		1.8	1.8		4.1	6.0	
2025	1,166	687		1.7	1.8		4.2	6.0	
2026	1,155	706		1.6	1.8		4.2	6.0	
2027	1,142	725		1.6	1.8		4.2	6.0	
2028	1,128	745		1.5	1.8		4.1	6.0	
2029	1,111	765		1.4	1.8		4.1	6.0	
2030	1,094	785		1.3	1.8		4.0	6.0	
2031	1,078	807		1.3	1.8		3.9	6.0	
2032	1,066	828		1.2	1.8		3.7	6.0	
5-Year Average of Moody's Mean for Triple-A States		933			1.8			n.a.	
5-Year Average of Moody's Median for Triple-A States		618			1.4			n.a.	

Note: Shaded figures in the State's debt per capita projection and State's debt as percentage of personal income, in fiscal years 2022-2032 and fiscal years 2022–2023, respectively represent the period when Vermont is expected to exceed the projected, respective State Guideline consistent with the current guideline calculation methodology and the assumption that the State will issue bonds consistent with the proposed two-year authorization (footnote (3)). See Section 6, "State Guidelines and Recent Events.

(1) Actual data compiled by Moody's Investors Service, reflective of all 50 states. Moody's uses states' prior year figures to calculate the "Actual" year numbers in the table.

(2) Calculated by Public Resources Advisory Group, Inc. using outstanding Long-Term Net Tax-Supported Debt of $691.917 million as of 6/30/21 divided by Vermont's 2021 population of 644,562 as projected by EPR.

(3) Projections assume issuance of $123,650 million of G.O. debt in FY 2022 and $61.590 million in FY 2023 through FY 2032.

(4) Rankings are in numerically descending order (i.e., from high to low debt).

(5) Revenues are aggregate of State's General Fund, including changes related to Act 11 as calculated by EPR, and Transportation Fund, as well as the motor vehicle and diesel fuel assessments associated with the TIBs and the dedicated property transfer tax revenues associated with the VHFA Property Transfer Bonds. Projected debt service is based on estimated interest rates at 5% over the projected period. Calculated by Public Resources Advisory Group, Inc.

(6) State Guideline equals the 5-year average of Moody's median for the Peer Group of $618 increasing annually at 2.7%.

(7) The 5-year average of Moody's median for the Peer Group is 1.4%. Since the annual number is quite volatile, ranging from 1.4% to 2.1% over the last five years, the State Guideline is 1.8% for FY 2022 - FY 2032.

"Dashboard" Indicators

	Vermont[a]	Median Triple-A States[b]
Long-Term Net Tax-Supported Debt:	$691,916,949	$3,2555,121[c]
Debt As A Percent Of Gross State Product:	1.93%	1.1%[c]
Debt Per Capita:	$1,073	$581[c]
Debt As A Percent Of Personal Income:	1.83%	1.2%[c]
Debt Service As A Percent Of Operating Revenue[d]:	3.98%	N/A
Rapidity Of Debt Retirement:	38.8% (In 5 Years)	N/A
	72.1% (In 10 Years)	N/A
	92.7% (In 15 Years)	N/A
	100.00% (In 20 Years)	N/A

(a) Debt statistics for Vermont are as of June 30, 2021. Estimates of FY 2021 Gross State Product, Population, Personal Income and Operating Revenue prepared by EPR.
(b) These calculations exclude all Vermont numbers and include only states rated triple-A by two or more of the rating agencies during the periods shown, year ended September 30, 2021.
(c) Source: Moody's Investors Service, 2021 State Debt Medians Report calculated by Public Resources Advisory Group, Inc.
(d) Aggregate of State's General Fund, including changes related to Act 11 as calculated by EPR, and Transportation Fund, as well as the motor vehicle and diesel fuel assessments associated with the TIBs and the dedicated property transfer tax revenues associated with the VHFA Property Transfer Bonds.

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4. NATIONAL CREDIT RATING METHODOLOGIES AND CRITERIA

Standard & Poor's Methodology for U.S. State Ratings

On October 17, 2016, Standard & Poor's updated the final version of its "U.S. State Ratings Methodology." This updated methodology still provides a comprehensive presentation that sets forth, in a systematic way, a quantification approach to rating states. By assigning numerical values to its various rating criteria, the agency has moved closer to the establishment of state ratings through a quantification approach. The methodology includes the important categories of review, referred to as "factors," by Standard & Poor's:

(i) Government Framework,
(ii) Financial Management,
(iii) Economy,
(iv) Budgetary Performance and Flexibility, and
(v) Debt and Liability Profile.

In addition, the sub-categories, or "metrics" within each factor are weighed. Specifically, S&P assigns a score of 1 (strongest) to 4 (weakest) for twenty-eight metrics, grouped into the five factors listed above. Each of the metrics is given equal weight within the category, and then each factor is given equal weight in an overall 1 through 4 score. The overall scores correspond to the following indicative credit levels for the highest three ratings categories:

Score	Indicative Credit Level
1.0-1.5	AAA
1.6-1.8	AA+
1.9-2.0	AA
2.1-2.2	AA-
2.3-2.5	A+
2.5-2.6	A
2.7-3.0	A-
3.1-4	BBB category

In 2011, when S&P began to utilize the quantification approach, they reported that Vermont's score was approximately 1.7, corresponding to the State's AA+ rating from S&P. The major metrics where Vermont could improve, that to varying degrees are within the State's control, were consistent with what S&P outlined when they placed the State on positive outlook in 2015 in which Vermont received a composite score of 1.7: (a) increasing formal budget-based reserves to 8%; (b) increasing pension funded ratios; and (c) planning for and accumulating assets to address other post-employment benefits.

In April 2021, S&P's most recent report, Vermont's composite score was 1.9, which is a slight drop over the 2019 report, reflecting the State's debt and liability profile. The scores for each factor are as follows:

1.6	Government Framework
1.0	Financial Management,
2.4	Economy,
1.4	Budgetary Performance and Flexibility, and
2.9	Debt and Liability Profile.

The debt and liability profile is the fifth of the five major factors in S&P's assessment of the indicative credit level. S&P notes that they review debt service expenditures and how debt payments are prioritized versus funding of other long-term liabilities and operating costs for future tax streams and other revenue sources. They evaluate three key metrics which they score individually and weight equally: debt burden, pension liabilities, and other post-employment benefits. For each metric there may be multiple indicators (as they are for the debt metric) that they score separately and then average to develop the overall score for the metric. The new updated, methodology focuses on the revised governmental pension reporting and disclosure standards.

In terms of debt, the CDAAC reports since 2011 have incorporated certain new pieces of information, such as debt as a percent of state domestic product and relative rapidity of debt retirement (See the table above "Dashboard Indicators"). Provided below is a table with S&P's most recent debt statistics and scores for Vermont.

S&P' Debt Score Card Metrics

	Low Ranking (Score of 1)	Moderate Ranking (Score of 2)	Vermont's Statistics[1]	Vermont's Score
Debt per Capita	Below $500	$500 - $2,000	1,036	2
Debt as a % of Personal Income	Below 2%	2% - 4%	1.8%	1
Debt Service as a % of Spending	Below 2%	2%- 6%	1.9%	1
Debt as a % of Gross State Product	Below 2%	2% - 4%	2.0%	2
Debt Amortization (10 year)	80% - 100%	60%-80%	74%	2

[1] As calculated and reported by S&P.

As addressed previously, S&P reviews state pension liabilities and other post-employment benefits within the debt and liability profile. In regards to pension liabilities, S&P assesses two indicators: (i) three-year average of the pension funded ratio and (ii) pension funding discipline. As described within their methodology, S&P analysis covers changes in assets and liabilities, funded ratios, funding discipline, and unfunded pension liability. S&P considers a state's commitment to funding annual contributions that address the long-term pension liability is a key credit consideration." The scoring of the three-year average of the pension funded ratio is detailed below.

Three-Year Average of Pension Funded Ratio	Indicator	Score
90% or above	Strong	1
80% - 90%	Good	2
60% - 80%	Relatively Low	3
60% or below	Weak	4

Based on the State's most recent rating report in April 2021, the State's three-year average of the pension funded ratio was 59.7%, which considered weak and results in a score of 4.

S&P's review of a state's pension funding discipline includes an assessment of a state's funding policy, specifically reviewing whether it has an actuarial basis, and whether annual contributions usually meet or exceed the actuarially determined levels. S&P also reviews whether total annual plan contributions typically cover certain costs that drive the annual changes in the unfunded pension liability across plans, as well as an estimated annual amortization component of the unfunded liability. S&P also considers management factors and actuarial inputs to inform their assessment of a state's funding discipline.

S&P noted within Vermont's most recent rating report in April 2021, that their calculation of "Vermont's contributions to the state's pension plans do not meet our view of minimum funding progress needed toward full funding and are just short of our calculation of static funding of the level typically needed to maintain its current funding levels." However, in a more recent S&P report released September 20, 2021 titled "U.S. States Weigh Risk Reduction In Managing Pension and OPEB Liabilities" S&P assessed Vermont's FY 2020 pension contribution as meeting minimum funding progress and slightly above static funding.

The last component of the debt and liability profile is a review of other post-employment benefits risks. For this assessment, S&P focuses on the relative level of unfunded OPEB liability compared to other states and the legal and practical flexibility that a state has to adjust these liabilities and the overall strategy to manage the costs of these benefits given the impact to future contribution rates and budgetary requirements.

In S&P's most recent rating report from April 2021, it noted that "The state funds its health care obligations on a pay-as-you-go basis but has made progress toward reducing the unfunded liability in the past and is current exploring options for prefunding the liability." S&P notes their view that the State's net OPEB liability is significant. For FY 2020, Vermont did not meet minimum funding progress for OPEBs and had a static funding shortfall.

S&P has acknowledged the State's efforts to focus on its pension and OPEB liabilities in its report dated April 15, 2021: "We [S&P] understand that the legislature is considering a proposal to establish a task force to study options for pension and OPEB reforms that could include overhaul of the management system, contribution changes and benefit changes." The legislature subsequently formed the task force and work is continuing.

Moody's US States Rating Methodology

On April 12, 2018, Moody's Investors Services released the final version of its "US States and Territories Rating Methodology" to replace its "US States Rating Methodology," last revised in April 2013.

At a high level, the primary revisions to the methodology were the inclusion of U.S. territories in the new criteria and the proposed adjustment of the weights for three of the four factors, with the Economy factor increasing from 20% to 25%, the Debt and Pensions factor increasing from 20% to 25% and the Governance factor decreasing from 30% to 20%. The Finance factor remained the same at 30% of the total score.

Previously, the Finance factor had three components: (i) revenue diversity, volatility and growth, (ii) structural balance and reserves, and (iii) liquidity. Under the new criteria, the two sub-factors, structural balance and reserves and liquidity remain, but the revenue diversity, volatility and growth subfactor was replaced by a Fixed Cost Ratio. The Fixed Cost Ratio is calculated to be the sum of Moody's "tread water" annual pension cost, debt service and the annual OPEB payment divided by own source revenue.

The new methodology provides an updated explanation of how Moody's assigns ratings to US states and territories. The report provides market participants with insight into the factors Moody's considers being most important to their state ratings and the understanding of the qualitative and quantitative considerations, including financial information and metrics. The report also introduces an updated state and territory methodology scorecard. The scorecard's purpose is to provide a reference tool that can be used to approximate credit profiles for US states and territories.

The methodology includes "key factors" and "sub-factors," as referred to by Moody's, to produce a preliminary scorecard-indicated outcome. The preliminary outcome may be adjusted up or down in half-notch increments, based on six notching adjustments. The combination of the 10 factors, as seen below, results in the scorecard-indicated outcome:

Rating Factors	**Factor Weighting**	**Rating Sub-Factors**	**Sub-Factor Weighting**
Economy	25%	Per Capita Income Relative to US Average	12.5%
		Nominal Gross Domestic Product	12.5%
Governance	20%	Governance/Constitutional Framework	20%
Finances	30%	Structural Balance	10%
		Fixed Costs/State Own-Source Revenue	10%
		Liquidity and Fund Balance	10%
Debt and Pensions	25%	(Moody's-adjusted Net Pension Liability + Net Tax-Supported Debt)/State GDP	25%
Total	**100%**	**Total**	**100%**

Preliminary Score (Before Notching Factors)	
Notching Factors	
Growth Trend	(notching adjustment)
Economic or Revenue Concentration or Volatility	(notching adjustment)
Pension or OPEB Characteristics Not Reflected in Current Metrics	(notching adjustment)
Willingness to Assume Responsibility for Distressed Local Governments	(notching adjustment)
Impaired Market Access	(notching adjustment)
Financial Stability	(notching adjustment)
Scorecard-Indicated Outcome	

For the debt and pensions sub-factor, Moody's previously calculated two ratios with a 10% weighting factor for each rations:

- Net Tax-Supported Debt / Total Governmental Fund Revenues, and

- 3-Year Average of the Adjusted Net Pension Liability / Total Governmental Fund Revenues

In the new methodology, for the debt and pensions sub-factor, Moody's now calculates a combined ratio for debt and pensions with a 25% weighting factor:

$$\frac{\text{(Adjusted Net Pension Liability + Net Tax-Supported Debt)}}{\text{State Gross Domestic Product}}$$

Adjusted Net Pension Liability (ANPL) is the difference between the fair market value of a pension plan's assets and its adjusted liabilities. Moody's adjusts the reported pension liabilities of U.S states to improve comparability and transparency based on a market-determined discount rate and the market value of assets.

Net Tax-Supported Debt (NTSD) is debt paid from statewide taxes and other general resources, net of obligations fully and reliably supported by pledged sources other than state taxes or operating resources, such as utility or local government revenue.

State Gross Domestic Product (State GDP) is used as a proxy for a state's capacity to carry liabilities, because the economy drives current and future tax revenue.

The table below summarizes how Moody's assesses this ratio for the scorecard.

Sub-Factor	**Sub-factor Weight**	**Aaa**	**Aa**	**A**	**Baa**	**Ba**	**B**	**Caa**	**Ca**
(Moody's-adjusted Net Pension Liability + Net Tax-Supported Debt)/State GDP	25%	Less than 10%	10%-20%	20%-30%	30%-40%	40%-50%	50%-75%	75%-100%	Greater than 100%

As mentioned prior, Moody's also has added the Fixed Cost Ratio in the Finances rating factor. The Fixed Cost Ratio is calculated to be the sum of Moody's tread water annual pension cost, debt service and the annual OPEB payment divided by own source revenue. A strong argument can be made that the Fixed Cost Ratio adds to the weight of the debt and pensions factor since those costs are associated with a state's liabilities. Under the prior rating methodology, the debt and pensions factor made up 20% of the total rating score. Under the new criteria, the stated Debt and Pensions factor increases to 25%. Adding in the "weight" of the new Fixed Cost Ratio, which is 10% of the overall scorecard rating, results in the total debt and pension weight increasing from 20% to 35%.

Measurement	**Sub-factor Weight**	**Aaa**	**Aa**	**A**	**Baa**	**Ba**
Fixed Costs / State Own-Source Revenue	10%	Less than 5%	5%-12%	12%-20%	20%-25%	25%-35%

Moody's has yet to publish their state pension Median report in 2020, however, based on the Moody's Median report titled "Pension and OPEB liabilities fell in fiscal 2019 ahead of jump in 2020," dated September 8, 2020, Vermont's 2019 fixed costs as a percentage of state revenue is 8.2%. Thus, Moody's most recent fixed cost for Vermont is in the "Aa" category. See "Moody's Adjustment to Pension Data and Adjusted State Pension Liability Medians" herein for additional information regarding Vermont's relative standing to other triple-A states regarding pensions.

Moody's most recent rating report for Vermont, dated June 18 2021, acknowledges that "though Vermont's combined debt and pension burden remains above the state median, it is not on a rapidly growing path and the state's contribution practices are sound. ANPL growth in 2020 is largely a consequence of a decline in the market-based interest rate we use to discount liabilities, an effect that will be fairly consistent across states. Despite being above average, Vermont's debt and pension burden is much lower than those of the most highly leveraged states. And importantly, Vermont's pension burden incorporates all liabilities associated with statewide school districts because the state accounts for all primary and secondary education financial activities in its own financial statements. This is a big driver of Vermont's high pension burden relative to other states."

Fitch Rating Criteria for US State and Local Governments

On April 18, 2016, Fitch Ratings published an updated "U.S. Tax-Supported Rating Criteria" that outlines criteria applied by Fitch for ratings of U.S. state and local governments. The criteria has been updated a number of times since, most recently on May 26, 2021 but the general framework as outlined below has remain consistent.

Notable aspects of the criteria included published assessments of four key rating factors that drive rating analysis in the context of the economic base. The four key rating factors driving state and local government ratings include:

--Revenues;
--Expenditures;
--Long-term liabilities; and
--Operating performance.

On May 31, 2017, Fitch updated their criteria based on analysis of defined benefit pension liabilities. Specifically, Fitch lowered the discount rate adjustment to 6% from 7%, which is used to establish comparable liability figures. The adjustment was refined based on information within GASB 67 and 68 reporting.

Fitch considers the credit impact of OPEBs in evaluating a government's expenditure framework and operating performance but does not include this liability as part of an issuer's long-term liability burden except in limited cases. Fitch does not view OPEB liabilities akin to debt and net pension.

Please see the guidance table on the following page that outlines general expectations for a given rating category.

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	aaa	Aa	a	bbb	bb
Revenue Framework					
Growth Prospects for Revenues Without Revenue-Raising Measures	Strong Growth in line with or above the level of U.S. economic performance	Solid Growth below U.S. economic performance but above the level of inflation	Slow Growth in line with the level of inflation	Stagnant Growth below the level of inflation or flat performance	Negative Declining revenue trajectory
Independent Legal Ability	High	Substantial	Satisfactory	Moderate	Limited
to Raise Operating Revenues Without External Approval (in Relation to Normal Cyclical Revenue Decline)	Minimum revenue increase at least 300% of the scenario revenue decline	Maximum revenue increase at least 200% of the scenario revenue decline	Maximum revenue increase at least 100% of the scenario decline	Maximum revenue increase at least 50% of the scenario revenue decline	Maximum revenue increase less than 50% of the scenario revenue decline
Asymmetric Rating Driver Considerations	The requirement for periodic re-authorization of existing revenue streams is a negative consideration.				
Expenditure Framework					
Natural Pace of Spending Growth Relative to Expected Revenue Growth (Based on Current Spending Profile)	Slower to equal	Marginally above	Above	Well above	Very high
Flexibility of Main Expenditure Items (Ability to Cut Spending Throughout the Economic Cycle)	Ample	Solid	Adequate; legal or practical limits to budget management may result in manageable cuts to core services at times of economic downturn	Limited; cuts likely to meaningfully, but not critically, reduce core services at times of economic downturn	Constrained; adequate delivery of core services may be compromised at times of economic downturn
	Carrying cost metric less than 10%	Carrying cost metric less than 20%	Carrying cost metric less than 25%	Carrying cost metric less than 30%	Carrying cost metric 30% or greater
Asymmetric Rating Driver Considerations	Significant potential funding pressures, including outstanding or pending litigation, internal service fund liabilities and contingent obligations, can be a negative consideration in the expenditure framework assessment.				
Long-Tern Liability Burden	Low	Moderate	Elevated but still in the moderate range	High	Very High
Combined Burden of Debt and Unfunded Pension Liabilities in Relation to Resource Base	Liabilities less than 10% of personal income	Liabilities less than 20% of personal income	Liabilities less than 40% of personal income	Liabilities less than 60% of personal income	Liabilities 60% or more of personal income

Asymmetric Rating Driver Considerations	The liability burden assessment can be negatively affected by high levels of derivatives exposure, short-term debt, variable-rate debt or bullet maturity debt or an exceptionally large OPEB liability without the ability or willingness to make changes to benefits. An exceptionally large accounts payable backlog can also negatively affect the long-term liability burden assessment.				
Operating Performance					
Financial Resilience Through Downturns (Based on Interpretation of Scenario Analysis)	Superior strong gap-closing capacity; expected to manage through economic downturns while maintaining a high level of fundamental financial flexibility.	Very strong gap-closing capacity; expected to manage through economic downturns while maintaining an adequate level of fundamental financial flexibility.	Strong gap-closing capacity; financial operations would be more challenged in a downturn than is the case for higher rating levels but expected to recover financial flexibility.	Adequate gap-closing capacity; financial operations could become stressed in a downturn, but expected to recover financial flexibility	Limited gap-closing capacity; financial operations could become distressed in a downturn and might not recover.
Budget Management at Times of Economic Recovery	Rapid rebuilding of financial flexibility when needed, with no material deferral of required spending/ nonrecurring support of operations.	Consistent efforts in support of financial flexibility, with limited to no material deferral of required spending/nonrecurring support of operations.	Some deferral of required spending/ nonrecurring support of operations.	Significant deferral of required spending/ nonrecurring support of operations.	Deferral of required spending/ nonrecurring support of operations that risks becoming untenable given tools available to the issuer.
Asymmetric Rating Driver Considerations	The operating performance assessment could be negatively affected by liquidity or market access concerns (in general, liquidity becomes a concern if the government-wide days cash on hand metric has or is expected to fall below 60 days); the risk of an outside party (e.g. another level of government) having a negative impact on operations; evidence of an exceptional degree of taxpayer dissatisfaction, particularly in environments with easy access to the voter-initiative process.				
Asymmetric Additional Risk Considerations	In addition to the key rating driver assessments discussed above, the final rating assigned also considers certain additional risk factors that may affect the rating conclusion. These additional risk factors work asymmetrically, where only below-standard features are factored into the final rating levels. For U.S. state and local governments, these risk factors are management and economic characteristics that are significantly outside the U.S. norm.				

Fitch can create scenarios that consider how a government's revenues may be affected in a cyclical downturn and the options available to address the resulting budget gap. Also under the criteria, Fitch provides more in-depth opinions on reserve adequacy related to individual issuers' inherent budget flexibility and revenue volatility.

In 2017, Vermont was rated under the new criteria and there was no change to the State's AAA rating at that time as the result of the new criteria. However, subsequently, the State was downgraded to AA+ by Fitch in July 2019, as previously discussed, and the AA+ rating was affirmed most recently in April 2021. In the April 2021 report, Fitch scored the State as follows based on the four key rating factors:

Revenue Framework: 'aa'
Expenditure Framework: 'aaa'
Long-term Liability Burden: 'aa'
Operating Performance: 'aaa'

Under long-term liability burden Fitch notes that "Vermont's long-term liabilities burden is above the median for U.S. states but remains moderate. Positively, the state's leadership team maintains close oversight and management of debt issuance, and engages in ongoing efforts to adjust policies to improve retirement liabilities sustainability over time."

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5. ECONOMIC AND FINANCIAL FORECASTS

This section of the report includes excerpts from the "Consensus Revenue Forecast Update for the General Fund, Transportation Fund, and Education Fund; Fiscal Years 2022 through 2023" prepared by Economic and Policy Resources, Inc. ("EPR") dated July 30, 2021.

" Uncertainty is unprecedented due to two main factors that continue to dominate the outlook: (1) the continuing, but evolving COVID pandemic, including the recently increasing case numbers associated with the more highly transmissible variants (e.g. the Delta variant) of the COVID virus in areas where COVID vaccination rates remain low; and (2) the uncertainty surrounding the ongoing, unprecedented flow of federal deficit spending dollars along with the highly accommodative stance of monetary policy that are presently being employed at the federal level to combat the pandemic."

"Since the northeastern region of the U.S. is a primary source of visitors for the Vermont tourism economy, these dollars promise to underpin elevated levels of visitor and associated economic activity—which will also likely positively impact State revenue collections—over at least the near-term time-period and probably longer. Moreover, the significant portion of these COVID financial aid assistance dollars that have been saved and or invested by households in financial and other hard assets (which has helped to boost asset values and tax receipts relative to those asset values when they are converted to income) since the pandemic began. This situation promises to position households with additional consumption firepower that could conceivably be used to boost consumption to historically elevated levels for some time to come."

"Currently, the U.S. and global economies are in the middle of a period of an unprecedented "Keynesian-like" fiscal policy experiment—aided and abetted by an equally unprecedented period of "highly accommodative" monetary—that has taken the level of federal intervention in the economy to a level last seen towards the end of World War II. Last federal fiscal year, the federal budget deficit topped $3 trillion, with little prospect that this year's or even next year's federal deficit will improve appreciably. This has again raised concerns about the size of the national debt and the scale of the continuing run-up in accumulating federal debt."

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As shown in the table below, total revenue for fiscal year 2021 was $143.4 million more than in fiscal year 2020, an increase of 7.46%. The average annual revenue growth rate during the fiscal year period, 2022 through 2032, inclusive, is projected to be 2.62%.

STATE OF VERMONT
PRIOR YEAR, CURRENT AND PROJECTED STATE REVENUE[(1)]
(in millions of dollars)

Fiscal Year	General Fund	Transportation Fund	TIBs Fund	Property Transfer Tax[(2)]	Total Revenue[(3)]	Change from Prior Year
2020	1,640.4	264.1	14.7	2.5	1,921.7	--
2021	1,767.7	282.7	12.1	2.5	2,065.1	7.46%
2022	1,853.8	298.4	17.0	2.5	2,171.7	5.16%
2023	1,904.4	305.2	17.1	2.5	2,229.2	2.65%
2024	1,946.5	304.1	17.7	2.5	2,270.9	1.87%
2025	1,989.3	303.2	18.3	2.5	2,313.4	1.87%
2026	2,037.7	307.0	18.8	2.5	2,366.0	2.28%
2027	2,089.7	312.1	19.3	2.5	2,423.6	2.43%
2028	2,143.6	318.0	19.9	2.5	2,484.0	2.49%
2029	2,198.2	323.6	20.6	2.5	2,545.0	2.46%
2030	2,258.2	329.1	21.4	2.5	2,611.1	2.60%
2031	2,317.8	334.5	22.3	2.5	2,677.1	2.53%
2032	2,378.6	339.7	22.5	2.5	2,743.3	2.47%

(1) Administration-Legislative Consensus Long-Term Forecast (Calendar Years 2022-2032). These figures were prepared by EPR. Amounts shown are "current law" revenue forecasts, based on a consensus between the State's administration and legislature. As of September 6, 2021.

(2) Represents a portion of the State's property transfer tax set-aside to pay debt service on the VHFA Property Transfer Bonds.

(3) Totals may not agree due to rounding.

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Provided below are the forecasts of population, personal income, and nominal gross State product. As shown in the table below, population for calendar year 2021 and 2022 is 644.6 thousand and 645.7 thousand, respectively, an increase of 0.21% and 0.18%, over the previous calendar years. Personal income for calendar year 2021 and 2022 is $37.8 billion and $38.3 billion, respectively, an increase of 3.50% and 1.30%, over the previous calendar year, respectively. Nominal gross State product for calendar year 2021 and 2022 is $35.9 billion and $38.5 billion, respectively, an increase of 9.48% and 7.22%, over the previous calendar year, respectively.

STATE OF VERMONT
PRIOR YEAR, CURRENT AND PROJECTED ECONOMIC DATA(1)

Year	Population (in thousands)	Change from Prior Year	Personal Income (in $ billions)	Change from Prior Year	Nominal GSP (in $ billions)	Change from Prior Year
2020	643.2	--	36.6	--	32.8	--
2021	644.6	0.21%	37.8	3.50%	35.9	9.48%
2022	645.7	0.18%	38.3	1.30%	38.5	7.22%
2023	646.8	0.16%	40.1	4.60%	40.4	4.96%
2024	647.7	0.15%	41.9	4.50%	42.4	4.81%
2025	648.6	0.14%	43.7	4.40%	44.3	4.59%
2026	649.7	0.16%	45.6	4.30%	46.1	4.05%
2027	650.6	0.15%	47.6	4.40%	47.9	3.96%
2028	651.6	0.14%	49.8	4.50%	49.8	3.86%
2029	652.4	0.13%	52.0	4.40%	51.6	3.75%
2030	653.2	0.12%	54.1	4.20%	53.6	3.73%
2031	654.0	0.12%	56.3	4.00%	55.6	3.80%
2032	654.8	0.12%	58.6	4.00%	57.7	3.71%

(1) Administration-Legislative Consensus Long-Term Forecast (Calendar Years 2022-2032). These figures were prepared by EPR, as of September 6, 2021.

On the following page are EPR's 2021 economic projections as compared to its 2020 economic projections. As shown, the 2021 projections show an increase in population in all years of the forecast. The upward revision was a consequence of actual census results. Furthermore, the forecast for nominal personal income also display an increase for the forecast period. The 2021 revenue projections, which now include the comparison of the General Fund and Transportation Fund revenue, as well as the TIBs and Property Transfer Tax revenue are significantly higher throughout the forecast period. Specifically, the large increase in the revenue projections in the upfront years is attributable to the extensive federal stimulus relief flowing through the economy. Whereas, the high positive variance in the later years is more a function of the conservative nature of the 2020 forecast, as it was done at a time of great uncertainty regarding the path of the pandemic and a vaccine was not available at the time. In correlation to the substantial increase in projected revenues, the columns that compare revenues as a percentage of nominal personal income suggests that the State's general and transportation fund are expected to collect a higher share of the State's personal income for government operations for the projection years.

STATE OF VERMONT
POPULATION, PERSONAL INCOME AND REVENUE PROJECTIONS
2021 COMPARED TO 2020 PROJECTIONS

Population (Thousands)

Year	2020	2021	Change	% Change
2021	626.10	644.56	18.46	2.95%
2022	627.26	645.72	18.46	2.94%
2023	628.07	646.76	18.69	2.98%
2024	628.83	647.73	18.90	3.00%
2025	629.58	648.63	19.05	3.03%
2026	630.40	649.67	19.27	3.06%
2027	631.22	650.65	19.43	3.08%
2028	631.98	651.56	19.58	3.10%
2029	632.67	652.40	19.73	3.12%
2030	633.31	653.19	19.88	3.14%
2031	633.94	653.97	20.03	3.16%
2032		654.75	n.a.	n.a.

Nominal Dollar Personal Income (Millions)

Year	2020	2021	Change	% Change
2021	36,356.03	37,839.08	1,483.05	4.08%
2022	37,919.34	38,330.99	411.65	1.09%
2023	39,777.39	40,094.22	316.83	0.80%
2024	41,567.37	41,898.45	331.08	0.80%
2025	43,188.50	43,741.99	553.49	1.28%
2026	44,916.04	45,622.89	706.85	1.57%
2027	46,802.51	47,630.30	827.79	1.77%
2028	48,815.02	49,773.66	958.64	1.96%
2029	50,816.44	51,963.70	1,147.26	2.26%
2030	52,798.28	54,146.18	1,347.90	2.55%
2031	54,804.61	56,312.03	1,507.42	2.75%
2032		58,564.51	n.a.	n.a.

General Fund, Transportation Fund, TIBs and Property Transfer Tax Revenue (Millions)

Year	2020	2021	Change	% Change
2021	1,687.74	2,065.10	377.36	22.36%
2022	1,799.91	2,171.65	371.74	20.65%
2023	1,926.06	2,229.21	303.15	15.74%
2024	1,996.68	2,270.86	274.18	13.73%
2025	2,050.91	2,313.36	262.45	12.80%
2026	2,108.87	2,366.03	257.17	12.19%
2027	2,168.33	2,423.56	255.23	11.77%
2028	2,232.61	2,483.97	251.35	11.26%
2029	2,297.39	2,544.97	247.58	10.78%
2030	2,363.64	2,611.10	247.46	10.47%
2031	2,429.85	2,677.06	247.21	10.17%
2032		2,743.27	n.a.	n.a.

General Fund, Transportation Fund, TIBs and Property Transfer Tax Revenue as a Percent of Nominal Personal Income

Year	2020	2021	Change	% Change
2021	4.64%	5.46%	0.82%	17.56%
2022	4.75%	5.67%	0.92%	19.36%
2023	4.84%	5.56%	0.72%	14.82%
2024	4.80%	5.42%	0.62%	12.83%
2025	4.75%	5.29%	0.54%	11.37%
2026	4.70%	5.19%	0.49%	10.46%
2027	4.63%	5.09%	0.46%	9.83%
2028	4.57%	4.99%	0.42%	9.12%
2029	4.52%	4.90%	0.38%	8.33%
2030	4.48%	4.82%	0.35%	7.72%
2031	4.43%	4.75%	0.32%	7.22%
2032		4.68%	n.a.	n.a.

6. STATE GUIDELINES AND RECENT EVENTS

In order to recommend to the Governor and the General Assembly a maximum amount of net tax-supported indebtedness that the State may prudently issue for the ensuing fiscal year, CDAAC has adjusted its State guidelines and the method of calculating its State guidelines over time based on factors such as (i) changes in the rating agencies' criteria, (ii) changes in Vermont's ratings, (iii) changes to Vermont's Peer Group, (iv) substantial increases and decreases in the amount of debt issued due to market disruptions and tax law changes and (v) Vermont's relative debt position.

Examples of changes in rating criteria include Moody's dropping its State medians for "net tax supported debt as a percentage of effective full valuation" and "net tax supported debt service as a percentage of operating revenues" in 1996, reintroducing its "net tax supported debt service as a percentage of operating revenues" in 2012, Moody's and Fitch's recalibration of ratings in 2010, and the 2012 comparative research analysis that has combined State debt and pension liabilities as a method of evaluating states' financial position. The recalibration of ratings by Moody's and Fitch in 2010 and S&P rating changes over the past five years have also affected Vermont's Peer Group. Between 2002 and 2008, the number of states with two triple-A ratings remained fairly constant between eight and eleven states, compared to the current 16 states having at least two triple-A ratings.

While CDAAC has continued to make adjustments to the State guidelines and the way it calculates State guidelines, it has been consistent in its overall approach of projecting future State debt issuances and measuring the effect against prudent State guidelines based on Peer Group analysis. The Committee does not believe that adjustments in the credit markets or other recent events, such as the COVID-19 pandemic, should alter its process; however, the Committee realizes that it and the State will need to keep the changing debt finance environment and other current circumstances in mind as the State develops its capital funding and debt management program. As discussed earlier, CDAAC formed a working group to review and consider the Committee's current metrics and guidelines and potentially recommend changes. The working group intends to share its findings with CDAAC which will be considered and included in a supplemental report to the General Assembly prior to the 2022 legislative session. The supplemental report will focus on longer-term considerations and will not change the current $123,180,000 biennium recommendation.

Debt Per Capita State Guideline – Adjustments to Debt Per Capita State Guideline

The debt per capita statistics, among the various debt guidelines, is used to consider the amount of net tax supported debt that the State should authorize annually. The debt per capita State guideline calculation is based on a starting point, which since 2006 has consisted of the median of the 5-year Peer Group average of the debt per capita median of peer group (triple-A) states, and an annual inflation factor, in order to achieve a realistic perspective on the future direction of debt per capita median for the Peer Group states. As recently as 2007, CDAAC used an inflator of 2.7% or 90% of an assumed 3% inflation rate. In 2009, this approach was changed and the decision was made to adopt an inflator based on a percentage of the averaging of the annual increases in the median debt per capita of the Peer States in an attempt to best predict increases in future Peer State debt levels. At the time this changed occurred, it was noted that this approach should not be considered fixed because of possible changes to the Peer Group, among others, over time and that CDAAC should continue to monitor the best approach to calculating the inflator. With the recent changes to the Peer Group states and significant decrease in the Peer Group debt per capita resulting in an overall negative growth, or inflator, we have evidenced a deficiency in this approach and CDAAC in 2016 decided to revert back to its previous approach to calculating the inflator based on the 2.7% (90% of 3% assumed inflation). CDAAC will continue to monitor this approach as well as the approach to determining the starting point for its debt per capita guideline.

Net Original Premium Review

In 2020, the Committee reviewed the process by which the State increases the funding of capital projects based on the amount of net original issue bond premium generated from bond issues. The Committee reviewed the practices of other states related to (i) the use of bond premium and (ii) how and if bond premium affects states' capacity or affordability. For bonds issued for new capital projects, states surveyed either use bond premium to reduce the size of the bond issue, deposit the bond premium into a special capital account without reducing the bond issuance size, and/or use bond premium to pay interest on the bonds being issued. In terms of how bond premium affects capacity/affordability, several examples were provided and varied among states. Some states de-authorize bonding authority in amount equal to the associated bond premium, while certain states net premium does not affect capacity/affordability due to affordability metrics and other states recognize the lower bond issue size in state's future affordability reports. In 2020, CDAAC formed a working group to consider the best and most efficient use of the State's bond premium. The working group continued to meet during the 2021 CDAAC process and intends to share its findings with CDAAC which will be considered and included in a supplemental report to the General Assembly prior to the 2022 legislative session.

Pay-Go Review

The Committee has also been focusing on reviewing the benefits of the State increasing its pay-as-you-go capital funding. CDAAC has noted the rating agencies' concerns regarding the level of state and local governments' deferred maintenance and deferred capital infrastructure replacement. (See "Capital Planning Program and the Impact of Capital Spending Upon the Economic Conditions of the State" below.) The Committee believes that using additional pay-as-you-go ("Pay-go") funds would be beneficial for funding infrastructure including capital projects with shorter useful lives, such as technology projects, etc. The Committee noted the benefit of additional Pay-go funds – increase of Pay-go funds means more sources for capital projects, as well as reducing interest cost and total borrowing amounts over-time. In 2020, the Committee decided to form a working group to further evaluate the best use of bond premium and the benefits of the State increasing its Pay-go funds and possible sources for deferred maintenance funding and report back to the Committee. The working group continued to meet during the 2021 CDAAC process and intends to share its findings with CDAAC which will be considered and included in a supplemental report to the General Assembly prior to the 2022 legislative session.

Statutory Change Relating to Revenues and Effect on Debt Service as a Percentage of Revenue

Fiscal 2019 Appropriations Act, Act 11 (H.16) or the BIG BILL updates the funding allocation among the State's General Fund and Education Fund. Before the passage of Act 11, the State provided appropriations within the General Fund and transferred the respective allocation to the Education Fund. However, with the implementation of Act 11, the State now allocates 100% of Sales and Use Tax and 25% of Meals and Rooms Tax directly to the Education Fund.

As discussed previously in this report, debt service as a percent of revenues is utilized as one of the ratios establishing the state guidelines for future issuance. In years prior to Act 11, revenues were calculated with an aggregate revenue number consisting of the General Fund and Transportation Fund prior to any Education Fund transfers. After the passage of Act 11, the General Fund revenue is reduced. In order to keep the related debt service as a percent of revenues projections comparable to historical fund figures, the 2018 and 2019 CDAAC Reports utilized the revenue calculations that were previously in place prior to Act 11, i.e., as if there had been no revenue reallocation between the General Fund and Education Fund. However, as previously mentioned in Section 3, "Debt Service as a Percentage of Revenues," the 2020 CDAAC Report commenced the inclusion of post Act 11 General Fund Revenue, as well as the motor vehicle and diesel fuel assessments associated with the TIBs and the dedicated property transfer tax revenues associated with the VHFA Property Transfer Bonds.

Statutory Change Relating to Use of Bond Premium and Effect on Affordability

Effective in fiscal year 2013, 32 V.S.A. § 954 was amended to permit the use of bond premium received from issuance of debt for capital purposes. Previously bond premium was used to pay debt service. In fiscal year 2013, the net bond premium became available to pay capital appropriations, effectively reducing the par amount of bonds issued such that the par amount of bond plus the net original issue premium equals the capital appropriations amount.

The effect of this legislative change on the CDAAC numbers is as follows: if future bonds are issued with a net original issuance premium, the par amount of bonds will be less than estimated by the CDAAC report; however, the higher the original issue premium, the higher the average interest rate on the lower amount of debt. Due to the lower nominal interest rates in the market and the institutional investors' preference for higher coupon debt, the State expects to sell bonds with some original issue premium and reduce the size of its bond sales. To the extent that occurs, the State could authorize future additional capital appropriations in an amount equal to or less than the premium generated and still be in compliance with the CDAAC bond issuance recommendation.

Recent Decreasing State Debt Levels, Future State Infrastructure Spending Increasing

According to the Moody's State Debt Medians 2015 report published June 24, 2015, total net tax-supported debt for US States declined in 2014. This was the first drop in state debt levels in the 28 years Moody's has been compiling the data. According to the 2015 report "The decrease comes as states continue to be reluctant to take on new debt with tight operating budgets, a slow economic recovery, and uncertainty over federal fiscal policy and health care funding." The Moody's State Debt Medians 2020 report, indicated the net tax-supported debt for US States declined by 0.8%, falling to just above 2014 levels.

In 2018, CDAAC reviewed rating agencies' concerns regarding the level of state and local governments' deferred maintenance on critical infrastructure and likelihood of this becoming an increasing focus in the rating agencies' evaluation of the creditworthiness. S&P published a report in May 2018 titled *Between a Budget and a Hard Place: The Risks of Deferring Maintenance for U.S. Infrastructure* that outlined the growing level of deferred maintenance in the U.S. and the absence of a standard for measuring the amount of deferred maintenance. The report also discussed the need for state and local governments to identify and report on deferred maintenance and for governments to establish asset replacement funding solutions.

In June 2021, S&P release another report titled "U.S. States' And Transit Debt Hit Emergency Brake During Pandemic As Infrastructure Needs Accelerated" which details how states prioritized liquidity and postponed or scaled back debt issuances in 2020 due to the pandemic. The report also mentions how this follows a long-term trend between 2009-2020 of states deleveraging which, according to S&P, resulted in states underinvesting in infrastructure by $1.5 trillion and a decade of shallow economic growth, missed productivity gains, and deferred maintenance. The report does note the proposed federal infrastructure plans and expectation for the plans, if approved, to be transformational and potentially incentivize states to increase their share of general capital expenditures to help address the remaining infrastructure gap. S&P also suggests pay-as-you-go capital as a means to keep debt levels stable while increasing infrastructure spending.

Over the last decade, Vermont has continued to invest in its infrastructure, such as investing in the Waterbury office complex. The State has recognized the necessity of investing in its infrastructure. Furthermore, these issues exemplify the cause in which the State's debt metrics have risen in comparison to those states within the Peer Group.

The Recent Landscape of Municipal Bonds

The Tax Cuts and Jobs Act, passed in November 2017 and signed by President Trump in December 2017, took effect on January 1, 2018. The municipal market was severely impacted as it eliminated advance refundings and issuer's ability to refinance older and higher cost of debt prior to the call date. Advance refunding bond issuance totaled $91 billion in 2017, which accounted for 22.2 percent of supply, according to Thomson Reuters. Since the Tax Cuts and Jobs Act was enacted, the municipal market has performed well due to a cooperative Federal Reserve, as well as strong demand caused by a cap on state and local tax deductions and ample supply caused by historically low interest rates.

The municipal market in late March and April 2020 experienced the effect of the COVID-19 pandemic. The 10-year AAA MMD yields increased by as much as 200 basis points during that time with historical single day movements of 50 basis points. Nevertheless, actions taken by Congress and the Federal Reserve helped stabilize the municipal market from early 2020 and there continues to be a steady flow of funds and investor demand. Interest rates reached historical lows in 2020, especially for U.S. Treasuries, as investors had an appetite for safe investments during the uncertainty of the COVID-19 pandemic. In 2021, interest rates are still low, however, rates have increased from the 2020 historical lows. Following the September 2021 FOMC meeting, Federal Reserve Chairman Jerome Powell announced that the FOMC kept interest rates at zero and intends to continue the current pace of asset purchases." He further commented on the economy that, "If progress continues, a moderation of the pace of asset purchases can be warranted." He further added that, "Policy will remain accommodative until we achieve maximum employment and price stability goals" and suggested that "a gradual tapering process that concludes around the middle of next year can be appropriate."

In September 2021, House Democrats and the Biden administration introduced their respective proposed tax changes, some of which are expected to significantly affect the municipal market in numerous ways. First, proposed higher individual and corporate tax rates could cause investor demand for municipal bonds to strengthen further. The proposed tax changes also include the return of tax-exempt advance refundings, a higher bank-qualified limit from $10 million to $30 million and the implementation of direct-pay taxable bonds known as Qualified Infrastructure Bonds. The final package is yet to be determined, however, advocates in Washington believe the municipal provisions are expected to remain.

Moody's Adjustment to Pension Data and Adjusted State Pension Liability Medians

On June 27, 2013 Moody's published "Adjusted Pension Liability Medians for US States." This inaugural report presents adjusted pension data for the 50 individual states for fiscal year 2011, based on Moody's recently published methodology for analyzing state and local government pension liabilities. The report ranks states based on ratios measuring the size of their adjusted net pension liabilities (ANPL) relative to several measures of economic capacity: state revenues, GDP and personal income.

As discussed above, Moody's considers debt and pension liabilities together and has incorporated this analysis into its US States and Territories Rating Methodology. The "Debt and Pensions" factor reflects both bonded tax supported debt and adjusted net pension liabilities which equals 25% the total score (previously 10% each). Additionally, under the new methodology, Moody's also has added the Fixed Cost Ratio in the "Finances" rating factor. The Fixed Cost Ratio is calculated to be the sum of Moody's tread water annual pension cost, debt service and the annual OPEB payment divided by own source revenue. which is 10% of the overall scorecard rating, results in the total long-term lability weight increasing from 20% to 35%

As mentioned prior, Moody's has yet to release their 2021 state pension Median report. Therefore, pension data reflected on the upcoming pages are identical to the information within the 2020 CDAAC Report based on Moody's annual state pension report published on September 8, 2020 titled "Pension and OPEB Liabilities Fell in Fiscal 2019 Ahead of Jump in 2020," which updated Moody's ANPL for fiscal year 2019 for the 50 states. The report reflects 2019 data based on 2018 liabilities and utilizes a FTSE Pension Liability Index of 3.51% as a discount rate to value liabilities in standard adjustments. The 2018 report began state rankings based on the new debt and pension ratio contained in Moody's "US States and Territories Rating Methodology" dated April 12, 2018, specifically, state ANPL + NTSD as a % of state GDP. Moody's notes that (i) total state ANPL reached $1.48 trillion in fiscal 2019, (ii) investment returns were lower in fiscal 2019, which will be reflected in fiscal 2020 state financial statements, and (iii) total adjusted net OPEB liabilities were $527 billion in fiscal 2019, which represented a 10.6% decrease from the prior fiscal year. It is anticipated that the 2021 state pension Median report will be released in October 2021 and the updated information reflected within will be presented in next year's CDAAC report.

The following two tables provide Vermont's relative position among the 50 states with respect to its ANPL for 2019 and 2020 and a comparison of Vermont and Peer Group states with respect to Moody's pension ratios.

Moody's Pension Ratios	State of Vermont Rankings 2018[1,2]	State of Vermont Rankings 2019[1,3]
ANPL as % of Personal Income	9	9
ANPL as % of State Gross Domestic Product	7	7
ANPL Per Capita	9	9
ANPL as % of State Government Revenues	19	19
ANPL + NTSD as a % of State Gross Domestic Product	10	10

Sources: Moody's *Adjusted Net Pension Liabilities Decline; OPEB Liabilities Vary Widely,* September 17, 2019.

Moody's *Pension and OPEB Liabilities Fell in Fiscal 2019 Ahead of Jump in 2020,* September 8, 2020.

[1]Rankings are in numerically descending order, with the state having the highest Moody's Adjusted Net Pension Liability statistic ranked 1st and the state having the lowest Adjusted Net Pension Liability statistic ranked 50th.

[2]Based on a FTSE Pension Liability Index of 4.14%.

[3]Based on a FTSE Pension Liability Index of 3.51%.

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STATE OF VERMONT AND PEER GROUP STATES' MOODY'S PENSION LIABILITIES METRICS*

Triple-A Rated States	Moody's Adjusted Net Pension Liability (ANPL)[1]			
	As % of PI	As % of State GDP	Per Capita ($)	As % of Revenues
Delaware	10.1	7.1	5,526	80
Florida	2.0	2.0	1,026	41
Georgia	4.3	3.6	2,083	80
Indiana	5.4	4.7	2,641	80
Iowa	2.7	2.3	1,444	39
Maryland	13.5	12.5	8,903	198
Minnesota	3.6	3.2	2,177	42
Missouri	4.3	3.9	2,115	91
North Carolina	1.8	1.6	880	29
South Carolina	12.0	11.3	5,473	175
South Dakota	3.6	3.2	1,944	68
Tennessee	1.8	1.6	873	29
Texas	8.6	7.0	4,550	161
Utah	2.7	2.2	1,287	40
Virginia	3.3	3.0	1,981	56
MEAN[2]	**5.3**	**4.6**	**2,860**	**81**
MEDIAN[2]	**3.6**	**3.2**	**2,083**	**68**
VERMONT[3]	12.9	13.1	7,319	117
VERMONT's 50 STATE RANK[4]	9	7	9	19

Source: Moody's *Pension and OPEB Liabilities Fell in Fiscal 2019 Ahead of Jump in 2020,* September 8, 2020.

[1]Based on a FTSE PLI of 3.51%.

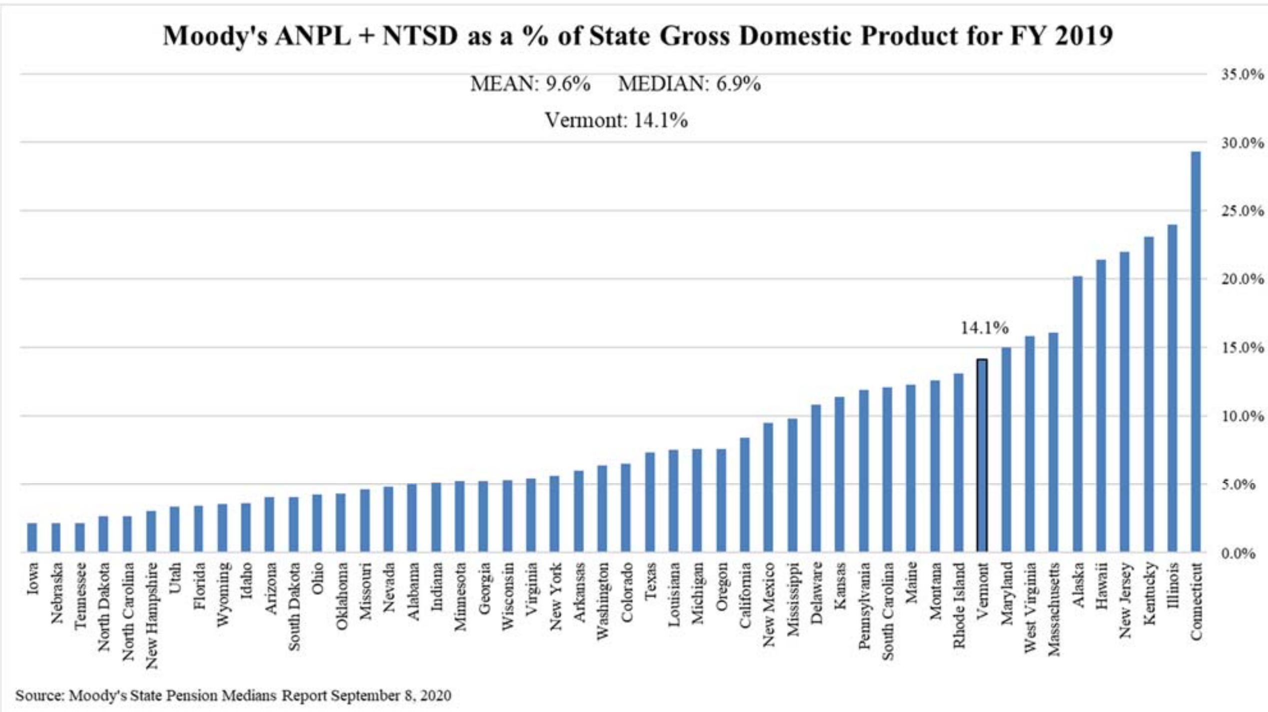
[2] Calculated by Public Resources Advisory Group, Inc. These calculations exclude all Vermont numbers and include only states rated triple-A by two or more of the rating agencies, year ended June 30th, 2019.

[3]Vermont numbers include the combined defined benefits plans of the Vermont State Employees' Retirement System and the Vermont State Teachers' Retirement System.

[4]Rankings are in numerically descending order, with the state having the highest Moody's Adjusted Net Pension Liability statistic ranked 1st and the state having the lowest Adjusted Net Pension Liability statistic ranked 50th.

*Sources does not take into account differing retirement benefits among states.

As discussed in Section 4, "Moody's US States Rating Methodology," Moody's updated the "Debt and Pension" factor with a combined ratio for debt and pensions with a 25% weighting factor. As can be seen in the table below, Vermont is currently ranked 10th out of the 50 states in regards to the new ratio (higher ranked numbers are superior). Please see below for a chart comparing Moody's new Debt and Pension ratio (ANPL+NTSD as a percentage of Gross State Product) compared to the other 49 states.



Moody's began including adjusted net OPEB liabilities ("ANOL") statistics within their 2019 pension report as states have adopted new OPEB accounting rules in their fiscal 2018 reporting. Vermont is currently ranked 8th out of the 50 states with the addition of ANOL added to ANPL and NTSD as a percentage of Gross State Product (note: higher ranked numbers are superior so Vermont's ranking is negatively impacted with the addition of ANOL to the equation). Please see the following page for a chart comparing Moody's new ANOL data in addition to ANPL and NTSD as a percentage of Gross State Product) compared to the other 49 states.

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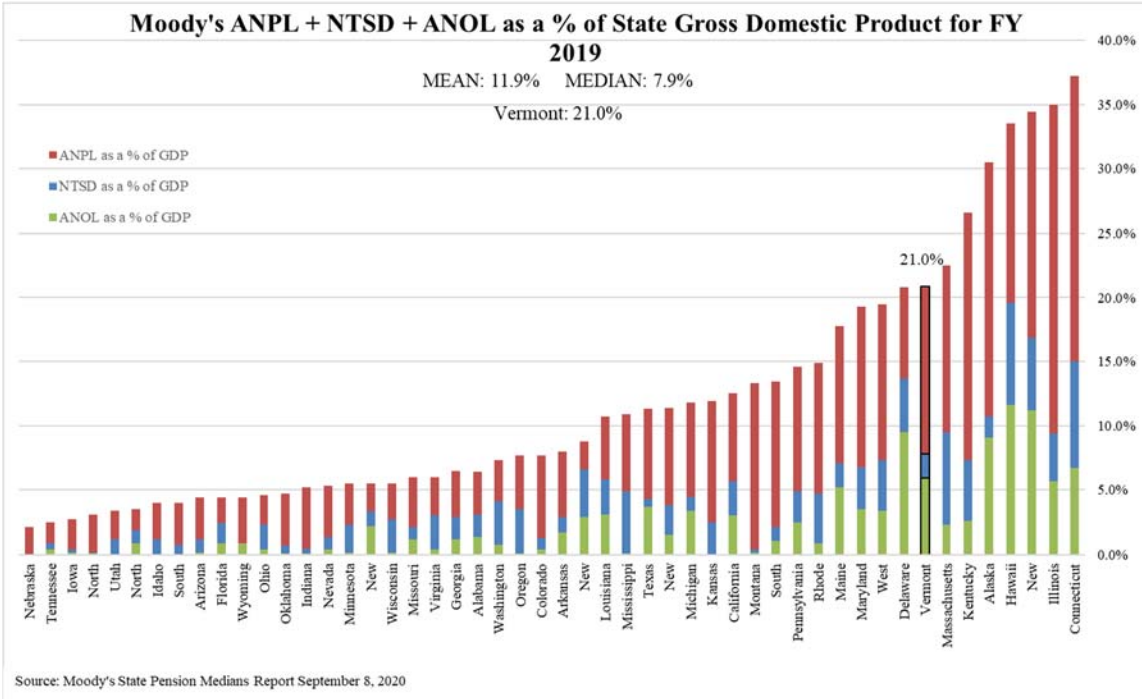

Moody's -- Review of State and Local Budget Capacity

Moody's have raised concerns with state and local governments' long-term debt liabilities as it relates to percentage of fixed cost to total operating budget capacity. With many states expecting the costs for pensions, debt and OPEBs expected to rise, the agencies are concerned that other funding priorities will be squeezed and for some states this could create reduced financial flexibility.

Moody's Fixed Cost Ratio, which was also previously discussed, is an added ratio within the Finance factor that compares debt service, OPEB and pension tread water costs to state own source revenue. Moody's expresses concern related to states with fixed costs may experience limited operating budget flexibility as many state pensions and OPEB costs are expected to rise faster than revenue growth in the future. Please see below for a chart comparing Moody's new Fixed Cost Ratio among the 50 states in order to review the State's current position among other states.

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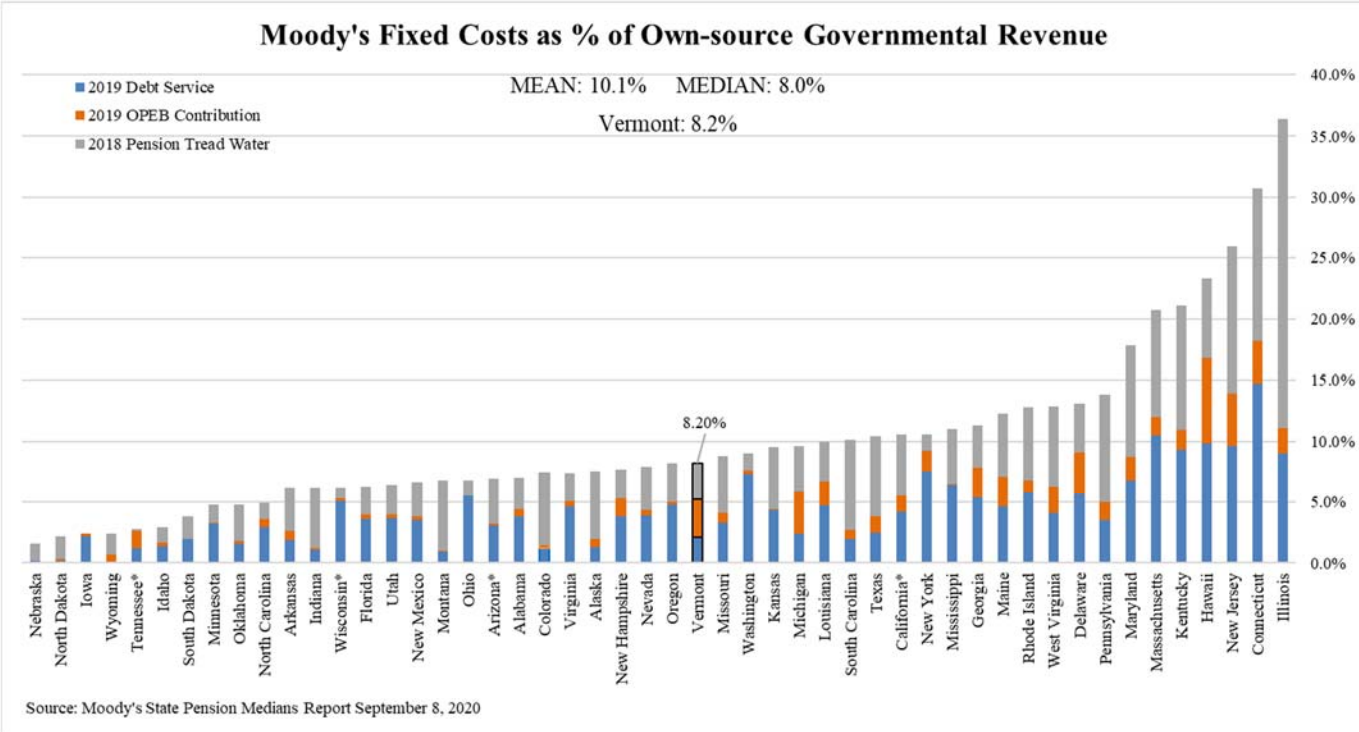

S&P and Fitch -- Review State Debt and Pension

In addition to Moody's, and as addressed within Section 4, "National Credit Rating Methodologies and Criteria," S&P and Fitch also takes state pensions and OPEB liabilities into their state credit rating considerations. Recently, S&P published a report titled "U.S. States Weigh Risk Reduction in Managing Pension and OPEP Liabilities" on September 20, 2021. The report suggested that that many states prioritized their pension contributions over their OPEB contributions during COVID-19 pandemic due to their legal protections for pension benefits. S&P anticipates that stability of the COVID-19 pandemic due to the vaccine, federal stimulus and economic activity will enable states to re-focus their attention on unfunded pension liabilities. The chart below represents each state's ratio of direct debt, pension liabilities and OPEB liabilities to personal income. Vermont is currently ranked 7th out of the 50 states (note: higher ranked states have less debt, pension liabilities and OPEB liabilities).

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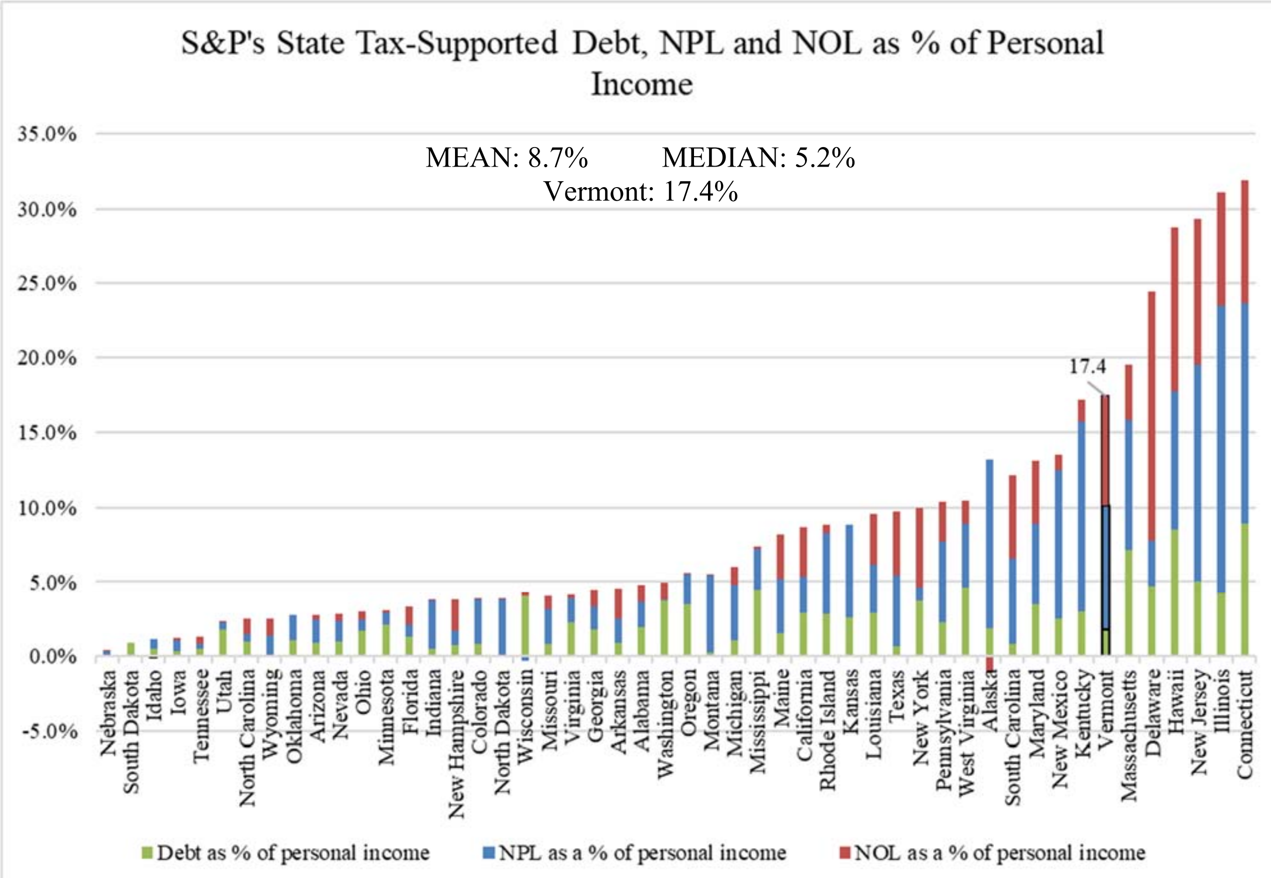

Fitch annually publishes a state liability report. In October 2020, Fitch released their report titled "Liability Burdens Fall in Final Year of Economic Expansion." Fitch recognized the decline in state liabilities with an increase of state personal income. In the chart below, Fitch presents each state's ratio of direct debt and net pension liabilities to personal income. Vermont is currently ranked 12th out of the 50 states (note: higher ranked states have less debt and pension liabilities).

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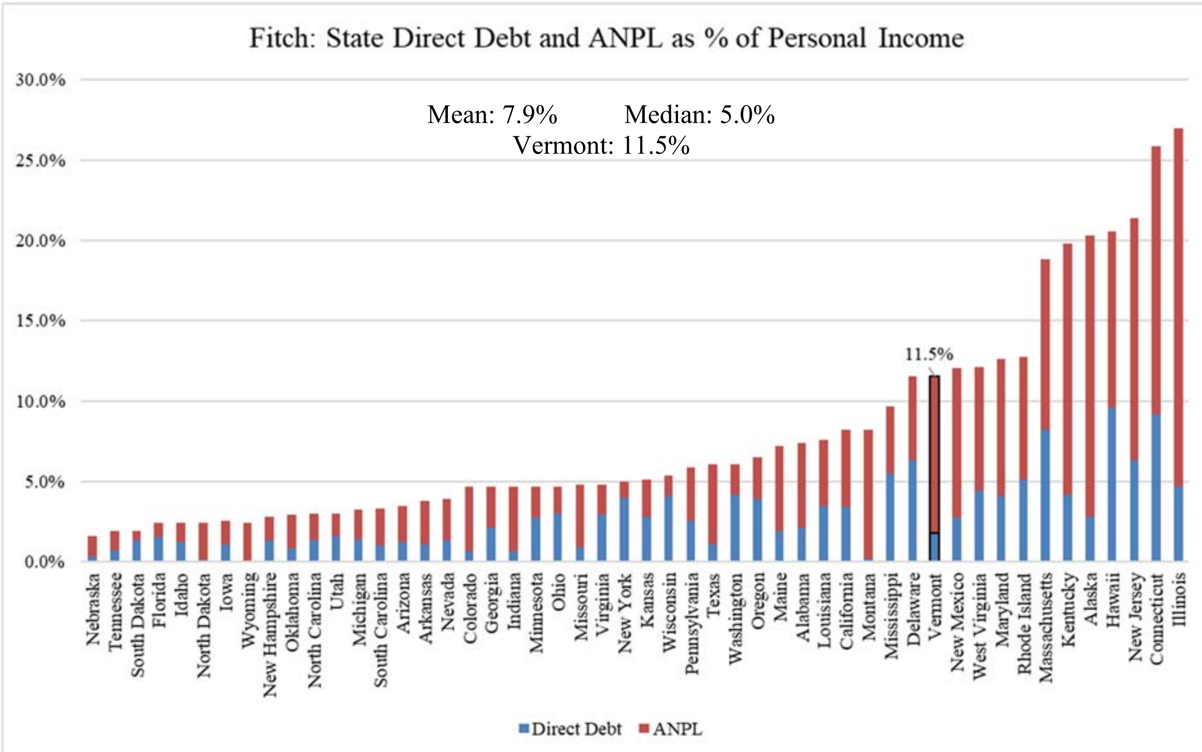

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Reserve or Rainy-Day Fund Balances

The rating agencies are also putting greater emphasis on the importance of having robust general fund reserve fund balances, commonly referred to as rainy day funds. Well-funded rainy-day funds were particularly important for states during the onset of the COVID-19 pandemic to maintain adequate liquidity in order to deliver essential services. Historically, a rainy day fund target of 5% of general fund expenditures was considered conservative and a credit positive by the rating agencies, but more recently the rating agencies have indicated that higher reserve funds are more consistent with triple-A ratings. In fact, Moody's US States Rating Methodology cited "Available Balances greater than 10%, with Requirements to Rebuild Rainy Day Fund if drawn upon" for their sub-factor Finances Measurement of "Available Balances as % of Operating Revenue (5-year average)." With respect to the State's rainy day fund balances, in the State's most recent Standard and Poor's report published in April 2021, S&P notes that "reserve accounts have typically remained at their maximum statutory levels of 5% of the previous year's budgetary appropriations, which we consider good" and the reserve balance "represents a good 5.0% of annual general fund expenditures." The table below shows the fiscal year 2020, 2021, and 2022 rainy day fund balances of the other triple-A states.

As mentioned in Section 4, "National Credit Rating Methodologies and Criteria," released in April 2016, Fitch has a different approach to evaluating reserve or rainy day balances. Rather than having a set target % of general fund expenditures, it determines reserve adequacy taking into consideration revenue volatility and budget flexibility.

Vermont has several reserve funds in order to reduce the effects of variations in revenues and are considered "available reserve funds." These are statutorily defined in 32 V.S.A.§§ 308-308e. The General Fund Stabilization Fund Reserve and Transportation Fund Stabilization Fund Reserve are determined on a self-building 5% budgetary basis and administered by the Commissioner of Finance and Management. The General Fund Balance Reserve is known as the "Rainy Day Reserve." Any remaining and undesignated General Fund amount is determined by the Emergency Board annually at its July meeting for deposit into this fund up to an additional 5% level. The use of this fund is restricted to 50% for unforeseen or emergency needs.

In fiscal year 2017, the State recognized the pressures placed on the budget by periodic 53rd week Medicaid vendor payments and 27th payroll payments. The State created new reserves to build over time the amount to fully fund these payments when needed. See the table on the following page for a summary of the State's FY 2021 and budgeted FY 2022 operating reserves as a percentage of General Fund Appropriations and Health Care Resources Fund reserves.

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State of Vermont Summary of Operating Reserves		
	Fiscal Year 2021	**Fiscal Year 2022**
Appropriations:		
Total General Fund Appropriations	$1,742.39	$1,949.71
State Health Care Resources Fund	17.08	17.08
TOTAL	$1,759.47	$1,966.79
Reserves:		
Stabilization Reserve	$81.87	$87.12
27/53 Reserve	20.30	0.00
Human Services Caseload Reserve	97.73	97.73
Rainy Day Reserve	80.37	80.37
TOTAL	150.00	150.00
Operating Reserves as a Percentage of Total General Fund Appropriations and Health Care Resources Fund:	$430.26	$415.22

Note: $'s in millions. Totals may not agree due to rounding.

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The chart below provides the State's FY 2020 through budgeted FY 2022 operating reserves as a percentage of general government expenditures compared to the Peer Group.

Rainy Day Fund Balances As a Percentage of General Government Expenditures			
Triple-A Rated States	**Fiscal 2020**	**Fiscal 2021**	**Fiscal 2022**
Delaware	5.6	5.4	5
Florida	4.6	4.5	4.7
Georgia[1]	10.7	10.7	10.7
Indiana	5.3	5.2	0.51
Iowa	9.9	10.1	10.2
Maryland	6	4.7	4.9
Minnesota	11.3	10.9	10.9
Missouri	6.4	6.1	6.1
No. Carolina	4.9	4.8	8.3
So. Carolina	13.7	11.7	11.2
So. Dakota	10.2	11.6	12
Tennessee	8.2	8.9	8.6
Texas	15.1	17.1	17.1
Utah	10.1	9.5	9.3
Virginia	4.8	6.6	9.1
Median[2]	7.3	8.9	9.1
VERMONT	14.2	13.7	11.1

Source: "The Fiscal Survey of States 2021, Spring 2020. A report by the National Governors Association and the National Association of State Budget Officers." Fiscal Year 2020 are "Actuals," Fiscal Year 2021 are "Estimated" and Fiscal 2022 are 'Recommended."

[1] Information for Georgia's FY 2021 and FY 2022 rainy day fund balance was not provided in the reports. Rainy day fund balance was assumed to stay constant at the FY 2020 level.

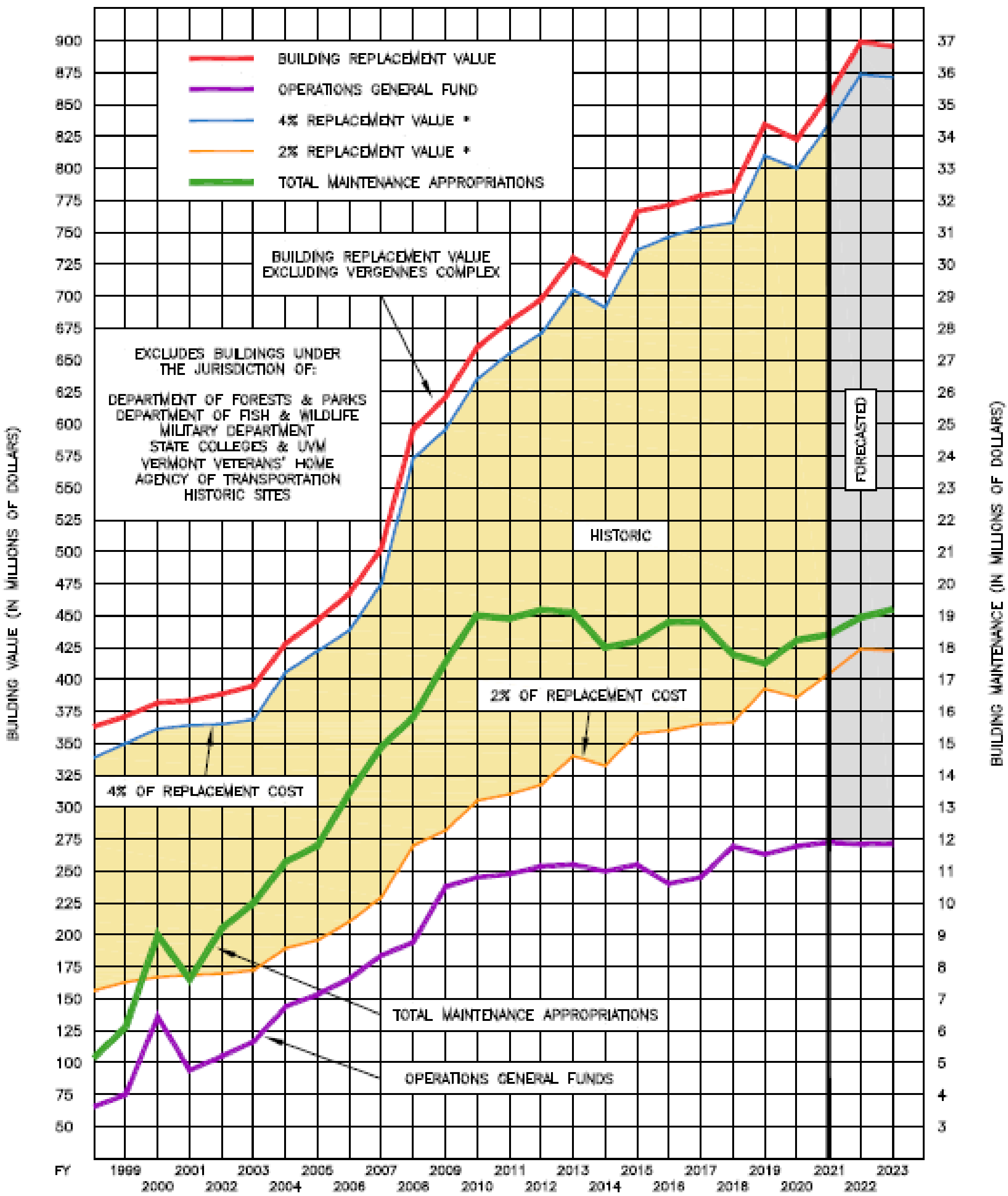
[2] Calculated by Public Resources Advisory Group, Inc. These calculations exclude all Vermont numbers and include only states rated triple-A by any two of the three rating agencies, as of September 30, 2021.

Capital Planning Program and the Impact of Capital Spending Upon the Economic Conditions of the State

All three rating agencies include the condition of Vermont's economy as a significant factor in their respective ratings. Capital improvements – whether financed through the use of debt, funded through direct appropriation or federal funds, or advanced through public private collaboration - have a significant impact on the State's economy. Further, the link between investment in infrastructure and economic development is widely accepted. As noted in a March 2012 report prepared by the United States Department of Treasury with the Council of Economic Advisors, titled *A New Economic Analysis of Infrastructure Investment*, states that "well-designed infrastructure investments can raise economic growth, productivity, and land values, while also providing significant positive spillovers to areas such as economic development, energy efficiency, public health, and manufacturing." These points notwithstanding, the report also states that not every infrastructure project is worth the investment. Metrics are needed to ensure that economic growth through infrastructure investment is done in an affordable and sustainable manner.

With the passage of 32 V.S.A. § 310 and as amended in 2019, the Administration prepared a ten-year State capital program plan. The statute requires the plan to include a list of all recommended projects in the current fiscal year, plus the following nine fiscal years thereafter and an assessment, projection of capital needs, a comprehensive financial assessment, and an estimated cost of deferred infrastructure maintenance in State building and facilities. The working group that CDAAC established to evaluate the best use of bond premium and the benefits of the State increasing its Pay-go funds has been tasked with reviewing the capital budget and 10-year capital program to provide suggestions for funding deferred maintenance. The working group is reviewing the Governor's Fiscal Year 2022-23 Proposed Capital Budget (the "Proposed CIP") which outlines a 10-year capital project list aggregating to $772.08 million. The Proposed CIP document references the American Public Works Association's position that annual maintenance spending should be between 2% to 4% of building replacement value in order to adequately maintain infrastructure. The Proposed CIP also includes an analysis of the State's historical operating budget for maintenance and major maintenance spending, as well as, projected State maintenance spending for the 2022-23 biennium versus building replacement value. The State's annual maintenance spending has been relatively stable since 2009 and in recent years has been trending slightly above 2% of the State's building replacement value which is on the low end of the spectrum of what is needed to maintain the State's infrastructure. The State's operating budget for maintenance is $11.826 million for FY 2022 which covers salaries and routine maintenance and the Proposed CIP requests $7.098 million for FY 2022 and $7.347 million for FY 2023 for statewide major maintenance and also includes a like amount in each of the remaining planning years in the 10-year program. The biennial amount proposed by the Governor was included by the Legislature in the authorized 2021 Capital Bill (Act 50). The chart and table included within the Proposed CIP regarding this respective historical and projected maintenance appropriations can be viewed on the following page.

BUILDINGS AND GENERAL SERVICES
BUILDINGS MAINTENANCE APPROPRIATIONS - FY22 / FY23



* TOTAL MAINTENANCE APPROPRIATIONS SHOULD BE BETWEEN 2% – 4% OF THE TOTAL BUILDING REPLACEMENT VALUE (SHADED AREA) IN ORDER TO PROPERLY MAINTAIN THE INFRASTRUCTURE ACCORDING TO THE AMERICAN PUBLIC WORKS ASSOCIATION. (SEE PUBLICATION: SPECIAL REPORT 3 60 – COMMITTING TO THE COST OF OWNERSHIP.)

** OPERATIONS = 40% X FEE FOR SPACE COST (TOTAL)

*** CONSIDERS LOSSES AT WATERBURY STATE COMPLEX

FISCAL YEAR (FY)	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
MAJOR MAINTENANCE (x100)	8,000	7,900	7,000	7,000	8,210	8,000	6,000	6,000	6,500	6,500	7,098	7,347
OPERATION GNRL. FUND (x100)	11,160	11,200	10,983	11,203	10,601	10,800	11,746	11,513	11,741	11,878	11,826	11,849
TOTAL MAINT. APPRO. (x100)	19,160	19,100	17,983	18,203	18,811	18,800	17,746	17,513	18,241	18,378	18,924	19,196
BLDG. REPLACE VALUE (x100)	695,500	730,000	715,885***	765,855	770,850	778,500	782,998	834,540	823,268	858,686	899,171	895,789

REVISED: JANUARY 2021

In order to ensure the State is sufficiently maintaining its infrastructure, the Committee recognizes that the process set forth in 32 V.S.A. § 310 must also incorporate a comprehensive review of current capital stock, its condition, and future replacement needs. Currently, the State, led by the Agency of Transportation (AOT), is in the process of procuring a State-wide asset management system. AOT is working with the Department of Buildings and General Services (BGS), the agency responsible for State buildings and other agencies that manage capital assets of the State, to develop a system that will assist the State to identifying each asset, quantifying the amount of deferred maintenance and establishing replacement funding plans, establish priority funding requirements and ultimately manage the assets more efficiently.

The State's asset management system initiative builds on significant efforts have been made in this area in the past. In 2009, the General Assembly charged the Treasurer and AOT to prepare a report containing a long-term needs assessment for repair, maintenance, and rehabilitation of bridges and culverts in the state with funding options for such long-term needs. This ultimately led to the creation of the Special Obligation Transportation Infrastructure Bond Program and the substantial leveraging of federal matching funds. While this increased funding corresponded with transportation infrastructure funding from other sources – namely ARRA and federal highway funds after Tropical Storm Irene – the condition of the State's transportation infrastructure has improved dramatically since 2007. In particular, the percentage of federal, State and municipal bridges deemed "structurally deficient" decreased by half - from approximately 20% to approximately 10% - from 2007 through 2012.

As part of its discussions in 2014 and again in 2015, the Committee reviewed information prepared by the Auditor of Accounts' Office showing Vermont's rankings on a series of measures both of economic health and quality of life compared to other triple-A rated states. Vermont scores quite well in most categories, and with respect to the economic data, this is reflected in Vermont's favorable rankings relative to other triple-A rated states based upon several rating agencies' assessments, with Standard & Poor's in particular stating that "Vermont's quality of life and well-educated workforce provide economic development opportunities."

There is always a concern at the rating agencies when a state meaningfully enlarges its debt program to ameliorate periodic economic downturns. The rating agencies will often advise that long-term annual costs, in the form of higher debt service and frequently higher administrative and operating expenses, can accompany such an increased debt program. The Committee believes it is of critical importance to strike the correct balance between infrastructure investment and economic growth on the one hand, and maintaining affordable and sustainable levels of debt authorizations and capital spending on the other.

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7. ACKNOWLEDGEMENTS

We would like to express our gratitude to the State Treasurer's Office, the Department of Finance and Management, EPR, and various officers and staff members of the State, whose assistance has been invaluable in completing this report. Certain computations and projections were made based on population, personal income, and revenue projections provided by EPR. The numbers presented herein have not been audited and are, therefore, subject to change, possibly in a substantial manner.

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8. APPENDICES

A. 2021 State Debt Medians (Moody's Investors Service)

B. 2020 State Pension Medians (Moody's Investors Service)

C. 2021 Fitch Ratings Credit Report

D. 2021 Moody's Investors Service Credit Report

E. 2021 Standard & Poor's Credit Report

F. Full Text of 32 V.S.A. §1001, Capital Debt Affordability Advisory Committee

APPENDIX A

MOODY'S
INVESTORS SERVICE

SECTOR PROFILE
14 June 2021

Rate this Research

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State Government – US

Medians - State debt rose 2.5% in 2020, spurred by pandemic-linked borrowing

US states' bonded debt (net tax-supported debt or NTSD) increased by 2.5% in 2020 to a record $535.07 billion. Although the growth was the largest since 2010, the 2.5% pace was modest, remaining well below the 8.1% annual average in the 2000 to 2009 period. The growth was fed in part by pandemic-induced borrowing by a few large states, some of which is likely to be repaid quickly. Some of the gain also resulted from states taking advantage of low interest rates to upgrade their physical assets at a time of growing public awareness of infrastructure needs.

» **Debt outstanding: Total NTSD grew by 2.5% in 2020.** Most of the increase came from New York (Aa2 stable), New Jersey (A3 stable) and Illinois (Baa3 stable), which already ranked among the 10 states with the largest debt burdens. Illinois' and New Jersey's borrowing was directly tied to the coronavirus pandemic's fiscal effects. New York issued a substantial amount of debt to support the Metropolitan Transportation Authority (MTA, Baa3 stable) as the transit agency struggled with dramatically diminished ridership. Gross tax-supported debt (GTSD), which includes NTSD as well as some self-supporting obligations, also rose.

» **Capacity to pay: The ratio of NTSD to personal income fell.** Bolstered by federal pandemic aid, personal income grew enough to reduce the 50-state median debt to personal income ratio slightly, to a 20-year low of 1.92% versus the prior year's 1.94%. The median ratio of debt service to own-source revenue, which is state revenue less federal aid, edged up to 3.9%.

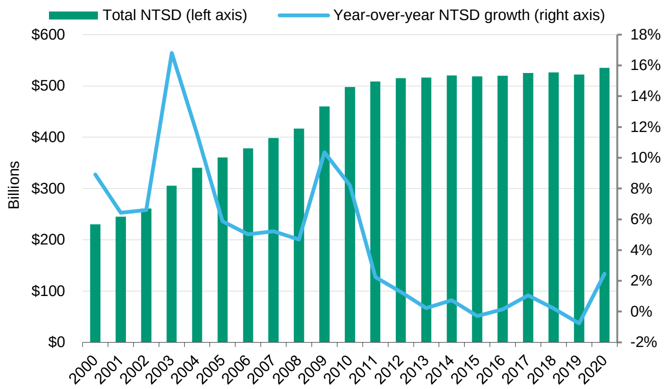
» **Debt types: General obligation (GO) debt accounted for 51% of states' outstanding debt.** In 2020, the mix of states' debt was little changed. Although 12 states have no GO debt outstanding, GO bonds remain the predominant state debt type. Most states (about three-quarters) have some GO bonds outstanding.

» **Future issuance: Depreciation points to growing infrastructure investment needs.** States with higher capital asset depreciation ratios[1] may face increased demand for investment in buildings, roads and other infrastructure, leading to more debt to fund projects.

Debt outstanding

Exhibit 1

Total NTSD (net tax-supported debt) grew in 2020, but at a modest rate compared with the 2000-09 trend



Some historical figures have been updated and may not match prior published reports.
Source: Moody's Investors Service

States' 2020 debt increase was the most in years, spurred by pandemic response

» Total NTSD grew by 2.5% in 2020 to $535.07 billion. The pace exceeded the tepid 1.3% yearly average for the preceding decade (2010-19), but was far slower than the annual 8.1% average from 2000 through 2009.

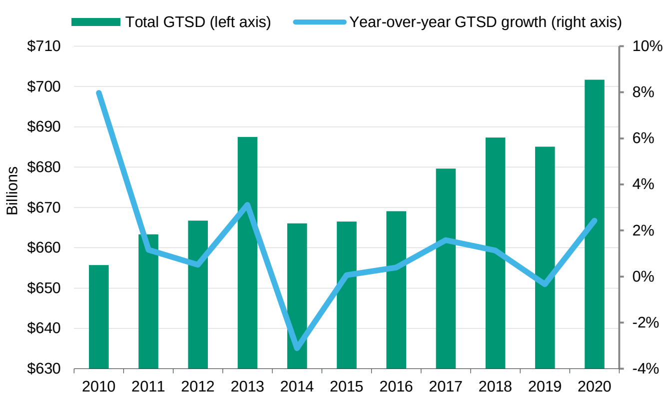
» New York, New Jersey and Illinois, which all borrowed to cope with pandemic needs, accounted for most of the sector's dollar and percentage NTSD increases. Illinois and New Jersey added a combined $6.6 billion in NTSD. New York's borrowing on behalf of the MTA helped drive its $5.4 billion NTSD increase.

» Of the 14 states with $10 billion or more of NTSD, eight saw increases (ranging from 3% to 11%), but six experienced declines ranging from 1% to 7.9%.

» Alabama (Aa1 stable) borrowed $1 billion for education infrastructure. The level of popular support for infrastructure spending will greatly affect states' issuance amounts in coming years.

Exhibit 2

Total gross tax-supported debt (GTSD) rose 2.4%, driven by NTSD growth



Some historical figures have been updated and may not match prior published reports.
Source: Moody's Investors Service

Gross tax-supported debt increased in 2020

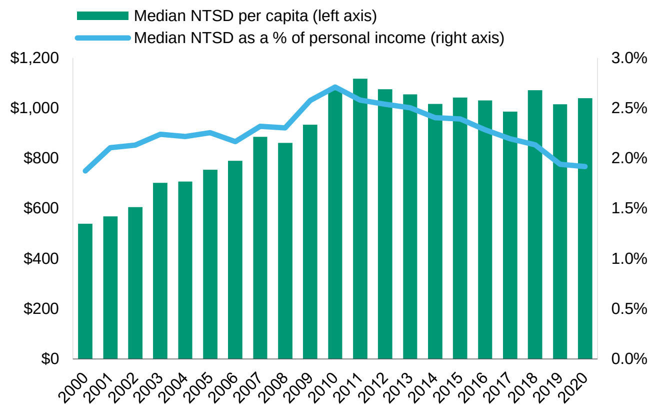
» Gross tax-supported debt (GTSD), which includes NTSD and other obligations (see box on page six), increased by 2.4% to $701.7 billion.

» States with large GTSD increases that did not simply reflect increases in NTSD included Washington (Aaa stable), which had a $1.2 billion (or 8%) rise in debt covered by its school bond guarantee program and Oregon (Aa1 stable), which saw its school bond program debt grow by $1.65 billion, or 21%.

» GTSD fell for 22 states, with the median 50-state change being a 0.6% increase. Although California's (Aa2 stable) NTSD declined slightly, its GTSD rose 1.2%.

Capacity to pay

Exhibit 3
Personal income growth led to the lowest debt-to-income ratio in two decades
NTSD stands for net tax-supported debt



Some historical figures have been updated and may not match prior published reports.
Source: Moody's Investors Service

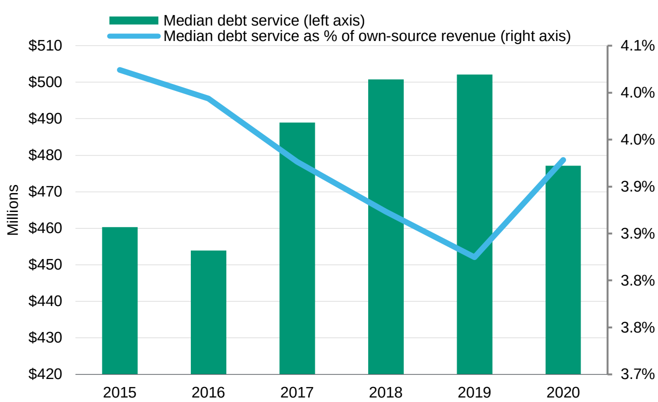
Decline in debt-to-personal income ratio continued, but debt per capita rose

» Median NTSD as a share of personal income was 1.92%, down slightly from the prior year and reaching the lowest level in two decades. The ratio has steadily declined from a peak of 2.7% in 2010, reflecting states' restrained approach to debt issuance.

» The median NTSD per capita rose 2.3% to $1,039 in 2020. States' NTSD per capita ranged from $18 in Nebraska (Aa1 stable), a state that has issued debt only sparingly, to $6,971 in Connecticut (Aa3 stable), a wealthy state.

» The pandemic-induced recession reduced economic growth for the year, causing NTSD to rise as a share of GDP. The median NTSD to state GDP ratio rose to 2.04% in 2020 from 1.83% in 2019 (see Exhibit 11). GDP declined in 46 states last year, by amounts ranging from 0.2% in South Dakota (Aaa stable) to 10.3% in Wyoming.

Exhibit 4
Median debt service declined, but rose as a share of own-source revenue



Some historical figures have been updated and may not match prior published reports. Own-source revenue is reported total governmental revenue less funds received from federal sources. Additional adjustments have been made to own-source revenue for Delaware, Massachusetts and Washington to reflect inclusion or exclusion of certain funds.
Source: Moody's Investors Service

Debt service costs remain low as a share of revenue, despite ratio's 2020 increase

» Median debt service payments fell 5% to $477.2 million, while the median debt service ratio (debt service as a share of own-source revenue) edged up to 3.93% from 3.83%. Despite the increase, the ratio remains low compared with past levels, reflecting trends of restrained issuance and revenue growth prior to fiscal 2020.

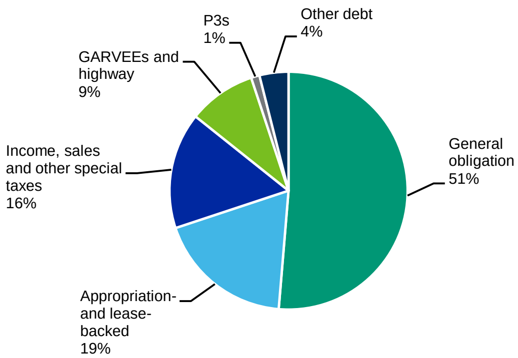
» The debt service ratio was highest in Connecticut, at 14.1%, and in Massachusetts (Aa1 stable), at 10.3%.

» Illinois had one of the most notable reductions in annual debt service. Its 2020 debt service fell to $3.67 billion, down almost $1 billion, or 21%, from the preceding year, after the maturity of its 2011 pension funding GO bonds in 2019.

Debt types

Exhibit 5

GO debt constituted more than half of outstanding net tax-supported debt (NTSD) in 2020



GARVEE stands for grant anticipation revenue vehicle bonds. Highway refers to highway revenue bonds. P3s refer to public-private partnerships.
Source: Moody's Investors Service

GO debt accounts for most state NTSD

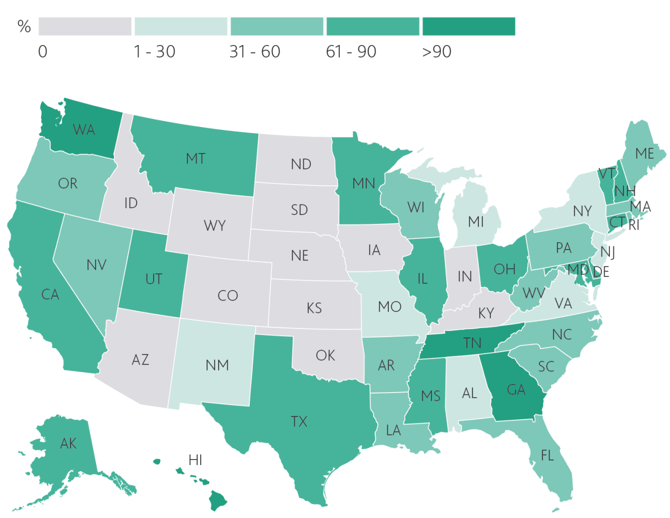
» General obligation (GO) debt, which totaled $274.6 billion, accounted for the largest share of states' total NTSD (about 51%) in 2020. Most states use GO bonds to some extent.

» Appropriation- and lease-backed bonds amounted to $99.5 billion, or almost 19% of total NTSD. Most states have issued bonds supported by leases or payments otherwise subject to annual appropriation by the state legislature. In several states, such as Colorado (Aa1 stable) and New Jersey, such debt accounts for more than three-quarters of total NTSD.

» Bonds supported by highway revenue or other special tax revenue amounted to $133.8 billion, accounting for 25% of total NTSD in 2020. This type of debt remains a component of NTSD for most states, although states in recent years have shifted the way they fund highway projects to some degree, in favor of GO issuance.

Exhibit 6

Thirty-eight states had general obligation (GO) debt in 2020
GO debt as % of net-tax-supported debt (NTSD)



Source: Moody's Investors Service

States rely on GO borrowings to varying degrees

» Most states (about three-quarters) have at least some GO bonds outstanding. Individual amounts reflect constitutional restrictions and political dynamics. For two of the largest issuers, New York and New Jersey, GO bonds account for small shares of NTSD (3% and 13%, respectively).

» Twelve states — from low-debt North Dakota (Aa1 stable) to high-debt Kentucky (Aa3 stable) — do not issue GO debt. In four states — Georgia (Aaa stable), Hawaii (Aa2 stable), Tennessee (Aaa stable) and Washington — more than 90% of outstanding NTSD is in the form of GO bonds.

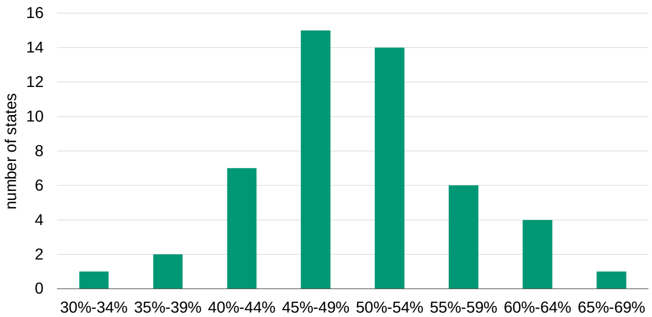
» States without GO bonds tend to rely on subject-to-appropriation debt — led by Oklahoma (Aa2 stable) and Colorado (Aa1 stable) with such debt constituting 96% and 77% of NTSD, respectively.

Future issuance needs

Exhibit 7

Most states have capital asset depreciation ratios below 55%

Accumulated depreciation as a % of gross depreciable assets in 2020



The capital asset depreciation ratio compares accumulated depreciation to gross depreciable assets. This ratio provides more insight into debt needs for states with larger percentages of assets subject to depreciation relative to total assets. Exhibit only incorporates assets subject to depreciation.

Sources: State comprehensive annual financial reports and Moody's Investors Service

Some states may face more urgent need to issue bonds to finance capital investment

- In 39 states, less than 55% of gross depreciable capital assets have been depreciated. The 11 states with higher depreciation ratios may need to issue debt in the near term to replace aging assets or face increased operating costs.
- Some states do not depreciate the bulk of their capital assets. Instead, they accrue maintenance and depreciation costs as expenses related to those assets. Bonding needs in these states may be driven by other factors.[2]
- States that issued substantial debt for infrastructure programs in 2020 included Alabama, which issued debt for education projects through the Alabama Public School and College Authority.
- Most states have used operating revenue to support infrastructure investment in recent years, providing capacity to issue debt for infrastructure later.

Basis for state debt data

Our 2020 state debt medians report is based on our analysis of calendar year 2020 debt issuance and fiscal year 2020 debt service.

In considering debt burdens, our focus is largely on net tax-supported debt (NTSD), which we characterize as debt secured by statewide taxes and other general resources, net of obligations that are self-supporting from pledged sources other than state taxes or operating resources — such as utility or local government revenue. NTSD typically includes P3 (or PPP) agreements that include contractual obligations of the government to make scheduled payments, and P3 debt is valued based on the higher of the liability in the government's financial statement or the size of the government's termination payment obligation. We also examine gross debt, which captures debt supported by revenue other than state taxes and general resources. This includes self-supporting general obligation (GO) debt, special assessment bonds and contingent debt liabilities that may not have direct tax support but that represent commitments to make debt service payments under certain conditions (e.g., state guarantees and bonds backed by state moral obligation pledges that have never been tapped).

The debt and debt service ratios of some states are relatively high because they issue debt for purposes that in other states would be financed at the local level, such as for schools or mass transit. Some states' debt service ratios rank higher than their NTSD ratios because of conservative debt management practices, such as rapid debt amortization. Conversely, some states' debt service ratios rank relatively lower because of the use of capital appreciation bonds or long maturity schedules.

Exhibit 8
Comparison of net tax-supported debt (NTSD) and gross tax-supported debt (GTSD)

Generally included in NTSD	Generally Excluded from NTSD/ Included in GTSD
General obligation debt paid from statewide taxes and fees	Self-supporting general obligation debt with an established history of being paid from sources other than taxes or general revenue
Appropriation backed bonds	Moral obligation debt with an established history of being paid from sources other than taxes or general revenue
Lease revenue bonds	Tobacco securitization bonds, with no state backup
Special tax bonds secured by statewide taxes and fees	Unemployment insurance obligation bonds
Highway bonds, secured by gas taxes and DMV fees	Debt guaranteed, but not paid, by the state
GARVEE bonds	Special assessment bonds
Lottery bonds	
Moral obligation debt paid from statewide taxes and fees	
Capital leases	
P3s with state concession obligation	
Pension obligation bonds	

GARVEE refers to grant anticipation revenue vehicle.
Source: Moody's Investors Service

These ratios have been calculated based on our definition of NTSD, debt service and own-source revenue (state revenue less federal aid) and, in most cases, will differ from a state's own published calculations of debt limits or debt affordability. There is no correlation between our ratios and a state's compliance with its internal policies.

Appendix: Key metrics for US state debt medians

Exhibit 9

Net tax-supported debt per capita and as % of personal income in 2020

	Net tax-supported debt per capita		Rating		Net tax-supported debt as a % of personal income	
1	Connecticut	$6,971	Aa3	1	Hawaii	10.1%
2	Massachusetts	$6,240	Aa1	2	Connecticut	8.7%
3	Hawaii	$6,122	Aa2	3	Massachusetts	7.8%
4	New Jersey	$4,569	A3	4	New Jersey	6.1%
5	New York	$3,614	Aa2	5	Delaware	6.0%
6	Delaware	$3,400	Aaa	6	New York	4.8%
7	Illinois	$2,861	Baa3	7	Mississippi	4.6%
8	Washington	$2,627	Aaa	8	Illinois	4.5%
9	Maryland	$2,410	Aaa	9	Kentucky	4.2%
10	Rhode Island	$2,398	Aa2	10	Rhode Island	3.9%
11	California	$2,144	Aa2	11	Washington	3.8%
12	Oregon	$2,004	Aa1	12	West Virginia	3.6%
13	Kentucky	$1,965	Aa3	13	Maryland	3.5%
14	Mississippi	$1,908	Aa2	14	Oregon	3.5%
15	Virginia	$1,746	Aaa	15	Louisiana	3.2%
16	West Virginia	$1,617	Aa2	16	California	3.0%
17	Louisiana	$1,591	Aa3	17	Virginia	2.8%
18	Wisconsin	$1,477	Aa1	18	Wisconsin	2.7%
19	Pennsylvania	$1,448	Aa3	19	Kansas	2.6%
20	Kansas	$1,447	Aa2	20	Pennsylvania	2.3%
21	Minnesota	$1,400	Aa1	21	Minnesota	2.3%
22	Ohio	$1,146	Aa1	22	New Mexico	2.2%
23	Alaska	$1,133	Aa3	23	Alabama	2.2%
24	Vermont	$1,102	Aa1	24	Ohio	2.1%
25	Alabama	$1,045	Aa1	25	Georgia	1.9%
26	Maine	$1,032	Aa2	26	Maine	1.9%
27	New Mexico	$1,023	Aa2	27	Vermont	1.9%
28	Georgia	$987	Aaa	28	Alaska	1.7%
29	Utah	$866	Aaa	29	Utah	1.7%
30	New Hampshire	$733	Aa1	30	Florida	1.3%
31	Colorado	$721	Aa1	31	Michigan	1.2%
32	Florida	$710	Aaa	32	North Carolina	1.2%
33	Michigan	$661	Aa1	33	Arkansas	1.2%
34	Nevada	$597	Aa1	34	Colorado	1.1%
35	North Carolina	$581	Aaa	35	Nevada	1.1%
36	Arkansas	$545	Aa1	36	New Hampshire	1.1%
37	Idaho	$490	Aa1	37	Idaho	1.0%
38	South Dakota	$482	Aaa	38	Arizona	0.9%
39	Arizona	$443	Aa1	39	South Carolina	0.9%
40	South Carolina	$415	Aaa	40	South Dakota	0.8%
41	Missouri	$413	Aaa	41	Missouri	0.8%
42	Texas	$365	Aaa	42	Oklahoma	0.7%
43	Oklahoma	$365	Aa2	43	Texas	0.7%
44	Tennessee	$266	Aaa	44	Tennessee	0.5%
45	Indiana	$233	Aaa	45	Indiana	0.5%
46	Montana	$177	Aa1	46	Montana	0.3%
47	Iowa	$157	Aaa	47	Iowa	0.3%
48	North Dakota	$46	Aa1	48	North Dakota	0.1%
49	Wyoming	$23	NGO*	49	Wyoming	0.0%
50	Nebraska	$18	Aa1	50	Nebraska	0.0%
	Mean	$1,535			Mean	2.5%
	Median	$1,039			Median	1.9%

*No general obligation debt or issuer rating.

Sources: Moody's Investors Service, US Census Bureau and US Bureau of Economic Analysis

Exhibit 10

State net tax-supported debt and gross tax-supported debt in 2020

Net tax-supported debt ($ thousands)			Rating	Gross tax-supported debt ($ thousands)			Gross to net ratio
1	California	$84,421,995	Aa2	1	California	$91,596,735	1.08
2	New York	$69,888,498	Aa2	2	New York	$70,171,853	1.00
3	Massachusetts	$43,019,028	Aa1	3	New Jersey	$45,166,955	1.11
4	New Jersey	$40,586,085	A3	4	Massachusetts	$43,545,094	1.01
5	Illinois	$36,013,215	Baa3	5	Washington	$37,411,045	1.85
6	Connecticut	$24,795,559	Aa3	6	Illinois	$37,136,980	1.03
7	Washington	$20,207,445	Aaa	7	Connecticut	$30,106,429	1.21
8	Pennsylvania	$18,506,241	Aa3	8	Minnesota	$27,999,087	3.54
9	Florida	$15,423,347	Aaa	9	Texas	$25,245,702	2.35
10	Virginia	$14,998,295	Aaa	10	Pennsylvania	$22,548,269	1.22
11	Maryland	$14,593,876	Aaa	11	Michigan	$22,545,154	3.42
12	Ohio	$13,395,113	Aa1	12	Oregon	$19,679,861	2.32
13	Texas	$10,723,381	Aaa	13	Virginia	$19,513,753	1.30
14	Georgia	$10,571,615	Aaa	14	Ohio	$18,640,910	1.39
15	Kentucky	$8,799,332	Aa3	15	Florida	$18,107,567	1.17
16	Wisconsin	$8,614,012	Aa1	16	Maryland	$14,593,876	1.00
17	Hawaii	$8,613,665	Aa2	17	Colorado	$14,390,136	3.43
18	Oregon	$8,498,030	Aa1	18	Wisconsin	$13,318,911	1.55
19	Minnesota	$7,918,477	Aa1	19	Kentucky	$13,194,899	1.50
20	Louisiana	$7,388,594	Aa3	20	Alabama	$10,762,136	2.09
21	Michigan	$6,590,900	Aa1	21	Georgia	$10,571,615	1.00
22	North Carolina	$6,157,902	Aaa	22	Utah	$8,693,714	3.09
23	Mississippi	$5,659,408	Aa2	23	Hawaii	$8,632,355	1.00
24	Alabama	$5,143,586	Aa1	24	Louisiana	$8,346,865	1.13
25	Kansas	$4,215,992	Aa2	25	North Carolina	$6,157,902	1.00
26	Colorado	$4,190,136	Aa1	26	Mississippi	$5,839,378	1.03
27	Delaware	$3,355,121	Aaa	27	Maine	$4,646,202	3.33
28	Arizona	$3,290,085	Aa1	28	West Virginia	$4,325,591	1.50
29	West Virginia	$2,885,608	Aa2	29	Kansas	$4,215,992	1.00
30	Utah	$2,814,715	Aaa	30	Indiana	$3,970,488	2.52
31	Missouri	$2,541,646	Aaa	31	Tennessee	$3,961,776	2.16
32	Rhode Island	$2,534,575	Aa2	32	Delaware	$3,355,121	1.00
33	South Carolina	$2,166,679	Aaa	33	Arizona	$3,290,085	1.00
34	New Mexico	$2,154,185	Aa2	34	Rhode Island	$3,177,106	1.25
35	Nevada	$1,873,090	Aa1	35	Iowa	$2,636,875	5.33
36	Tennessee	$1,831,951	Aaa	36	Missouri	$2,541,646	1.00
37	Arkansas	$1,651,027	Aa1	37	Idaho	$2,481,581	2.77
38	Indiana	$1,575,369	Aaa	38	Alaska	$2,434,819	2.94
39	Oklahoma	$1,452,715	Aa2	39	South Carolina	$2,205,035	1.02
40	Maine	$1,393,946	Aa2	40	Nevada	$2,204,459	1.18
41	New Hampshire	$1,001,932	Aa1	41	Oklahoma	$2,169,681	1.49
42	Idaho	$895,239	Aa1	42	New Mexico	$2,154,185	1.00
43	Alaska	$828,100	Aa3	43	New Hampshire	$1,938,381	1.93
44	Vermont	$687,007	Aa1	44	North Dakota	$1,911,828	54.04
45	Iowa	$495,165	Aaa	45	Arkansas	$1,693,593	1.03
46	South Dakota	$429,892	Aaa	46	Vermont	$1,520,939	2.21
47	Montana	$190,746	Aa1	47	South Dakota	$496,047	1.15
48	North Dakota	$35,381	Aa1	48	Montana	$376,581	1.97
49	Nebraska	$35,350	Aa1	49	Nebraska	$35,350	1.00
50	Wyoming	$13,342	NGO*	50	Wyoming	$13,342	1.00
	Total	$ 535,066,594			Total	$ 701,673,886	
	Mean	$10,701,332			Mean	$14,033,478	2.75
	Median	$4,203,064			Median	$5,998,640	1.24

*No general obligation debt or issuer rating.

Sources: Moody's Investors Service

Exhibit 11

Net tax-supported debt as % of state gross domestic product

	2018 NTSD as % of state GDP			2019 NTSD as % of state GDP			2020 NTSD as % of state GDP	
1	Connecticut	8.69%	1	Connecticut	8.40%	1	Hawaii	9.59%
2	Hawaii	8.32%	2	Hawaii	8.17%	2	Connecticut	8.83%
3	Massachusetts	7.51%	3	Massachusetts	7.29%	3	Massachusetts	7.37%
4	New Jersey	6.04%	4	New Jersey	5.77%	4	New Jersey	6.56%
5	Kentucky	5.17%	5	Mississippi	4.88%	5	Mississippi	4.96%
6	Mississippi	4.69%	6	Kentucky	4.33%	6	Delaware	4.44%
7	Delaware	4.18%	7	Delaware	4.16%	7	Rhode Island	4.21%
8	Illinois	4.06%	8	Rhode Island	3.96%	8	Kentucky	4.19%
9	Rhode Island	3.91%	9	West Virginia	3.86%	9	Illinois	4.17%
10	New York	3.72%	10	Illinois	3.77%	10	New York	4.11%
11	Maryland	3.44%	11	New York	3.64%	11	West Virginia	3.91%
12	Washington	3.42%	12	Oregon	3.36%	12	Maryland	3.45%
13	West Virginia	3.34%	13	Maryland	3.31%	13	Oregon	3.39%
14	Oregon	3.33%	14	Washington	3.20%	14	Washington	3.27%
15	California	2.92%	15	Louisiana	2.89%	15	Louisiana	3.05%
16	Louisiana	2.80%	16	California	2.71%	16	California	2.73%
17	Wisconsin	2.71%	17	Virginia	2.57%	17	Virginia	2.72%
18	Pennsylvania	2.59%	18	Wisconsin	2.52%	18	Wisconsin	2.54%
19	Kansas	2.57%	19	Kansas	2.46%	19	Kansas	2.43%
20	Virginia	2.52%	20	Pennsylvania	2.40%	20	Pennsylvania	2.37%
21	New Mexico	2.50%	21	New Mexico	2.23%	21	Alabama	2.29%
22	Vermont	2.17%	22	Minnesota	2.07%	22	New Mexico	2.15%
23	Minnesota	2.13%	23	Ohio	1.95%	23	Minnesota	2.12%
24	Ohio	2.00%	24	Vermont	1.95%	24	Maine	2.11%
25	Alabama	1.94%	25	Maine	1.90%	25	Vermont	2.09%
26	Alaska	1.78%	26	Alabama	1.77%	26	Ohio	1.98%
27	Maine	1.75%	27	Alaska	1.65%	27	Georgia	1.71%
28	Georgia	1.74%	28	Georgia	1.65%	28	Alaska	1.65%
29	Florida	1.65%	29	Florida	1.51%	29	Utah	1.44%
30	Arkansas	1.40%	30	Arkansas	1.26%	30	Florida	1.41%
31	Utah	1.38%	31	Utah	1.20%	31	Arkansas	1.28%
32	New Hampshire	1.23%	32	Idaho	1.15%	32	Michigan	1.28%
33	Michigan	1.21%	33	Michigan	1.10%	33	New Hampshire	1.18%
34	Arizona	1.14%	34	New Hampshire	1.10%	34	Nevada	1.09%
35	Nevada	1.13%	35	North Carolina	1.04%	35	Colorado	1.07%
36	Idaho	1.12%	36	Nevada	1.02%	36	Idaho	1.07%
37	South Carolina	1.09%	37	Arizona	0.99%	37	North Carolina	1.05%
38	North Carolina	0.97%	38	South Carolina	0.97%	38	South Carolina	0.90%
39	Missouri	0.94%	39	Colorado	0.88%	39	Arizona	0.88%
40	South Dakota	0.79%	40	Missouri	0.87%	40	Missouri	0.79%
41	Colorado	0.74%	41	South Dakota	0.79%	41	South Dakota	0.78%
42	Oklahoma	0.63%	42	Oklahoma	0.66%	42	Oklahoma	0.78%
43	Texas	0.62%	43	Texas	0.60%	43	Texas	0.61%
44	Tennessee	0.57%	44	Tennessee	0.53%	44	Tennessee	0.50%
45	Indiana	0.49%	45	Indiana	0.44%	45	Indiana	0.42%
46	Iowa	0.34%	46	Iowa	0.24%	46	Montana	0.37%
47	Montana	0.31%	47	Montana	0.21%	47	Iowa	0.26%
48	North Dakota	0.18%	48	North Dakota	0.09%	48	North Dakota	0.07%
49	Wyoming	0.05%	49	Wyoming	0.04%	49	Wyoming	0.04%
50	Nebraska	0.04%	50	Nebraska	0.03%	50	Nebraska	0.03%
	Mean	2.40%		Mean	2.31%		Mean	2.43%
	Median	1.86%		Median	1.83%		Median	2.04%

Some historical figures have been updated and may not match prior published reports.
Sources: Moody's Investors Service and US Bureau of Economic Analysis

Exhibit 12

Net tax-supported debt as a % of personal income

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Alabama	2.4%	2.5%	2.4%	2.4%	2.4%	2.2%	2.2%	2.3%	2.2%	2.1%	1.9%	2.2%
Alaska	2.9%	2.5%	2.8%	2.3%	3.0%	2.7%	2.5%	2.7%	2.4%	2.2%	2.0%	1.7%
Arizona	2.3%	2.8%	2.8%	2.5%	2.4%	2.2%	2.0%	1.7%	1.5%	1.3%	1.1%	0.9%
Arkansas	1.0%	1.1%	1.0%	1.1%	1.6%	1.7%	1.6%	1.5%	1.5%	1.4%	1.2%	1.2%
California	5.6%	5.8%	5.5%	5.3%	5.0%	4.6%	4.2%	3.8%	3.6%	3.5%	3.2%	3.0%
Colorado	1.0%	1.3%	1.2%	1.1%	1.1%	0.9%	0.8%	0.7%	0.9%	0.8%	1.0%	1.1%
Connecticut	8.0%	8.3%	8.0%	8.0%	8.6%	8.5%	9.0%	9.3%	9.2%	9.1%	8.8%	8.7%
Delaware	6.1%	6.5%	6.1%	5.8%	5.6%	6.6%	6.2%	6.3%	6.1%	6.1%	6.0%	6.0%
Florida	3.0%	3.0%	2.9%	2.6%	2.5%	2.3%	2.3%	2.1%	1.8%	1.6%	1.5%	1.3%
Georgia	3.4%	3.3%	3.0%	2.9%	2.8%	2.6%	2.5%	2.3%	2.2%	2.1%	2.0%	1.9%
Hawaii	9.3%	9.6%	8.9%	9.5%	10.5%	10.3%	9.3%	9.8%	9.9%	9.9%	9.7%	10.1%
Idaho	1.7%	1.6%	1.7%	1.5%	1.4%	1.3%	1.1%	1.0%	1.1%	1.1%	1.2%	1.0%
Illinois	4.6%	5.7%	5.8%	5.5%	5.5%	5.4%	4.9%	4.8%	5.4%	4.8%	4.5%	4.5%
Indiana	1.4%	1.3%	1.2%	1.1%	1.3%	0.8%	0.8%	0.7%	0.6%	0.6%	0.5%	0.5%
Iowa	0.2%	0.7%	0.8%	0.7%	0.6%	0.6%	0.5%	0.5%	0.5%	0.4%	0.3%	0.3%
Kansas	2.9%	3.1%	2.8%	2.5%	2.4%	2.3%	3.2%	3.3%	3.2%	3.0%	2.8%	2.6%
Kentucky	5.2%	5.9%	5.9%	5.6%	5.7%	7.2%	6.6%	6.2%	5.7%	5.7%	4.8%	4.2%
Louisiana	3.5%	3.5%	3.6%	3.5%	3.6%	3.7%	3.8%	3.8%	3.7%	3.3%	3.4%	3.2%
Maine	2.0%	2.3%	2.1%	2.0%	2.4%	2.2%	2.1%	2.0%	1.9%	1.7%	1.9%	1.9%
Maryland	3.3%	3.2%	3.3%	3.4%	3.4%	3.5%	3.4%	3.5%	3.6%	3.7%	3.6%	3.5%
Massachusetts	9.1%	8.6%	8.7%	8.6%	8.7%	9.5%	9.2%	9.2%	9.0%	8.7%	8.5%	7.8%
Michigan	2.2%	2.2%	2.1%	2.0%	2.0%	1.8%	1.7%	1.5%	1.5%	1.3%	1.2%	1.2%
Minnesota	2.5%	2.7%	2.5%	2.7%	2.9%	3.1%	2.9%	2.8%	2.6%	2.5%	2.4%	2.3%
Mississippi	4.9%	4.9%	5.4%	5.2%	5.2%	5.1%	5.1%	5.2%	5.1%	4.7%	4.9%	4.6%
Missouri	2.2%	2.1%	1.9%	1.7%	1.7%	1.5%	1.4%	1.3%	1.2%	1.0%	1.0%	0.8%
Montana	1.0%	1.0%	0.9%	0.8%	0.7%	0.6%	0.6%	0.5%	0.4%	0.3%	0.2%	0.3%
Nebraska	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Nevada	2.5%	2.4%	2.1%	1.9%	1.6%	1.6%	1.3%	1.3%	1.3%	1.3%	1.2%	1.1%
New Hampshire	1.5%	1.7%	1.6%	1.7%	1.7%	1.6%	1.5%	1.3%	1.3%	1.2%	1.1%	1.1%
New Jersey	7.3%	7.5%	7.4%	7.3%	7.1%	7.1%	6.8%	7.0%	6.7%	6.1%	5.9%	6.1%
New Mexico	4.2%	5.4%	4.0%	3.7%	3.4%	3.4%	3.2%	3.2%	2.9%	2.9%	2.6%	2.2%
New York	6.7%	6.4%	6.2%	5.9%	5.8%	5.5%	5.2%	5.0%	4.7%	4.7%	4.6%	4.8%
North Carolina	2.1%	2.2%	2.2%	2.2%	2.1%	1.8%	1.7%	1.5%	1.4%	1.1%	1.2%	1.2%
North Dakota	0.8%	0.7%	0.5%	0.5%	0.5%	0.4%	0.3%	0.3%	0.3%	0.2%	0.1%	0.1%
Ohio	2.6%	2.8%	2.6%	2.6%	2.6%	2.6%	2.5%	2.4%	2.4%	2.4%	2.3%	2.1%
Oklahoma	1.6%	1.7%	1.2%	1.1%	0.9%	0.8%	0.7%	0.8%	0.7%	0.7%	0.7%	0.7%
Oregon	5.3%	5.6%	5.3%	4.9%	4.8%	4.5%	4.2%	4.0%	4.1%	3.7%	3.8%	3.5%
Pennsylvania	2.3%	2.6%	2.6%	2.6%	2.5%	2.5%	2.5%	2.7%	2.5%	2.8%	2.6%	2.3%
Rhode Island	5.2%	5.1%	4.5%	4.5%	4.5%	4.1%	3.7%	4.2%	4.2%	4.1%	4.1%	3.9%
South Carolina	2.9%	2.7%	2.4%	2.2%	2.1%	1.8%	1.5%	1.4%	1.2%	1.1%	1.0%	0.9%
South Dakota	0.3%	0.8%	0.8%	0.8%	0.9%	0.9%	1.1%	1.0%	1.1%	0.9%	0.9%	0.8%
Tennessee	0.9%	1.0%	0.9%	0.9%	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.6%	0.5%
Texas	1.4%	1.6%	1.4%	1.3%	1.4%	0.9%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%
Utah	3.1%	4.0%	4.1%	3.5%	3.2%	2.8%	2.3%	1.9%	1.7%	1.7%	1.5%	1.7%
Vermont	1.8%	1.8%	1.8%	1.8%	1.9%	2.0%	2.0%	2.1%	1.9%	2.1%	1.9%	1.9%
Virginia	2.0%	2.3%	2.4%	2.7%	2.7%	2.7%	2.6%	2.8%	2.7%	2.7%	2.8%	2.8%
Washington	5.3%	6.2%	5.8%	5.9%	6.1%	5.6%	5.1%	4.9%	4.5%	4.2%	4.0%	3.8%
West Virginia	3.4%	3.7%	3.4%	3.2%	3.0%	2.6%	3.2%	3.0%	2.7%	3.5%	4.0%	3.6%
Wisconsin	4.5%	4.6%	4.4%	4.4%	4.3%	4.0%	3.8%	3.7%	3.4%	3.0%	2.8%	2.7%
Wyoming	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
Mean	3.2%	3.4%	3.2%	3.1%	3.1%	3.1%	2.9%	2.9%	2.8%	2.7%	2.6%	2.5%
Median	2.6%	2.7%	2.6%	2.5%	2.5%	2.4%	2.4%	2.3%	2.2%	2.1%	1.9%	1.9%

Some historical figures have been updated and may not match prior published reports.

Sources: Moody's Investors Service and US Bureau of Economic Analysis

Exhibit 13

Debt service ratio

		FY 2018			FY 2019			FY 2020
1	Connecticut	13.5%	1	Connecticut	14.9%	1	Connecticut	14.1%
2	Massachusetts	10.9%	2	Massachusetts	10.4%	2	Massachusetts	10.3%
3	New Jersey	9.9%	3	Hawaii	9.8%	3	Hawaii	10.3%
4	Hawaii	9.5%	4	New Jersey	9.6%	4	New Jersey	10.1%
5	Illinois	8.4%	5	Illinois	9.0%	5	Kentucky	7.4%
6	Mississippi	7.8%	6	Kentucky	8.0%	6	Illinois[1]	7.3%
7	Kentucky	7.6%	7	New York	7.4%	7	Washington	6.9%
8	Washington	7.3%	8	Washington	7.3%	8	Maryland	6.8%
9	Maryland	7.1%	9	Maryland	6.8%	9	Rhode Island	6.2%
10	New York	6.8%	10	Mississippi	6.4%	10	Mississippi	5.7%
11	Delaware	6.0%	11	Rhode Island	5.8%	11	Delaware	5.6%
12	Georgia	5.9%	12	Delaware	5.7%	12	New York	5.6%
13	Ohio	5.4%	13	Ohio	5.5%	13	Ohio	5.5%
14	Rhode Island	5.4%	14	Georgia	5.4%	14	Oregon	5.4%
15	Oregon	5.3%	15	Wisconsin	5.1%	15	Georgia	5.4%
16	Wisconsin	5.1%	16	Oregon	4.8%	16	Louisiana	4.9%
17	Louisiana	4.8%	17	Louisiana	4.7%	17	Maine	4.8%
18	Maine	4.8%	18	Maine	4.6%	18	Wisconsin	4.5%
19	Virginia	4.5%	19	Virginia	4.6%	19	Virginia	4.5%
20	Florida	4.4%	20	Kansas	4.3%	20	Utah	4.5%
21	California	4.3%	21	West Virginia	4.1%	21	Florida	4.3%
22	Nevada	4.2%	22	California	4.0%	22	Nevada	4.1%
23	Utah	4.1%	23	Pennsylvania	4.0%	23	West Virginia	4.1%
24	Alabama	4.0%	24	Nevada	3.9%	24	Pennsylvania	4.0%
25	New Hampshire	3.9%	25	Alabama	3.8%	25	California[1]	4.0%
26	Pennsylvania	3.8%	26	New Hampshire	3.8%	26	Kansas	3.8%
27	Arizona	3.7%	27	Utah	3.7%	27	New Hampshire	3.7%
28	Kansas	3.7%	28	Florida	3.6%	28	New Mexico[1]	3.5%
29	New Mexico	3.6%	29	New Mexico	3.5%	29	Minnesota	3.2%
30	Missouri	3.4%	30	Missouri	3.3%	30	Alabama	3.2%
31	Minnesota	3.3%	31	Minnesota	3.2%	31	Arizona{1}	3.1%
32	West Virginia	3.3%	32	Arizona	3.1%	32	North Carolina	3.0%
33	North Carolina	3.1%	33	North Carolina	2.9%	33	Missouri	2.7%
34	Texas	2.6%	34	Texas	2.5%	34	Texas	2.6%
35	Arkansas	2.5%	35	Michigan	2.4%	35	Arkansas	2.4%
36	South Dakota	2.4%	36	Iowa	2.2%	36	Michigan	2.2%
37	South Carolina	2.4%	37	Vermont	2.1%	37	Alaska	2.2%
38	Michigan	2.3%	38	South Carolina	2.0%	38	Vermont	2.1%
39	Vermont	2.0%	39	South Dakota	2.0%	39	South Carolina	1.8%
40	Oklahoma	1.7%	40	Arkansas	1.9%	40	South Dakota	1.7%
41	Alaska	1.6%	41	Alaska	1.7%	41	Idaho	1.6%
42	Idaho	1.3%	42	Oklahoma	1.6%	42	Colorado	1.4%
43	Tennessee	1.2%	43	Idaho	1.4%	43	Oklahoma	1.3%
44	Colorado	1.2%	44	Colorado	1.2%	44	Tennessee	1.1%
45	Montana	1.2%	45	Tennessee	1.2%	45	Indiana	1.0%
46	Indiana	1.1%	46	Indiana	1.1%	46	Montana	0.9%
47	Iowa	0.7%	47	Montana	0.9%	47	Iowa[1]	0.7%
48	North Dakota	0.3%	48	North Dakota	0.2%	48	North Dakota	0.4%
49	Nebraska	0.2%	49	Nebraska	0.2%	49	Nebraska	0.2%
50	Wyoming	0.1%	50	Wyoming	0.1%	50	Wyoming	0.2%
	Mean	4.3%		Mean	4.2%		Mean	4.1%
	Median	3.9%		Median	3.8%		Median	3.9%

[1] Figures use fiscal 2019 own-source revenue or estimated 2020 revenue; fiscal 2020 audited financial statements not available at time of publication. Own-source revenue is reported total governmental revenue less funds received from federal sources. Additional adjustments have been made to own-source revenue for Delaware, Massachusetts and Washington to reflect inclusion or exclusion of certain funds.

Source: Moody's Investors Service

Exhibit 14

Capital assets and capital asset depreciation ratio (2020)

	Capital assets subject to depreciation				Capital assets not subject to depreciation		
State	Gross capital assets ($ million)	Gross capital assets (% of GDP)	Accumulated depreciation ($ million)	Capital asset depreciation ratio (%) [1]	Gross capital assets ($ million)	Gross capital assets (% GDP)	Share of capital assets not subject to depreciation
Indiana[3][4]	3,463	0.9%	-2,289	66%	16,492	4.4%	82.6%
New Mexico[2][4]	22,033	21.0%	-13,809	63%	1,584	1.5%	6.7%
Louisiana	33,896	14.0%	-21,059	62%	4,182	1.7%	11.0%
Hawaii[4]	22,806	25.4%	-13,903	61%	5,900	6.6%	20.6%
Connecticut[4]	36,453	13.0%	-21,880	60%	7,799	2.8%	17.6%
Alaska	21,603	43.0%	-12,785	59%	3,506	7.0%	14.0%
Nebraska[3]	1,497	1.2%	-860	57%	8,570	6.7%	85.1%
Ohio[3]	17,722	2.6%	-10,167	57%	27,465	4.1%	60.8%
Maryland[4]	47,106	11.1%	-26,977	57%	12,869	3.0%	21.5%
Wisconsin[3][4]	14,940	4.4%	-8,556	57%	24,850	7.3%	62.5%
Maine[3][4]	1,501	2.3%	-822	55%	3,705	5.6%	71.2%
Wyoming[3]	1,494	4.1%	-802	54%	651	1.8%	30.4%
West Virginia	22,848	31.0%	-12,218	53%	3,617	4.9%	13.7%
Oklahoma	40,198	21.5%	-21,328	53%	3,930	2.1%	8.9%
Georgia[4]	65,259	10.5%	-34,536	53%	10,302	1.7%	13.6%
New Hampshire	9,194	10.8%	-4,763	52%	1,001	1.2%	9.8%
Pennsylvania	82,113	10.5%	-42,463	52%	10,503	1.3%	11.3%
New York[3]	43,895	2.6%	-22,637	52%	88,549	5.2%	66.9%
Arkansas[4]	28,894	22.4%	-14,808	51%	3,365	2.6%	10.4%
Massachusetts	21,289	3.6%	-10,846	51%	2,440	0.4%	10.3%
Iowa[2]	29,484	15.1%	-15,008	51%	2,030	1.0%	6.4%
Missouri[4]	68,105	21.2%	-34,516	51%	5,865	1.8%	7.9%
Minnesota[3]	23,594	6.3%	-11,730	50%	17,993	4.8%	43.3%
Washington[3]	30,209	4.9%	-14,999	50%	31,047	5.0%	50.7%
Michigan[3][4]	14,552	2.8%	-7,223	50%	21,680	4.2%	59.8%
Rhode Island	11,363	18.9%	-5,591	49%	1,576	2.6%	12.2%
Florida[3]	43,725	4.0%	-21,507	49%	100,774	9.2%	69.7%
North Dakota	10,593	19.6%	-5,210	49%	1,908	3.5%	15.3%
Arizona[2][3]	13,935	3.8%	-6,839	49%	23,940	6.5%	63.2%
Illinois[2][4]	59,563	6.7%	-29,196	49%	6,806	0.8%	10.3%
New Jersey	39,228	6.3%	-18,797	48%	9,153	1.5%	18.9%
Nevada[3]	6,915	4.0%	-3,296	48%	9,938	5.8%	59.0%
Idaho[3]	5,963	7.1%	-2,822	47%	6,065	7.2%	50.4%
Kansas[3]	9,039	5.2%	-4,260	47%	13,777	7.9%	60.4%
California[2][3][4]	109,489	3.5%	-51,416	47%	125,735	4.0%	53.5%
Alabama[3]	20,629	9.2%	-9,617	47%	22,148	9.8%	51.8%
Kentucky[3]	12,633	6.0%	-5,798	46%	26,288	12.5%	67.5%
Vermont[4]	4,291	13.1%	-1,964	46%	837	2.6%	16.3%
Delaware[3]	5,900	7.8%	-2,684	45%	5,643	7.5%	48.9%
Utah[3]	17,904	9.2%	-8,025	45%	20,292	10.4%	53.1%
Tennessee[3][4]	14,070	3.9%	-6,194	44%	30,402	8.3%	68.4%
Colorado[4]	32,569	8.3%	-14,241	44%	5,089	1.3%	13.5%
Oregon	26,246	10.5%	-11,003	42%	3,970	1.6%	13.1%
South Dakota	7,895	14.4%	-3,265	41%	1,284	2.3%	14.0%
South Carolina	36,939	15.3%	-15,261	41%	8,693	3.6%	19.0%
Montana	8,883	17.3%	-3,615	41%	2,512	4.9%	22.0%
Virginia	76,107	13.8%	-30,376	40%	12,313	2.2%	13.9%
Mississippi	23,532	20.6%	-8,852	38%	7,448	6.5%	24.0%
Texas	176,471	10.0%	-61,354	35%	44,476	2.5%	20.1%
North Carolina	76,283	13.0%	-25,832	34%	27,350	4.7%	26.4%

[1] The capital asset depreciation ratio measures the ratio of accumulated depreciation to gross depreciable assets.
[2] Audits for Arizona, California, Illinois, Iowa and New Mexico for fiscal 2020 were not available as of publication. Data is for 2019 for these states.
[3] These states use a modified approach, under GASB 34, for reporting certain capital assets, which allows the state to expense certain maintenance and preservation costs and not report depreciation on the respective assets.
[4] Capital assets for certain component units are excluded for these states because of state financial reporting.
Source: Moody's Investors Service

Endnotes

1 The capital asset depreciation ratio measures the ratio of accumulated depreciation to gross depreciable assets. This ratio provides more insight into debt needs for states with larger percentages of assets subject to depreciation relative to total assets.

2 A few states use this approach, but still depreciate more than 50% of their capital assets.

REPORT NUMBER 1276415

MOODY'S INVESTORS SERVICE

APPENDIX B

MOODY'S
INVESTORS SERVICE

SECTOR PROFILE
8 September 2020

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State Government – US

Medians - Pension and OPEB liabilities fell in fiscal 2019 ahead of jump in 2020

Adjusted net pension liabilities (ANPL) declined in states' fiscal 2019 reporting because of favorable investment returns in fiscal 2018. States typically report their pension funding positions with a one-year lag. Lower investment returns and discount rates in 2019 and 2020 will cause a jump in pension liabilities in states' fiscal 2020 and 2021 reporting. Other post-employment benefit (OPEB, primarily retiree healthcare) liabilities remained small compared with pension liabilities for most states in fiscal 2019. States with high pension liabilities tend to also have above-average OPEB liabilities. Economic and revenue disruptions caused by the coronavirus will worsen pension and OPEB affordability ratios over the next year.

» **Total state ANPL was $1.48 trillion in fiscal 2019, decreasing 5.1% from fiscal 2018 and representing 7.0% of US GDP and 121% of state revenue.** Favorable investment returns in fiscal 2018, the reference year for most states' fiscal 2019 pension reporting, and higher interest rates contributed to lower unfunded liabilities. The median ratio of ANPL to state GDP decreased to 4.8% in fiscal 2019 from 5.5% the year before.

» **Fiscal 2020 reporting of net pension liabilities will increase based on lower investment returns and interest rates in 2019.** The fiscal 2019 average return of 6.6% was below the average target return of 7.2%. The FTSE Pension Liability Index (FTSE PLI), which we use as a discount rate to value liabilities in our standard adjustments, decreased to 3.51% as of June 30, 2019 from 4.14% on June 30, 2018. We estimate aggregate state ANPL will increase to $1.76 trillion in fiscal 2020 reporting, an increase of 19% from fiscal 2019. Additional investment underperformance and lower discount rates for fiscal 2020 will drive another ANPL jump in the following reporting year.

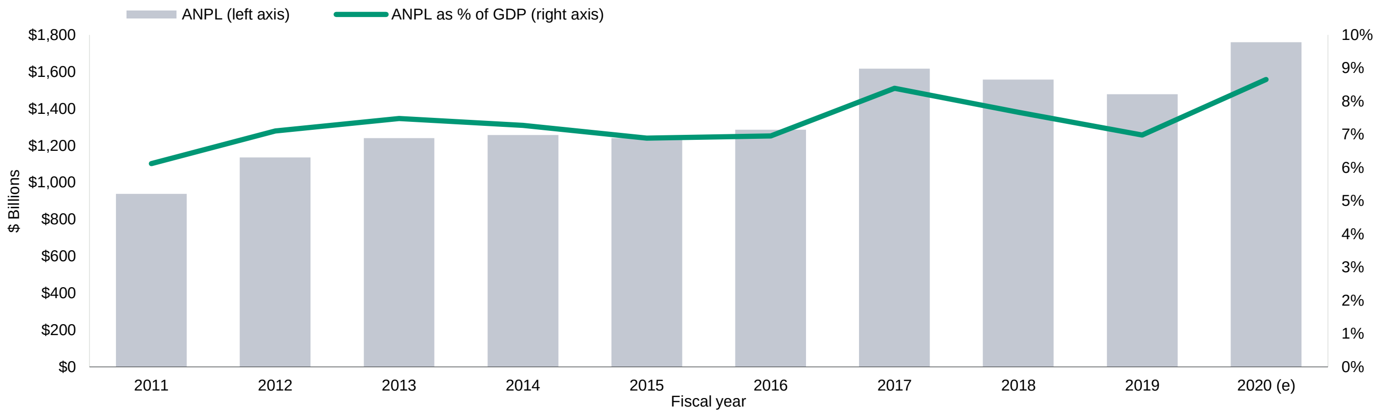
» **Over half of states contributed above our tread water indicator, or the cost to prevent reported unfunded pension liabilities from growing, in fiscal 2019.** The median total fixed costs, including debt service, pension and OPEB contributions, was 7.9% of own-source revenue. Using our tread water indicator rather than actual pension contributions, the median total fixed costs was slightly lower at 7.8%. Illinois (Baa3 negative), Connecticut (A1 stable) and New Jersey (A3 negative) had the highest fixed costs among states in fiscal 2019, all above 25% of own-source revenue on a tread water basis.

» **Total state adjusted net OPEB liabilities (ANOL) were $527 billion in fiscal 2019, decreasing by $62 billion or 10.6% from fiscal 2018.** Unfunded OPEB liabilities represented a large source of balance sheet leverage for some states and a very small obligation for others. The median ratio of ANOL to state GDP in fiscal 2019 was 1.0%.

Adjusted net pension liabilities

Exhibit 1

Total state pension liabilities declined in fiscal 2019 ahead of rebound in 2020



With the adoption of GASB 68, most state pension data is reported with a six to 12 month lag. Only a small number of states report plan liabilities (11 of 229 plans) without a lag. Fiscal 2020 ANPL was estimated based on data from fiscal 2019 pension plan financial statements.
Moody's forecasts a nominal US GDP decline of 5.1% to $20.3 trillion in 2020.
Sources: Moody's Investors Service, US Bureau of Economic Analysis, state audited financial reports and pension plan valuation reports

Total state ANPL declined in fiscal 2019 ahead of rebound in 2020

» In states' fiscal 2019 reporting, aggregate adjusted net pension liabilities (ANPL) totaled $1.48 trillion, or 121% of total state own-source revenue,[1] down from $1.56 trillion and 132%, respectively, in fiscal 2018.

» Aggregate ANPL declined to 7.0% of US GDP in fiscal 2019 from 7.7% in fiscal 2018, as the nominal aggregate ANPL declined by 5.1%.

» ANPL declined for 46 states in fiscal 2019. The largest percentage decreases occurred in Minnesota (Aa1 stable), Colorado (Aa1 stable) and Washington (Aaa stable), which all declined by more than 15%. The declines in Minnesota and Colorado were mostly driven by changes in benefits for certain plans.

» Based on lower investment returns and discount rates in fiscal 2019, we estimate aggregate state ANPL increased to $1.76 trillion, which will be reported by states on a lagged basis in their fiscal 2020 reporting. The fiscal 2020 aggregate state ANPL increased by an estimated 19% from fiscal 2019. We estimate state ANPL as a percent of US GDP increased to 8.7%.[2]

» ANPL increased for all 50 states in fiscal 2020 based on our estimates. Wisconsin (Aa1 stable), Alabama (Aa1 stable) and Texas (Aaa stable) had the largest percentage increases in ANPL, all at over 35%. These states all have pension measurement dates that are later than June 30, 2019; therefore, their estimated fiscal 2020 ANPLs incorporate lower discount rates.

Exhibit 2

Illinois' fiscal 2019 combined pension and OPEB burden was the highest among states, with Tennessee the lowest

		Fiscal 2019 Moody's adjusted net pension and OPEB liabilities and fixed costs				Tread water shortfall as % of own-source revenue
State	Rating	ANPL (billions)	ANOL (billions)	ANPL + ANOL as % of GDP	Total fixed costs as % of own-source revenue (tread water basis)	
Illinois	Baa3	$229.9	$51.3	31.3%	32.9%	5.6%
Connecticut	A1	$63.3	$19.1	28.8%	29.8%	(1.2%)
Alaska	Aa3	$11.0	$5.0	28.8%	6.5%	(0.1%)
New Jersey	A3	$112.5	$72.5	28.7%	25.2%	4.0%
Hawaii	Aa2	$13.6	$11.3	25.5%	24.7%	2.6%
Kentucky	Aa3	$41.3	$5.5	21.8%	23.1%	(0.4%)
Vermont	Aa1	$4.6	$2.1	19.1%	9.8%	(0.1%)
Delaware	Aaa	$5.4	$7.2	16.6%	12.5%	(0.5%)
Maryland	Aaa	$53.5	$15.0	16.0%	16.4%	0.4%
Maine	Aa2	$7.2	$3.5	15.9%	11.7%	(1.0%)
West Virginia	Aa2	$9.5	$2.6	15.6%	10.5%	(3.3%)
Massachusetts	Aa1	$77.2	$13.7	15.3%	20.5%	2.0%
Montana	Aa1	$6.7	$0.1	13.1%	6.6%	0.3%
South Carolina	Aaa	$28.0	$2.7	12.5%	9.4%	1.1%
Pennsylvania	Aa3	$79.0	$20.4	12.2%	13.7%	(0.1%)
Rhode Island	Aa2	$6.5	$0.6	11.1%	12.9%	(0.2%)
Michigan	Aa1	$39.7	$18.3	10.7%	10.6%	(0.8%)
Texas	Aaa	$131.4	$69.5	10.6%	11.1%	2.7%
California*	Aa2	$214.5	$94.7	10.0%	10.5%	(0.8%)
Kansas	Aa2	$16.3	$0.1	9.4%	9.7%	(2.6%)
New Mexico	Aa2	$7.9	$1.6	9.1%	6.5%	1.0%
Louisiana	Aa3	$12.8	$8.1	7.9%	10.3%	(1.1%)
Colorado	Aa1	$25.2	$1.4	6.8%	8.0%	1.7%
Arkansas	Aa1	$6.8	$2.2	6.8%	5.1%	0.1%
Mississippi	Aa2	$7.1	$0.2	6.1%	9.3%	0.7%
New York	Aa1	$38.8	$50.3	5.1%	10.8%	(0.3%)
Missouri	Aaa	$12.9	$4.0	5.1%	8.6%	0.4%
Indiana	Aaa	$17.8	$0.2	4.8%	5.5%	(1.7%)
Georgia	Aaa	$22.0	$7.4	4.8%	10.8%	(1.2%)
Alabama	Aa1	$7.6	$3.2	4.7%	6.5%	0.1%
Wyoming	NGO	$1.4	$0.4	4.4%	2.5%	(0.0%)
New Hampshire	Aa1	$2.0	$1.9	4.4%	7.3%	(0.2%)
Nevada	Aa1	$7.0	$0.8	4.4%	7.5%	0.6%
Oregon	Aa1	$10.6	$0.2	4.3%	7.6%	0.9%
Oklahoma	Aa2	$8.2	$0.3	4.1%	4.0%	(4.6%)
Washington	Aaa	$19.2	$4.8	4.0%	8.7%	(1.9%)
Virginia	Aaa	$16.7	$2.2	3.4%	7.4%	0.0%
Arizona*	Aa1	$11.6	$0.8	3.4%	6.0%	0.6%
Minnesota	Aa1	$12.3	$0.6	3.4%	4.4%	0.1%
South Dakota	Aaa	$1.7	$0.0	3.2%	3.5%	(0.3%)
North Dakota	Aa1	$1.7	$0.1	3.1%	2.0%	1.0%
Wisconsin*	Aa1	$9.9	$0.8	3.1%	6.2%	(0.5%)
Florida	Aaa	$22.0	$10.0	2.9%	5.5%	0.3%
Idaho	Aa1	$2.2	$0.0	2.8%	3.1%	(0.3%)
Ohio	Aa1	$16.2	$2.8	2.7%	7.1%	0.3%
Iowa	Aaa	$4.6	$0.4	2.6%	3.8%	(0.1%)
North Carolina	Aaa	$9.1	$5.2	2.4%	4.8%	(0.4%)
Utah	Aaa	$4.1	$0.1	2.2%	5.7%	(0.8%)
Nebraska	Aa1	$2.6	$0.0	2.1%	1.3%	(0.6%)
Tennessee*	Aaa	$5.9	$1.4	1.9%	3.7%	(0.4%)
Median		**$11.3**	**$2.4**	**5.6%**	**7.8%**	**(0.1%)**

ANPL stands for adjusted net pension liability. ANOL stands for adjusted net OPEB liability. NGO stands for no general obligation rating. GDP refers to state GDP.

*Total fixed costs (tread water basis) and tread water shortfall for these states reflect fiscal 2018 pension tread water figures because of insufficient information to calculate pension tread water indicator for fiscal 2019. See page 8 for a definition of the tread water indicator. California's ANOL reflects fiscal 2018 figures also because of insufficient information for fiscal 2019.

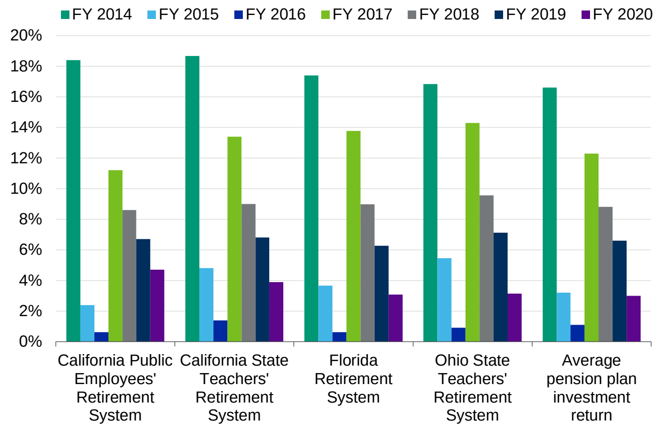
Sources: Moody's Investors Service, state and pension plan financial statements

Pension plan investment returns

Exhibit 3

Investment returns fell for the third year in a row

Investment returns by June 30 fiscal year-end for select pension plans



The average pension plan investment return is based on a 56-plan representative sample for fiscal years 2014 to 2019. The fiscal 2020 average is estimated.

Sources: Retirement systems and Moody's Investors Service

Investment returns fell below pension plan targets in fiscal 2019 and 2020

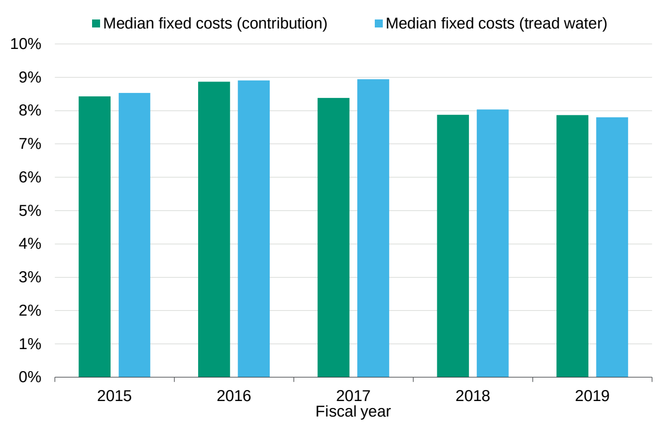
- Favorable investment returns in fiscal 2018 drove the decline of pension liabilities in states' fiscal 2019 reporting.
- Investment returns decreased for the third year in a row in fiscal 2020 and fell below pension plan targets in both fiscal 2019 and 2020.
- The average pension plan investment return[3] was 6.6% in fiscal 2019, below the average target return of 7.2%.
- Most pension plans will have investment returns between 2% to 4% in fiscal 2020. Wilshire Associates and Milliman both estimate investment returns ranging from 3% to 4%.
- The FTSE Pension Liability Index (FTSE PLI), which we use as a discount rate to value liabilities in our standard adjustments, decreased to 3.51% as of June 30, 2019 from 4.14% in June 2018. It declined again to 2.70% as of June 30, 2020.[4]

Total fixed costs

Exhibit 4

Fixed costs held steady in fiscal 2019

50-state median fixed costs (debt, pension and OPEB obligations) on a contribution and tread water basis as % of own-source revenue



Fiscal 2019 median fixed costs (tread water) is pro forma based on the 41 states with complete tread water data for the year. See page 8 for a definition of the tread water indicator.

Sources: Moody's Investors Service, state and pension plan financial statements

Over half of states contributed above the tread water indicator in fiscal 2019

- Fiscal 2019 fixed costs (debt, pension and OPEB obligations) as a percent of own-source revenue on a tread water basis declined for 32 states. Revenue losses caused by coronavirus-driven economic disruptions will worsen affordability ratios in fiscal 2020.
- Fixed costs still weigh heavily on many states, especially Illinois, Connecticut and New Jersey, where fiscal 2019 fixed costs on a tread water basis exceeded 25% of own-source revenue.[5]
- Nebraska (Aa1 stable), North Dakota (Aa1 stable) and Wyoming have the lowest fixed costs on a tread water basis at less than 3% of own-source revenue.

Inclusion of unrecognized teacher liabilities provides alternate way to compare pension burdens

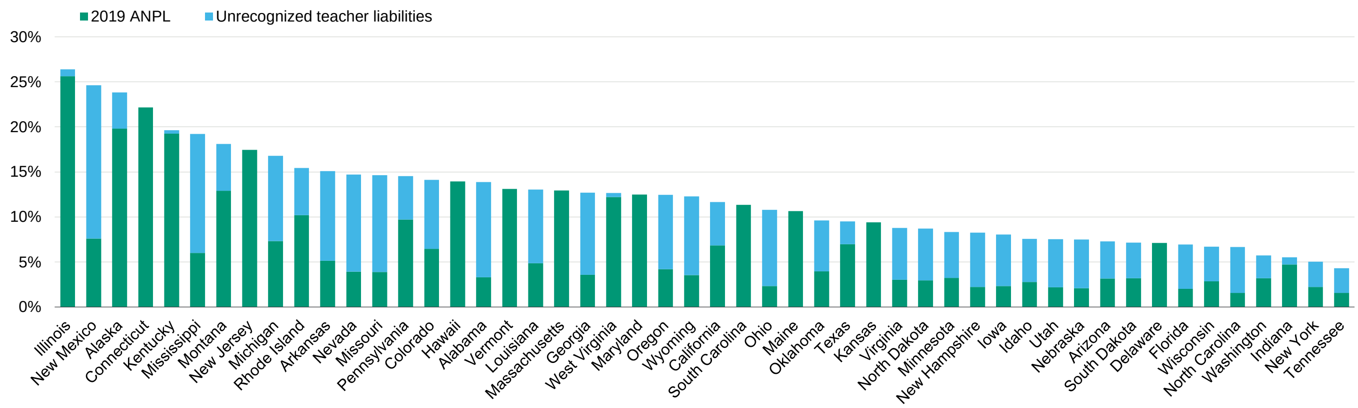
Given all states provide significant aid to school districts, including unrecognized teacher liabilities as part of a state's overall pension burden provides an alternate way to compare burdens across states. Exhibit 5 includes currently unrecognized portions of teacher liabilities as part of each state's total pension liability. For states that already report a 100% share of teacher liabilities in their financial statements, no additional teacher liability was added to their current pension burden. For states that have a separate teacher pension system and currently report a proportionate share of the liability, the reported share was subtracted from the state's liability, and then the full amount of the teacher liability was added back to the state's liability to determine the state's full pension burden.

Some states do not have a separate teacher retirement system. Instead, teachers participate in the state's employees' retirement system. To determine the currently unrecognized teacher liability for these states, the share of the employees' retirement system liability related to school districts was estimated based on the percentage of total plan members that come from public schools.[6] For Wisconsin, the percentage was based on the share of total covered payroll related to school districts.

Exhibit 5

Teacher liabilities significantly increase pension burdens for some states

Fiscal 2019 ANPL including currently unrecognized teacher liabilities as a percent of state GDP



ANPL stands for adjusted net pension liability.

Sources: Moody's Investors Service, state and pension plan financial statements and US Bureau of Economic Analysis

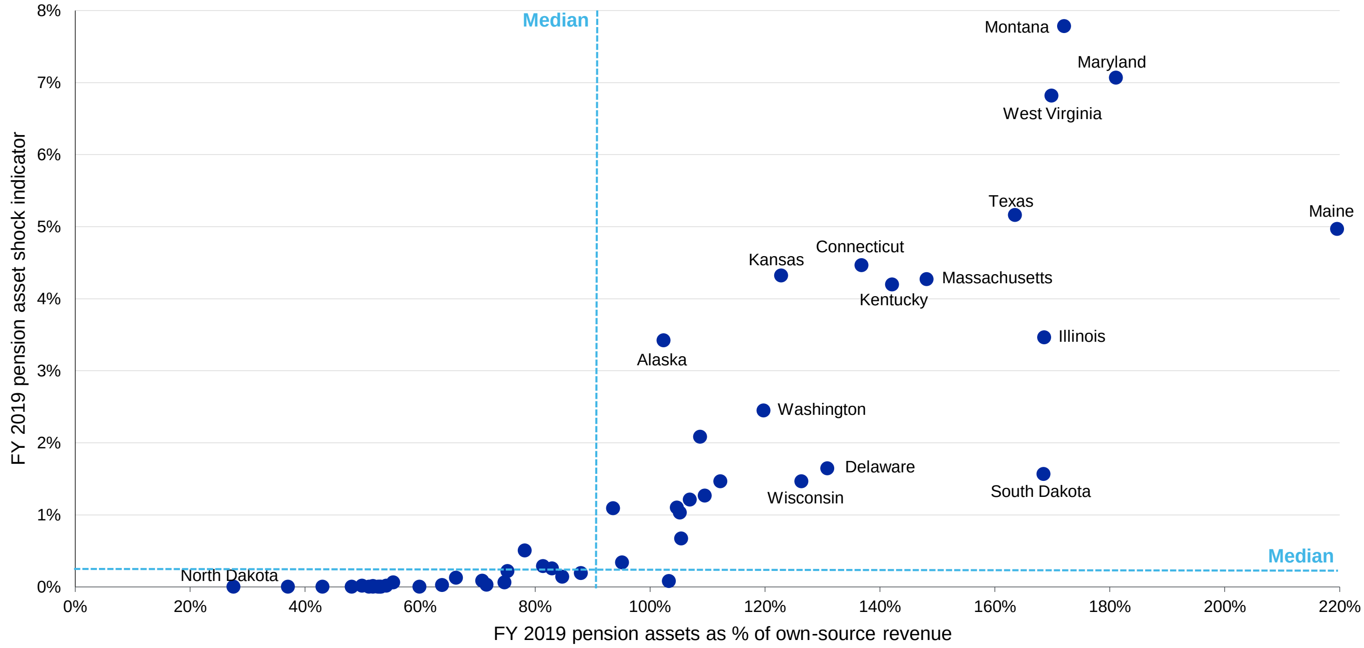
Teacher liabilities significantly increase pension burdens for some states

- Some states make direct on-behalf payments to teacher pension systems. However, K-12 public education is one of the key priorities of states, and all states provide significant aid to school districts. According to the National Association of State Budget Officers, elementary and secondary education accounted for 19.5% of total state expenditures in fiscal 2019.
- Currently, we allocate pension liabilities based on states' reported shares, including for teacher retirement systems. About a dozen states already account for the full teacher liability, or nearly the full liability, in their pension burdens. Other states account for only a portion or none at all.
- New Mexico's (Aa2 stable) fiscal 2019 ANPL increases to a significant 24.6% of state GDP from 7.6% when including currently unrecognized teacher liabilities.
- States that have high pension burdens because they already include most or all of teacher pension liabilities in their pension burdens still have the highest pension burdens among states even when including the full teacher liability for all states.

Pension assets

Exhibit 6

States with larger relative size of pension assets are more sensitive to investment losses



See Appendix on page 9 for explanation of adjustments made to own-source governmental revenue for certain states.
Source: Moody's Investors Service

States' risk of pension investment losses declined in fiscal 2019

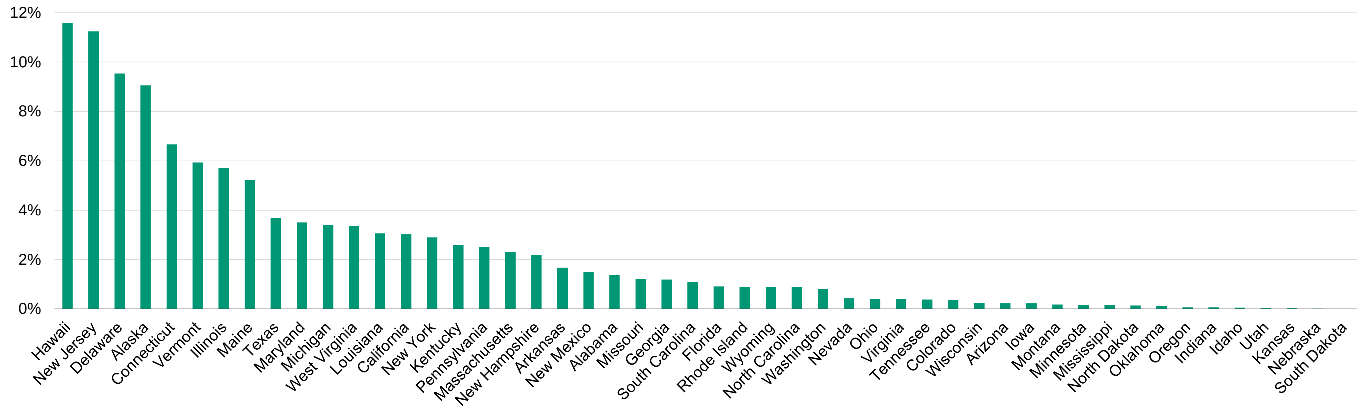
- Pension assets are often concentrated in volatile investments and are large relative to budgets for some states, presenting risk that investment shocks will saddle state budgets with significant new costs to make up for lost pension funds.
- We gauge the risk of pension investment losses using our pension asset shock indicator or PASI (see definition on page 8).
- The fiscal 2019 50-state median PASI declined to 0.3% from 1.1% the prior year. Our 2019 risk-return map tends to have lower volatility for a given return compared with our 2018 risk-return map, which contributed to lower PASIs for all states.
- The overall risk of pension investment losses to the state sector remains relatively low compared to the fiscal 2018 median PASI for the 50 largest local governments, which was 8%.
- The fiscal 2019 PASI was higher than 5% for only five states and was less than 1% for more than half of states.
- While Maine (Aa2 stable) continues to have the highest ratio of pension assets to revenue in fiscal 2019 at over 200%, Montana (Aa1 stable), Maryland (Aaa stable), West Virginia (Aa2 stable) and Texas (Aaa stable) all had higher PASIs because of higher estimated portfolio volatility. We estimate volatility based on a portfolio's assumed rate of investment return.
- Texas' PASI rank dropped to fourth highest among states in fiscal 2019 from the highest the year before because the state lowered the assumed rates of return on their pension systems, which in turn lowered our volatility estimate.
- Several states including New Jersey, Rhode Island (Aa2 stable), Colorado and Missouri (Aaa stable) have large pension systems with less than 10 years of asset/benefit coverage and negative non-investment cash flow (NICF) worse than -4% of assets (see Exhibit 20 in the Appendix).

Adjusted net OPEB liabilities

Exhibit 7

Adjusted net OPEB liabilities vary widely across states

Fiscal 2019 ANOL as a % of state GDP



ANOL stands for adjusted net OPEB liability.
California's ANOL reflects fiscal 2018 figures because of insufficient information for fiscal 2019.
Source: Moody's Investors Service

Adjusted net OPEB liabilities vary widely across states

- Unfunded OPEB liabilities represent a large source of balance sheet leverage for some states and a very small obligation for others.
- The fiscal 2019 50-state median adjusted net OPEB liability (ANOL) as a percent of state GDP was 1.0%.
- Hawaii (Aa2 stable) had the largest OPEB burden with its fiscal 2019 ANOL representing 11.6% of state GDP. Many states that have high pension burdens, such as New Jersey, Hawaii, Connecticut, Vermont (Aa1 stable) and Illinois, also have the highest OPEB burdens.
- South Dakota (Aaa stable) has no OPEB liability given that retiree health benefits are fully paid by plan members. Likewise, a number of other states have essentially no OPEB liability because they only provide retirees with the option to purchase health and other insurance under the states' group rates.
- OPEB liabilities are typically lower than pension liabilities for states. States also generally have more legal flexibility to change OPEB benefits versus pension benefits. However, significant changes to OPEB benefits may be politically difficult.

Explanation of analytical adjustments, measurement date alignment and key pension and OPEB metrics

GASB 67 and 68 enable analytical refinements for pensions

GASB 67 and 68 introduced significant changes in reporting of pension liabilities beginning in fiscal reporting year 2015, which increased transparency. Governments now disclose their proportionate share of cost-sharing liabilities, which we previously estimated using pro rata shares of plan contributions. The rules also require reporting the sensitivity of plan net pension liabilities to 100-basis-point changes in the discount rate, enabling us to more precisely estimate plan-specific liability adjustments. Governments and/or their plans now also report "service cost," also referred to as "normal cost" for actuarial funding. Other changes include the requirement that some poorly funded plans report liabilities based on a blended discount rate, and placement of the net pension liability on government-wide and business-type activities balance sheets.

GASB 74 and 75 enable analytical refinements for OPEB

GASB 74 and 75 provide disclosure for OPEB liabilities similar to the disclosure for pension liabilities beginning in fiscal reporting year 2018. Governments now disclose their proportionate share of the cost-sharing liabilities and the sensitivity of plan net OPEB liabilities to 100-basis-point changes in the discount rate, as is required for pensions.

Tread water indicator forms contribution benchmark

The tread water indicator is the amount that would cover interest on beginning-of-year net pension liability (NPL), plus employer service cost accruals during the year, based on reported assumptions. If all plan assumptions are met, including investment returns and demographic changes, a contribution equal to the tread water indicator would result in a year-end NPL equal to its beginning-of-year value.

Pension and OPEB measurement dates often misaligned with government reporting years

GASB 68 and 75 allow governments to report net pension and OPEB liabilities measured up to one year prior to their own fiscal year-end. Our balance sheet adjustments reflect liabilities as of the measurement date(s) reported in the government's financial statements. Nearly every state reported liabilities and assets in their 2019 financial statements based on a fiscal 2018 measurement date. Only 11 pension plans were reported based on a 2019 measurement date, most of which were single-employer plans.

Measurement date misalignment with government fiscal years complicates income statement metrics. Pension and OPEB contributions are reported based on the government fiscal year. However, the elements of the tread water indicator may not be. For cost-sharing plans, our tread water indicator matches the government fiscal year with the plan fiscal year. In some circumstances, the plan fiscal year-end does not align with the government's. For single-employer and agent plans, reported service cost and interest may lag by up to 12 months. As a result, tread water data for the government reporting year (2019 in this report) is incomplete.

Pension asset shock indicator (PASI) measures risks from asset volatility

The pension asset shock indicator estimates the probability of a pension investment loss amounting to 25% or more of a government's revenue. The indicator is a function of the size of pension assets relative to government revenue and estimated annual volatility of the asset portfolio. We use standard capital market assumptions to estimate the volatility for each pension plan based on its assumed investment rate of return. Higher assumed rates of return increase the probability of losses.

Negative non-investment cash flow, investment volatility hinders pension asset accumulation

Non-investment cash flow is the contributions from governments and employees to a pension system in a given year, less benefits and expenses. Many US public pension systems are maturing as their proportion of retirees to active members rises, meaning that their annual benefit outflows often exceed contributions — a situation known as negative non-investment cash flow (NICF). This cash flow dynamic exacerbates the risk of investment allocations that are weighted heavily toward classes with high return expectations but also high volatility risk. Should investment losses occur, NICF will worsen in comparison to system assets, making it more difficult for systems to accumulate assets and improve funding without higher government contributions.

Appendix

Pension and OPEB tables and comparative measures

The following tables summarize our calculations of key pension and OPEB metrics and rank the states accordingly. Pension and OPEB burdens are one of many factors we use to determine state credit quality. Our analysis of pension and OPEB risk also considers measures of the strength of annual funding contributions.

The following adjustments have been made to the data:

- In certain cases, state shares prior to fiscal 2015 have been adjusted to match fiscal 2015 shares reported under GASB 67 and 68.
- The tread water calculation was made only for those states whose pension plan financials were available for 2019.
- In cases where a pension plan amounted to less than 5% of a state's total adjusted net pension liability, but the pension plan's financials were not available for fiscal 2019, the tread water metric for 2019 was calculated excluding the missing plan's tread water indicator. This was the case for Alaska (Aa3 negative), Delaware (Aaa stable), Nebraska, Nevada (Aa1 negative), and Texas.
- Alaska's one-time extraordinary contribution of $2.7 billion in fiscal 2015 was backed out of the state's pension contribution that year to provide a more consistent time series trend. Additionally, Alaska's own-source governmental revenue incorporates a five-year rolling average of permanent fund investment and interest earnings, rather than single-year earnings.
- Additional adjustments to own-source governmental revenue have been made for Delaware, Massachusetts (Aa1 stable) and Washington to reflect inclusion or exclusion of certain funds from governmental revenue.
- For California (Aa2 stable), the state's fiscal 2019 CAFR was not available at the time of publication of this report. The state's fiscal 2019 ANPL was determined based on fiscal 2018 pension plan actuarial reports. Fiscal 2019 ANOL, pension tread water and own-source revenue figures reflect fiscal 2018 data because of insufficient information to calculate these metrics for fiscal 2019. California's fiscal 2018 CAFR provides all information required to calculate the ANOL with the exception of the discount rate sensitivity. We have applied the duration of the largest plan in which the state participates (the Retiree Health Benefits Program - Unfunded Plan) to calculate the change in the net OPEB liability as a result of a 1% decrease in the discount rate. In addition, the plan information reported by the state consists of 53 OPEB plans, most of which apply blended and single discount rates within specified ranges. Given the various discount rates across these plans, we have applied the largest of all of the discount rates provided (7.28%).
- For Colorado, the state's allocation of the School Division Trust Fund in fiscal 2018 was estimated to reflect the state's direct funding of school pensions for the first time in fiscal 2019.
- States' fiscal 2020 estimated ANPL was based on information from fiscal 2019 pension plan financial statements. We based the estimates on states' proportionate share of cost-sharing liabilities reported in their fiscal 2019 CAFRs. If the fiscal 2019 pension plan financial statements were not available, we used fiscal 2018 plan information and the FTSE PLI discount rate for the 2019 measurement date to calculate the ANPL.

Exhibit 8
Selected characteristics of state pension plans

State	Rating	# of pension plans	Measurement date for largest plan	Reported discount rate for largest plan	Aggregate reported net pension liability ($000) **	Moody's adjusted discount rate for largest plan	State share for largest plan
Alabama	Aa1	3	9/30/2018	7.70%	3,450,850	4.17%	100.0%
Alaska	Aa3	4	6/30/2018	8.00%	4,205,511	4.14%	60.9%
Arizona	Aa1*	4	6/30/2018	7.50%	4,946,036	4.14%	21.9%
Arkansas	Aa1	5	6/30/2018	7.15%	2,238,513	4.14%	65.8%
California	Aa2	9	6/30/2018	7.00%	88,356,751	4.14%	100.0%
Colorado	Aa1*	4	12/31/2018	7.25%	13,531,165	4.22%	96.0%
Connecticut	A1	3	6/30/2018	6.90%	34,820,959	4.14%	98.8%
Delaware	Aaa	7	6/30/2018	7.00%	1,597,994	4.14%	89.7%
Florida	Aaa	3	6/30/2018	7.00%	7,709,642	4.14%	17.7%
Georgia	Aaa	8	6/30/2018	7.30%	7,361,402	4.14%	90.6%
Hawaii	Aa2	1	6/30/2018	7.00%	6,837,450	4.14%	56.1%
Idaho	Aa1*	2	6/30/2018	7.05%	384,845	4.14%	24.8%
Illinois	Baa3	5	6/30/2018	7.00%	136,627,254	4.14%	96.3%
Indiana	Aaa*	8	6/30/2018	6.75%	12,020,427	4.14%	100.0%
Iowa	Aaa*	4	6/30/2018	7.00%	1,244,035	4.14%	16.6%
Kansas	Aa2*	3	6/30/2018	7.75%	6,632,284	4.14%	100.0%
Kentucky	Aa3	6	6/30/2018	7.50%	24,664,199	4.14%	97.1%
Louisiana	Aa3	7	6/30/2018	7.65%	6,182,012	4.14%	80.2%
Maine	Aa2	3	6/30/2018	6.75%	2,328,426	4.14%	97.4%
Maryland	Aaa	2	6/30/2018	7.40%	20,606,429	4.14%	93.8%
Massachusetts	Aa1	3	6/30/2018	7.35%	38,865,653	4.14%	100.0%
Michigan	Aa1	6	9/30/2019	6.08%	19,991,740	3.13%	38.7%
Minnesota	Aa1	9	6/30/2018	7.50%	3,040,544	4.14%	74.5%
Mississippi	Aa2	3	6/30/2018	7.75%	3,037,391	4.14%	17.2%
Missouri	Aaa	3	6/30/2018	7.25%	6,731,826	4.14%	82.8%
Montana	Aa1	9	6/30/2018	7.65%	2,377,360	4.14%	64.5%
Nebraska	Aa1*	6	6/30/2018	7.50%	482,801	4.14%	17.4%
Nevada	Aa1	3	6/30/2018	7.50%	2,261,233	4.14%	16.5%
New Hampshire	Aa1	2	6/30/2018	7.25%	930,984	4.14%	18.4%
New Jersey	A3	7	6/30/2018	4.86%	95,657,889	4.14%	100.0%
New Mexico	Aa2	5	6/30/2018	7.25%	3,392,440	4.14%	52.7%
New York	Aa1	2	3/31/2018	7.00%	3,056,141	3.96%	45.4%
North Carolina	Aaa	6	6/30/2018	7.00%	2,379,826	4.14%	21.8%
North Dakota	Aa1*	4	6/30/2018	6.32%	860,032	4.14%	50.4%
Ohio	Aa1	4	12/31/2018	7.20%	6,530,639	4.22%	20.9%
Oklahoma	Aa2*	6	7/1/2018	7.50%	1,804,101	4.14%	26.5%
Oregon	Aa1	1	6/30/2018	7.20%	3,193,464	4.14%	21.1%
Pennsylvania	Aa3	2	6/30/2018	7.25%	43,809,328	4.14%	55.4%
Rhode Island	Aa2	7	6/30/2018	7.00%	3,619,593	4.14%	42.7%
South Carolina	Aaa	5	6/30/2018	7.25%	13,947,034	4.14%	57.6%
South Dakota	Aaa*	2	6/30/2018	6.50%	(847)	4.14%	21.1%
Tennessee	Aaa	2	6/30/2018	7.25%	1,099,610	4.14%	69.8%
Texas	Aaa	6	8/31/2018	6.91%	58,757,564	4.07%	67.4%
Utah	Aaa	8	12/31/2018	6.95%	1,170,261	4.22%	23.0%
Vermont	Aa1	2	6/30/2018	7.50%	2,264,101	4.14%	100.0%
Virginia	Aaa	4	6/30/2018	7.00%	6,382,981	4.14%	100.0%
Washington	Aaa	10	6/30/2018	7.40%	477,872	4.14%	50.4%
West Virginia	Aa2	5	6/30/2018	7.50%	3,110,815	4.14%	94.9%
Wisconsin	Aa1	1	12/31/2018	7.00%	985,538	4.22%	27.7%
Wyoming	NGO	5	12/31/2018	7.00%	644,088	4.22%	18.7%

*State issuer ratings
**Represents state's share only for every plan
NGO stands for no general obligation rating.
Sources: Moody's Investors Service, state financial statements

Exhibit 9

Moody's state adjusted net pension liability (ANPL) rankings ($000)

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020 (estimate)
1	Illinois	191,646,293	200,628,979	250,135,970	240,759,774	229,886,900	260,986,363
2	California	171,500,601	175,995,732	234,042,082	230,803,077	214,491,523	249,709,409
3	Texas	123,858,729	108,618,781	140,253,456	132,760,832	131,402,045	181,603,926
4	New Jersey	90,206,661	94,969,351	115,964,089	113,845,643	112,546,910	132,682,279
5	Pennsylvania	63,133,969	69,552,310	80,549,468	79,779,435	78,996,495	86,753,848
6	Massachusetts	53,989,121	65,193,204	80,449,143	81,227,853	77,151,349	101,156,578
7	Connecticut	52,942,059	53,742,607	71,223,221	62,059,644	63,348,693	73,926,513
8	Maryland	45,790,041	46,208,447	67,240,080	59,264,776	53,509,910	60,903,453
9	Kentucky	35,807,730	37,424,333	46,968,436	45,916,658	41,328,094	47,620,920
10	Michigan	33,311,230	36,819,521	37,142,225	37,993,798	39,654,044	46,813,416
11	New York	43,505,658	42,913,661	43,640,389	39,166,292	38,812,223	46,504,973
12	South Carolina	22,597,243	22,880,188	28,872,871	30,364,902	27,954,094	30,924,853
13	Colorado	19,647,727	19,782,553	22,642,431	30,107,806	25,168,742	27,924,675
14	Georgia	19,119,624	19,630,715	26,391,116	23,986,014	21,986,315	27,059,574
15	Florida	16,643,646	17,948,972	25,395,230	23,218,268	21,972,968	26,255,530
16	Washington	22,271,273	23,362,109	23,975,681	22,809,640	19,184,264	24,062,513
17	Indiana	16,831,561	18,578,385	21,256,728	20,346,062	17,771,050	19,089,992
18	Virginia	15,584,225	15,991,114	20,140,861	18,318,199	16,679,109	20,238,462
19	Kansas	14,701,823	16,152,108	17,607,414	17,341,499	16,308,038	19,105,438
20	Ohio	13,623,862	13,638,720	15,680,805	16,365,511	16,229,714	18,254,556
21	Hawaii	8,199,864	8,391,291	14,351,491	13,950,603	13,558,845	16,506,695
22	Missouri	10,377,254	10,889,865	14,269,258	13,764,307	12,938,750	14,703,803
23	Louisiana	11,702,315	12,174,157	15,079,099	13,788,473	12,812,243	15,073,916
24	Minnesota	10,979,553	12,017,442	18,252,678	15,973,832	12,273,462	14,896,420
25	Arizona	9,347,944	10,326,759	11,688,286	11,903,465	11,552,068	13,493,544
26	Alaska	13,536,256	10,869,964	11,983,989	12,516,054	10,964,439	11,738,212
27	Oregon	4,782,189	7,150,395	11,954,071	11,127,973	10,618,750	13,167,398
28	Wisconsin	4,164,449	9,078,685	9,750,686	11,318,107	9,874,769	14,191,576
29	West Virginia	9,011,541	9,140,297	12,082,693	10,602,503	9,541,291	10,860,619
30	North Carolina	5,867,503	6,497,937	10,391,839	9,421,407	9,145,550	11,303,429
31	Oklahoma	7,469,424	8,129,899	11,325,615	9,282,282	8,158,141	10,222,719
32	New Mexico	5,906,607	6,376,808	8,884,611	7,353,640	7,890,987	10,166,852
33	Alabama	7,616,339	7,970,431	9,281,406	8,642,954	7,638,354	10,999,674
34	Maine	6,372,262	6,661,914	8,977,858	8,256,121	7,192,450	7,361,467
35	Mississippi	6,139,549	6,604,115	8,198,597	7,573,864	7,124,379	8,482,860
36	Nevada	6,001,059	6,117,991	7,902,307	7,292,773	6,989,253	8,339,378
37	Arkansas	5,532,181	5,935,199	8,085,386	7,318,307	6,821,936	8,314,912
38	Montana	4,751,010	4,866,079	6,090,280	6,212,965	6,741,063	7,785,402
39	Rhode Island	5,120,129	5,671,589	6,741,527	6,780,891	6,491,384	6,953,802
40	Tennessee	4,725,732	5,091,049	6,905,551	6,446,554	5,944,833	7,166,734
41	Delaware	3,859,643	3,406,059	6,373,422	5,831,614	5,361,945	6,787,557
42	Vermont	3,689,889	4,034,179	5,123,076	4,882,266	4,563,037	5,735,062
43	Iowa	3,737,767	4,099,809	5,319,983	4,776,209	4,552,905	5,062,873
44	Utah	4,312,097	4,003,770	4,187,458	4,497,709	4,119,495	4,868,132
45	Nebraska	2,121,372	2,219,456	2,870,530	2,650,498	2,636,775	3,401,956
46	Idaho	1,671,901	1,843,160	2,768,296	2,580,465	2,237,549	2,739,556
47	New Hampshire	1,686,124	1,784,268	2,370,644	2,247,106	1,984,320	2,285,630
48	South Dakota	1,581,368	1,694,309	2,777,714	1,867,818	1,713,172	2,253,960
49	North Dakota	1,255,244	1,264,586	1,831,005	1,792,617	1,681,686	2,063,147
50	Wyoming	1,300,956	1,341,246	1,438,478	1,466,636	1,403,893	1,627,279
	TOTAL	1,239,532,597	1,285,684,496	1,616,829,533	1,558,555,695	1,478,910,201	1,760,131,836
	MEAN	24,790,652	25,713,690	32,336,591	31,171,114	29,578,204	35,202,637
	MEDIAN	9,179,742	9,733,528	12,033,341	12,209,760	11,258,253	13,842,560

Some historical ANPL figures have been updated and may not match prior published reports.
Source: Moody's Investors Service

Exhibit 10

Moody's ANPL as a % of own-source governmental revenue

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
1	Illinois	434%	487%	601%	505%	445%
2	Connecticut	289%	285%	360%	286%	284%
3	Kentucky	261%	265%	325%	309%	265%
4	New Jersey	227%	249%	290%	275%	255%
5	Massachusetts	172%	202%	247%	227%	201%
6	Maryland	200%	194%	281%	237%	198%
7	Montana	147%	153%	195%	185%	179%
8	South Carolina	177%	173%	207%	203%	175%
9	Pennsylvania	154%	171%	185%	172%	166%
10	Texas	189%	162%	196%	170%	161%
11	Colorado	143%	140%	159%	196%	153%
12	Hawaii	118%	115%	189%	165%	151%
13	Kansas	168%	182%	193%	164%	148%
14	Maine	141%	145%	189%	168%	138%
15	Rhode Island	121%	131%	154%	148%	135%
16	West Virginia	134%	142%	185%	156%	126%
17	Alaska	182%	208%	168%	154%	122%
18	Michigan	107%	115%	113%	109%	120%
19	Vermont	106%	113%	141%	128%	117%
20	California	106%	107%	136%	120%	112%
21	Nevada	122%	112%	136%	125%	111%
22	Missouri	80%	82%	104%	99%	91%
23	Louisiana	92%	94%	107%	94%	84%
24	Indiana	91%	99%	110%	99%	80%
25	Delaware	68%	59%	106%	92%	80%
26	Georgia	86%	82%	104%	91%	80%
27	Mississippi	70%	74%	95%	86%	77%
28	South Dakota	75%	77%	116%	76%	68%
29	New Mexico	65%	79%	87%	70%	68%
30	Arkansas	59%	63%	85%	75%	66%
31	Washington	98%	96%	91%	79%	66%
32	Oklahoma	69%	80%	107%	81%	63%
33	Arizona	61%	66%	71%	69%	61%
34	Oregon	38%	48%	82%	70%	60%
35	Virginia	62%	62%	75%	63%	56%
36	Alabama	65%	65%	74%	66%	55%
37	New Hampshire	50%	49%	66%	59%	51%
38	Ohio	43%	43%	49%	50%	47%
39	Wisconsin	22%	47%	50%	56%	46%
40	Wyoming	43%	50%	45%	53%	46%
41	Minnesota	43%	46%	68%	55%	42%
42	Florida	36%	38%	52%	46%	41%
43	Idaho	31%	40%	54%	47%	40%
44	Nebraska	37%	38%	50%	45%	40%
45	Utah	53%	49%	47%	46%	40%
46	New York	47%	47%	48%	40%	39%
47	Iowa	37%	39%	49%	43%	39%
48	North Carolina	22%	23%	36%	31%	29%
49	Tennessee	27%	28%	36%	32%	29%
50	North Dakota	20%	31%	39%	33%	27%
	TOTAL	118%	122%	147%	132%	121%
	MEAN	106%	111%	135%	121%	107%
	MEDIAN	83%	82%	107%	91%	80%

Certain states' own-source governmental revenue has been adjusted. See page 9 for more information.
Sources: Moody's Investors Service, state financial statements

Exhibit 11

Moody's ANPL per capita ($)

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
1	Illinois	14,937	15,685	19,616	18,964	18,181
2	Connecticut	14,789	15,051	19,973	17,410	17,803
3	Alaska	18,919	15,099	16,679	17,488	15,397
4	New Jersey	10,183	10,717	13,065	12,825	12,684
5	Massachusetts	7,952	9,561	11,736	11,810	11,202
6	Hawaii	5,969	6,081	10,417	10,144	9,893
7	Kentucky	8,124	8,464	10,589	10,331	9,285
8	Maryland	7,689	7,744	11,230	9,876	8,903
9	Vermont	5,907	6,475	8,213	7,827	7,319
10	Montana	4,627	4,692	5,806	5,877	6,328
11	Pennsylvania	4,940	5,444	6,302	6,235	6,174
12	Rhode Island	4,868	5,388	6,409	6,434	6,153
13	Kansas	5,096	5,589	6,099	6,003	5,642
14	Delaware	4,116	3,603	6,685	6,062	5,526
15	South Carolina	4,658	4,652	5,795	6,022	5,473
16	California	4,424	4,512	5,971	5,872	5,450
17	Maine	4,802	5,010	6,733	6,172	5,356
18	West Virginia	4,895	4,995	6,653	5,879	5,327
19	Texas	4,528	3,907	4,977	4,656	4,550
20	Colorado	3,628	3,593	4,061	5,324	4,398
21	Michigan	3,355	3,702	3,726	3,807	3,972
22	New Mexico	2,843	3,066	4,271	3,534	3,784
23	Louisiana	2,518	2,612	3,241	2,969	2,766
24	Indiana	2,548	2,801	3,194	3,040	2,641
25	Washington	3,133	3,227	3,253	3,053	2,537
26	Oregon	1,192	1,749	2,887	2,663	2,519
27	Wyoming	2,233	2,308	2,498	2,553	2,439
28	Mississippi	2,065	2,220	2,756	2,553	2,405
29	Nevada	2,101	2,105	2,671	2,418	2,277
30	Arkansas	1,861	1,989	2,699	2,436	2,265
31	North Dakota	1,681	1,692	2,449	2,387	2,228
32	Minnesota	2,004	2,177	3,280	2,850	2,177
33	Missouri	1,713	1,794	2,343	2,255	2,115
34	Georgia	1,890	1,917	2,550	2,296	2,083
35	Oklahoma	1,920	2,080	2,895	2,367	2,072
36	New York	2,216	2,189	2,231	2,008	1,998
37	Virginia	1,889	1,928	2,412	2,184	1,981
38	South Dakota	1,858	1,971	3,195	2,134	1,944
39	Wisconsin	723	1,574	1,685	1,950	1,697
40	Arizona	1,372	1,492	1,664	1,668	1,591
41	Alabama	1,574	1,643	1,909	1,773	1,562
42	New Hampshire	1,263	1,331	1,759	1,662	1,461
43	Iowa	1,198	1,310	1,694	1,518	1,444
44	Ohio	1,174	1,173	1,346	1,403	1,389
45	Nebraska	1,126	1,169	1,503	1,381	1,368
46	Utah	1,449	1,318	1,352	1,428	1,287
47	Idaho	1,015	1,098	1,615	1,477	1,255
48	Florida	826	874	1,215	1,096	1,026
49	North Carolina	591	647	1,022	916	880
50	Tennessee	719	768	1,032	955	873
	TOTAL	3,889	4,005	5,004	4,798	4,532
	MEAN	3,942	4,044	5,147	4,919	4,622
	MEDIAN	2,376	2,460	3,218	2,910	2,528

Sources: Moody's Investors Service, US Census Bureau

Exhibit 12

Moody's ANPL as a % of personal income

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
1	Illinois	28.9%	29.9%	36.3%	33.2%	30.8%
2	Alaska	31.9%	26.2%	28.5%	28.6%	24.1%
3	Connecticut	21.6%	21.5%	27.6%	22.7%	22.5%
4	Kentucky	20.7%	21.3%	25.7%	24.2%	21.0%
5	New Jersey	16.6%	17.1%	20.1%	18.7%	17.9%
6	Hawaii	11.7%	11.5%	19.0%	17.7%	16.7%
7	Massachusetts	12.5%	14.6%	17.2%	16.4%	14.9%
8	Maryland	13.4%	13.0%	18.4%	15.5%	13.5%
9	Vermont	11.9%	12.7%	15.8%	14.4%	12.9%
10	Montana	10.6%	10.7%	12.8%	12.3%	12.9%
11	West Virginia	13.3%	13.5%	17.2%	14.4%	12.6%
12	South Carolina	11.7%	11.4%	13.7%	13.7%	12.0%
13	Rhode Island	9.7%	10.6%	12.2%	11.7%	10.8%
14	Maine	11.0%	11.2%	14.4%	12.6%	10.5%
15	Pennsylvania	9.8%	10.5%	11.9%	11.1%	10.5%
16	Kansas	10.7%	11.7%	12.4%	11.6%	10.5%
17	Delaware	8.5%	7.4%	13.2%	11.5%	10.1%
18	Texas	9.7%	8.5%	10.3%	9.2%	8.6%
19	New Mexico	7.4%	7.8%	10.7%	8.4%	8.6%
20	California	7.9%	7.8%	9.9%	9.2%	8.1%
21	Michigan	7.7%	8.2%	8.0%	7.8%	7.9%
22	Colorado	6.9%	6.8%	7.3%	9.0%	7.1%
23	Mississippi	5.9%	6.2%	7.5%	6.7%	6.1%
24	Louisiana	5.8%	6.1%	7.3%	6.4%	5.7%
25	Indiana	6.0%	6.4%	7.1%	6.4%	5.4%
26	Arkansas	4.7%	4.9%	6.5%	5.6%	5.0%
27	Oregon	2.6%	3.8%	6.0%	5.2%	4.8%
28	Nevada	4.7%	4.7%	5.7%	4.9%	4.5%
29	Oklahoma	4.3%	4.9%	6.6%	5.1%	4.3%
30	Georgia	4.5%	4.5%	5.7%	4.9%	4.3%
31	Missouri	4.0%	4.0%	5.1%	4.7%	4.3%
32	Washington	5.8%	5.7%	5.5%	4.9%	3.9%
33	North Dakota	3.1%	3.2%	4.6%	4.3%	3.8%
34	Wyoming	3.9%	4.2%	4.4%	4.2%	3.8%
35	Minnesota	3.8%	4.1%	6.0%	4.9%	3.6%
36	South Dakota	3.8%	4.0%	6.4%	4.1%	3.6%
37	Alabama	4.1%	4.2%	4.7%	4.2%	3.6%
38	Arizona	3.4%	3.7%	3.9%	3.7%	3.4%
39	Virginia	3.5%	3.5%	4.3%	3.7%	3.3%
40	Wisconsin	1.5%	3.3%	3.4%	3.8%	3.2%
41	New York	3.7%	3.6%	3.4%	2.9%	2.8%
42	Ohio	2.6%	2.6%	2.9%	2.9%	2.7%
43	Idaho	2.5%	2.7%	3.8%	3.4%	2.7%
44	Iowa	2.6%	2.8%	3.6%	3.0%	2.7%
45	Utah	3.5%	3.1%	3.1%	3.1%	2.7%
46	Nebraska	2.2%	2.3%	3.0%	2.6%	2.5%
47	New Hampshire	2.3%	2.4%	3.0%	2.7%	2.3%
48	Florida	1.8%	1.9%	2.5%	2.2%	2.0%
49	North Carolina	1.4%	1.5%	2.3%	2.0%	1.8%
50	Tennessee	1.7%	1.8%	2.3%	2.0%	1.8%
	TOTAL	7.9%	8.0%	9.6%	8.8%	8.0%
	MEAN	7.9%	8.0%	9.9%	9.0%	8.1%
	MEDIAN	5.8%	5.9%	6.8%	6.0%	5.2%

Sources: Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 13

Moody's ANPL as a % of state gross domestic product

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
1	Illinois	24.2%	24.9%	30.3%	27.8%	25.6%
2	Connecticut	20.4%	20.4%	26.5%	22.5%	22.2%
3	Alaska	26.7%	22.0%	23.1%	22.9%	19.8%
4	Kentucky	18.7%	19.2%	23.4%	22.1%	19.3%
5	New Jersey	15.8%	16.3%	19.5%	18.3%	17.5%
6	Hawaii	9.9%	9.8%	16.0%	14.9%	13.9%
7	Vermont	12.0%	12.7%	15.9%	14.7%	13.1%
8	Massachusetts	10.7%	12.6%	14.9%	14.3%	13.0%
9	Montana	10.3%	10.7%	12.8%	12.3%	12.9%
10	Maryland	12.5%	12.0%	17.1%	14.4%	12.5%
11	West Virginia	12.8%	13.1%	16.5%	13.7%	12.2%
12	South Carolina	11.1%	10.7%	12.9%	13.0%	11.3%
13	Maine	11.1%	11.1%	14.5%	12.7%	10.7%
14	Rhode Island	9.0%	9.8%	11.5%	11.2%	10.2%
15	Pennsylvania	8.9%	9.6%	10.8%	10.2%	9.7%
16	Kansas	9.6%	10.3%	10.9%	10.3%	9.4%
17	New Mexico	6.5%	7.0%	9.4%	7.3%	7.6%
18	Michigan	7.0%	7.5%	7.3%	7.2%	7.3%
19	Delaware	5.4%	4.9%	9.0%	7.9%	7.1%
20	Texas	7.9%	6.9%	8.4%	7.4%	7.0%
21	California	6.7%	6.6%	8.3%	7.7%	6.8%
22	Colorado	6.2%	6.0%	6.5%	8.1%	6.4%
23	Mississippi	5.8%	6.2%	7.4%	6.6%	6.0%
24	Arkansas	4.7%	4.9%	6.6%	5.7%	5.1%
25	Louisiana	5.0%	5.4%	6.3%	5.4%	4.9%
26	Indiana	5.1%	5.5%	6.1%	5.5%	4.7%
27	Oregon	2.4%	3.3%	5.3%	4.6%	4.2%
28	Oklahoma	4.0%	4.5%	6.0%	4.6%	4.0%
29	Nevada	4.2%	4.0%	5.0%	4.3%	3.9%
30	Missouri	3.5%	3.7%	4.7%	4.3%	3.9%
31	Georgia	3.7%	3.6%	4.7%	4.1%	3.6%
32	Wyoming	3.4%	3.8%	3.8%	3.7%	3.5%
33	Alabama	3.8%	3.9%	4.4%	3.9%	3.3%
34	Minnesota	3.3%	3.5%	5.2%	4.3%	3.2%
35	South Dakota	3.3%	3.5%	5.6%	3.6%	3.2%
36	Washington	4.7%	4.8%	4.6%	4.0%	3.2%
37	Arizona	3.1%	3.3%	3.6%	3.4%	3.2%
38	Virginia	3.2%	3.2%	4.0%	3.4%	3.0%
39	North Dakota	2.3%	2.5%	3.5%	3.2%	2.9%
40	Wisconsin	1.4%	2.9%	3.0%	3.4%	2.8%
41	Idaho	2.5%	2.7%	3.8%	3.3%	2.8%
42	Iowa	2.1%	2.3%	2.9%	2.5%	2.3%
43	Ohio	2.2%	2.2%	2.4%	2.4%	2.3%
44	New York	2.9%	2.8%	2.7%	2.3%	2.2%
45	New Hampshire	2.2%	2.3%	2.9%	2.7%	2.2%
46	Utah	2.9%	2.5%	2.5%	2.5%	2.2%
47	Nebraska	1.8%	1.9%	2.4%	2.1%	2.1%
48	Florida	1.9%	1.9%	2.6%	2.2%	2.0%
49	Tennessee	1.5%	1.5%	2.0%	1.8%	1.6%
50	North Carolina	1.2%	1.3%	1.9%	1.7%	1.6%
	TOTAL	6.9%	7.0%	8.4%	7.7%	7.0%
	MEAN	7.0%	7.2%	8.8%	8.1%	7.3%
	MEDIAN	4.9%	4.9%	6.2%	5.5%	4.8%

Sources: Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 14

Moody's ANPL + NTSD as a % of state gross domestic product

FY 2019 rank	State	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
1	Connecticut	28.9%	29.2%	35.3%	31.5%	30.5%
2	Illinois	28.3%	28.9%	34.8%	31.9%	29.3%
3	Kentucky	23.2%	23.8%	27.8%	26.2%	24.0%
4	New Jersey	22.3%	23.0%	26.0%	24.3%	23.1%
5	Hawaii	17.8%	18.1%	24.4%	23.1%	22.0%
6	Alaska	28.8%	24.6%	25.4%	24.8%	21.4%
7	Massachusetts	18.5%	20.4%	22.6%	21.7%	20.2%
8	West Virginia	15.9%	16.1%	19.1%	17.0%	16.1%
9	Maryland	15.6%	15.3%	20.4%	17.8%	15.8%
10	Vermont	14.0%	14.8%	17.8%	16.8%	15.0%
11	Rhode Island	12.5%	13.8%	15.5%	15.1%	14.1%
12	Montana	10.8%	11.2%	13.2%	12.7%	13.1%
13	Maine	13.2%	13.1%	16.4%	14.5%	12.6%
14	South Carolina	12.5%	12.1%	14.1%	14.1%	12.3%
15	Pennsylvania	11.1%	12.0%	13.1%	12.8%	12.1%
16	Kansas	12.6%	13.2%	13.7%	12.9%	11.9%
17	Delaware	9.4%	9.1%	13.2%	12.2%	11.4%
18	Mississippi	10.9%	11.3%	12.5%	11.2%	10.8%
19	New Mexico	9.3%	9.9%	11.9%	9.8%	9.8%
20	California	10.3%	9.9%	11.4%	10.6%	9.5%
21	Michigan	8.5%	8.9%	8.7%	8.4%	8.4%
22	Oregon	6.1%	6.8%	9.0%	8.0%	7.6%
23	Louisiana	8.2%	8.7%	9.5%	8.1%	7.6%
24	Texas	8.6%	7.6%	9.1%	8.0%	7.5%
25	Colorado	6.9%	6.6%	7.2%	8.8%	7.3%
26	Washington	8.9%	8.8%	8.3%	7.5%	6.5%
27	Arkansas	6.2%	6.4%	8.1%	7.1%	6.4%
28	New York	7.0%	6.7%	6.5%	6.1%	6.0%
29	Virginia	5.6%	5.8%	6.5%	5.8%	5.6%
30	Wisconsin	4.7%	6.1%	6.0%	6.1%	5.4%
31	Minnesota	5.9%	6.0%	7.5%	6.5%	5.3%
32	Georgia	5.8%	5.5%	6.5%	5.8%	5.2%
33	Indiana	5.7%	6.1%	6.6%	6.0%	5.2%
34	Alabama	5.8%	6.0%	6.5%	5.8%	5.1%
35	Nevada	5.3%	5.2%	6.2%	5.4%	5.0%
36	Missouri	4.7%	4.8%	5.7%	5.3%	4.8%
37	Oklahoma	4.7%	5.2%	6.6%	5.2%	4.6%
38	Ohio	4.3%	4.2%	4.5%	4.4%	4.3%
39	Arizona	4.9%	4.9%	4.9%	4.6%	4.2%
40	South Dakota	4.4%	4.6%	6.8%	4.6%	4.0%
41	Idaho	3.7%	3.7%	4.9%	4.5%	4.0%
42	Wyoming	3.5%	3.8%	3.9%	3.8%	3.6%
43	Florida	4.2%	4.0%	4.5%	3.9%	3.5%
44	Utah	4.7%	4.1%	3.9%	3.9%	3.4%
45	New Hampshire	3.6%	3.6%	4.2%	3.9%	3.3%
46	North Dakota	2.5%	2.7%	3.7%	3.4%	3.0%
47	North Carolina	2.6%	2.5%	3.1%	2.6%	2.6%
48	Iowa	2.5%	2.7%	3.3%	2.9%	2.6%
49	Nebraska	1.9%	1.9%	2.4%	2.2%	2.1%
50	Tennessee	2.1%	2.2%	2.6%	2.3%	2.1%
	TOTAL	9.8%	9.8%	11.1%	10.2%	9.5%
	MEAN	9.6%	9.7%	11.3%	10.4%	9.6%
	MEDIAN	7.0%	6.8%	8.2%	7.7%	6.9%

ANPL stands for adjusted net pension liability. NTSD stands for net tax-supported debt.
Sources: Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 15
Fiscal 2018 state OPEB metrics

State	Reported net OPEB liability ($000)	ANOL ($000)	ANOL as a % of own-source revenues	ANOL per capita ($)	ANOL as a % of personal income	ANOL as a % of state gross domestic product
Alabama	3,397,401	3,320,858	25.5%	681	1.6%	1.5%
Alaska	412,035	2,905,826	35.7%	4,060	6.6%	5.3%
Arizona	846,763	806,003	4.7%	113	0.3%	0.2%
Arkansas	2,299,942	2,179,113	22.4%	725	1.7%	1.7%
California	92,591,583	94,710,386	49.4%	2,410	3.8%	3.2%
Colorado	1,201,025	1,416,421	9.2%	250	0.4%	0.4%
Connecticut	20,590,998	19,874,486	91.5%	5,575	7.3%	7.2%
Delaware	7,623,319	7,205,432	113.7%	7,490	14.2%	9.8%
Florida	7,999,457	7,494,875	14.7%	354	0.7%	0.7%
Georgia	7,803,472	7,853,114	29.8%	752	1.6%	1.3%
Hawaii	6,666,282	11,047,324	130.9%	8,033	14.0%	11.8%
Idaho	132,855	145,804	2.6%	83	0.2%	0.2%
Illinois	56,961,397	54,407,761	114.1%	4,286	7.5%	6.3%
Indiana	503,290	467,549	2.3%	70	0.1%	0.1%
Iowa	185,552	182,471	1.6%	58	0.1%	0.1%
Kansas	89,187	88,259	0.8%	31	0.1%	0.1%
Kentucky	3,547,159	5,832,026	39.2%	1,312	3.1%	2.8%
Louisiana	6,430,045	5,678,926	38.6%	1,223	2.6%	2.2%
Maine	2,306,008	2,777,944	56.6%	2,077	4.2%	4.3%
Maryland	11,404,568	10,721,930	42.8%	1,787	2.8%	2.6%
Massachusetts	16,681,450	15,962,274	44.7%	2,321	3.2%	2.8%
Michigan	13,419,246	20,677,994	59.2%	2,072	4.3%	3.9%
Minnesota	621,237	609,007	2.1%	109	0.2%	0.2%
Mississippi	188,888	187,402	2.1%	63	0.2%	0.2%
Missouri	3,455,148	3,884,473	27.8%	637	1.3%	1.2%
Montana	85,897	84,642	2.5%	80	0.2%	0.2%
Nebraska	14,486	14,216	0.2%	7	0.0%	0.0%
Nevada	799,477	775,584	13.3%	257	0.5%	0.5%
New Hampshire	2,197,863	2,129,061	55.5%	1,575	2.6%	2.5%
New Jersey	90,487,141	85,957,592	207.6%	9,684	14.1%	13.8%
New Mexico	1,516,150	1,560,441	14.8%	750	1.8%	1.6%
New York	91,768,000	91,768,000	94.3%	4,705	6.8%	5.5%
North Carolina	6,381,057	6,020,036	20.1%	585	1.3%	1.1%
North Dakota	42,367	84,413	1.5%	112	0.2%	0.2%
Ohio	2,721,609	2,882,134	8.8%	247	0.5%	0.4%
Oklahoma	166,263	307,744	2.7%	78	0.2%	0.2%
Oregon	133,637	190,920	1.2%	46	0.1%	0.1%
Pennsylvania	26,490,435	25,096,973	54.2%	1,962	3.5%	3.2%
Rhode Island	511,756	611,780	13.3%	581	1.1%	1.0%
South Carolina	2,837,667	2,688,693	18.0%	533	1.2%	1.1%
South Dakota	-	-	0.0%	-	0.0%	0.0%
Tennessee	1,565,203	1,523,914	7.6%	226	0.5%	0.4%
Texas	75,940,032	72,197,269	92.7%	2,532	5.0%	4.0%
Utah	101,616	99,330	1.0%	32	0.1%	0.1%
Vermont	2,369,425	2,259,718	59.2%	3,623	6.7%	6.8%
Virginia	1,359,688	2,230,279	7.7%	266	0.5%	0.4%
Washington	5,825,822	5,478,091	19.1%	733	1.2%	1.0%
West Virginia	1,940,146	3,146,348	46.4%	1,745	4.3%	4.1%
Wisconsin	1,089,700	1,066,094	5.3%	184	0.4%	0.3%
Wyoming	294,517	276,860	10.1%	482	0.8%	0.7%
TOTAL	583,998,262	588,887,786	50.0%	1,813	3.3%	2.9%
MEAN	11,679,965	11,777,756	34.4%	1,552	2.7%	2.4%
MEDIAN	2,248,902	2,474,205	18.5%	611	1.2%	1.1%

ANOL stands for adjusted net OPEB liability.
The State of New York's 2018 fiscal year started before new OPEB accounting rules were effective; therefore, the table reflects metrics based on the state's reported fiscal 2018 unfunded actuarial accrued liability.
Source: Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 16
Fiscal 2019 state OPEB metrics

State	Reported net OPEB liability ($000)	ANOL ($000)	ANOL as a % of own-source revenues	ANOL per capita ($)	ANOL as a % of personal income	ANOL as a % of state gross domestic product
Alabama	3,147,904	3,199,836	23.1%	654	1.5%	1.4%
Alaska	795,787	5,016,281	56.0%	7,044	11.0%	9.1%
Arizona	875,525	838,132	4.4%	115	0.2%	0.2%
Arkansas	2,260,270	2,220,640	21.6%	737	1.6%	1.7%
California*	92,591,583	94,710,386	49.4%	2,406	3.6%	3.0%
Colorado	1,298,322	1,436,898	8.7%	251	0.4%	0.4%
Connecticut	19,747,233	19,052,752	85.3%	5,354	6.8%	6.7%
Delaware	7,558,335	7,189,167	107.6%	7,409	13.6%	9.5%
Florida	10,551,552	9,979,137	18.5%	466	0.9%	0.9%
Georgia	6,658,960	7,361,990	26.8%	698	1.4%	1.2%
Hawaii	6,969,257	11,277,973	125.9%	8,229	13.9%	11.6%
Idaho	15,031	36,691	0.7%	21	0.0%	0.0%
Illinois	56,136,207	51,310,482	99.2%	4,058	6.9%	5.7%
Indiana	259,852	243,199	1.1%	36	0.1%	0.1%
Iowa	447,355	443,456	3.8%	141	0.3%	0.2%
Kansas	51,559	51,035	0.5%	18	0.0%	0.0%
Kentucky	3,420,530	5,548,645	35.5%	1,247	2.8%	2.6%
Louisiana	9,578,309	8,069,087	53.1%	1,742	3.6%	3.1%
Maine	2,299,722	3,525,741	67.8%	2,626	5.1%	5.2%
Maryland	15,018,851	15,002,426	55.5%	2,496	3.8%	3.5%
Massachusetts	14,242,083	13,749,400	35.8%	1,996	2.7%	2.3%
Michigan	12,020,884	18,327,435	55.7%	1,836	3.6%	3.4%
Minnesota	612,799	601,669	2.0%	107	0.2%	0.2%
Mississippi	181,836	177,189	1.9%	60	0.2%	0.1%
Missouri	3,469,765	4,006,705	28.0%	655	1.3%	1.2%
Montana	95,045	94,172	2.5%	88	0.2%	0.2%
Nebraska	13,937	13,670	0.2%	7	0.0%	0.0%
Nevada	793,040	772,485	12.2%	252	0.5%	0.4%
New Hampshire	2,002,389	1,934,809	49.4%	1,424	2.2%	2.2%
New Jersey	75,926,040	72,508,871	164.3%	8,172	11.5%	11.2%
New Mexico	1,473,126	1,553,540	13.3%	745	1.7%	1.5%
New York	50,886,000	50,267,453	50.8%	2,587	3.6%	2.9%
North Carolina	5,463,548	5,212,656	16.5%	502	1.0%	0.9%
North Dakota	41,407	81,021	1.3%	107	0.2%	0.1%
Ohio	3,056,642	2,844,608	8.2%	244	0.5%	0.4%
Oklahoma	139,536	265,410	2.0%	67	0.1%	0.1%
Oregon	120,556	166,607	0.9%	40	0.1%	0.1%
Pennsylvania	21,243,754	20,382,987	42.8%	1,593	2.7%	2.5%
Rhode Island	496,212	573,088	11.9%	543	1.0%	0.9%
South Carolina	2,965,252	2,712,266	16.9%	531	1.2%	1.1%
South Dakota	-	-	0.0%	-	0.0%	0.0%
Tennessee	1,508,038	1,442,023	7.0%	212	0.4%	0.4%
Texas	72,274,565	69,480,664	85.2%	2,406	4.6%	3.7%
Utah	70,088	65,602	0.6%	20	0.0%	0.0%
Vermont	2,151,213	2,063,696	53.0%	3,310	5.8%	5.9%
Virginia	1,378,457	2,184,375	7.3%	259	0.4%	0.4%
Washington	5,079,882	4,817,302	16.5%	637	1.0%	0.8%
West Virginia	1,644,412	2,625,830	34.6%	1,466	3.5%	3.4%
Wisconsin	860,200	849,309	3.9%	146	0.3%	0.2%
Wyoming	378,052	357,012	11.6%	620	1.0%	0.9%
TOTAL	520,270,902	526,645,808	42.9%	1,614	2.8%	2.5%
MEAN	10,405,418	10,532,916	31.6%	1,528	2.6%	2.3%
MEDIAN	2,076,801	2,423,235	16.7%	629	1.1%	1.0%

*California's ANOL reflects fiscal 2018 figures because of insufficient information for fiscal 2019.
ANOL stands for adjusted net OPEB liability.
Source: Moody's Investors Service, US Bureau of Economic Analysis

Exhibit 17

Fiscal 2019 NTSD, ANPL and ANOL as a percent of state GDP

FY 2019 rank	State	NTSD as a % of GDP	ANPL as a % of GDP	ANOL as a % of GDP	NTSD + ANPL + ANOL as a % of GDP
1	Connecticut	8.3%	22.2%	6.7%	37.1%
2	Illinois	3.7%	25.6%	5.7%	35.1%
3	New Jersey	5.7%	17.5%	11.2%	34.4%
4	Hawaii	8.0%	13.9%	11.6%	33.6%
5	Alaska	1.6%	19.8%	9.1%	30.5%
6	Kentucky	4.7%	19.3%	2.6%	26.6%
7	Massachusetts	7.2%	13.0%	2.3%	22.5%
8	Vermont	1.9%	13.1%	5.9%	21.0%
9	Delaware	4.2%	7.1%	9.5%	20.9%
10	West Virginia	3.9%	12.2%	3.4%	19.5%
11	Maryland	3.3%	12.5%	3.5%	19.3%
12	Maine	1.9%	10.7%	5.2%	17.8%
13	Rhode Island	3.8%	10.2%	0.9%	15.0%
14	Pennsylvania	2.4%	9.7%	2.5%	14.6%
15	South Carolina	1.0%	11.3%	1.1%	13.4%
16	Montana	0.2%	12.9%	0.2%	13.3%
17	California	2.7%	6.8%	3.0%	12.6%
18	Kansas	2.5%	9.4%	0.0%	12.0%
19	Michigan	1.1%	7.3%	3.4%	11.8%
20	New Mexico	2.3%	7.6%	1.5%	11.3%
21	Texas	0.6%	7.0%	3.7%	11.2%
22	Mississippi	4.8%	6.0%	0.1%	10.9%
23	Louisiana	2.7%	4.9%	3.1%	10.6%
24	New York	3.7%	2.2%	2.9%	8.9%
25	Arkansas	1.2%	5.1%	1.7%	8.0%
26	Colorado	0.9%	6.4%	0.4%	7.7%
27	Oregon	3.4%	4.2%	0.1%	7.7%
28	Washington	3.3%	3.2%	0.8%	7.3%
29	Alabama	1.7%	3.3%	1.4%	6.4%
30	Georgia	1.7%	3.6%	1.2%	6.4%
31	Virginia	2.6%	3.0%	0.4%	6.0%
32	Missouri	0.9%	3.9%	1.2%	6.0%
33	Wisconsin	2.5%	2.8%	0.2%	5.6%
34	New Hampshire	1.1%	2.2%	2.2%	5.5%
35	Minnesota	2.1%	3.2%	0.2%	5.5%
36	Nevada	1.0%	3.9%	0.4%	5.4%
37	Indiana	0.4%	4.7%	0.1%	5.2%
38	Oklahoma	0.6%	4.0%	0.1%	4.7%
39	Ohio	1.9%	2.3%	0.4%	4.7%
40	Wyoming	0.0%	3.5%	0.9%	4.5%
41	Florida	1.5%	2.0%	0.9%	4.5%
42	Arizona	1.0%	3.2%	0.2%	4.4%
43	South Dakota	0.8%	3.2%	0.0%	4.0%
44	Idaho	1.2%	2.8%	0.0%	4.0%
45	North Carolina	1.0%	1.6%	0.9%	3.5%
46	Utah	1.2%	2.2%	0.0%	3.4%
47	North Dakota	0.1%	2.9%	0.1%	3.2%
48	Iowa	0.2%	2.3%	0.2%	2.8%
49	Tennessee	0.5%	1.6%	0.4%	2.5%
50	Nebraska	0.0%	2.1%	0.0%	2.1%
	TOTAL	2.5%	7.0%	2.5%	11.9%
	MEAN	2.3%	7.3%	2.3%	11.9%
	MEDIAN	1.8%	4.8%	1.0%	7.9%

*California's ANOL reflects fiscal 2018 figures because of insufficient information for fiscal 2019.

NTSD stands for net tax-supported debt. ANPL stands for adjusted net pension liability. ANOL stands for adjusted net OPEB liability.

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

Exhibit 18

Fiscal 2019 state pension contribution and tread water metrics

State	FY 19 contributions as a % of own-source revenues	FY 19 tread water as a % of own-source revenues	FY 19 contributions as a % of tread water	FY 19 tread water shortfall as a % of own-source revenues
Alabama	2.0%	2.1%	94.3%	0.1%
Alaska	4.6%	4.5%	102.5%	(0.1%)
Arizona*	2.2%	2.8%	80.0%	0.6%
Arkansas	2.5%	2.6%	95.0%	0.1%
California*	5.8%	5.0%	117.0%	(0.8%)
Colorado	4.8%	6.5%	74.5%	1.7%
Connecticut	12.9%	11.7%	110.1%	(1.2%)
Delaware	3.9%	3.4%	114.3%	(0.5%)
Florida	1.2%	1.5%	77.7%	0.3%
Georgia	4.1%	3.0%	139.6%	(1.2%)
Hawaii	5.4%	8.0%	67.2%	2.6%
Idaho	1.8%	1.5%	123.2%	(0.3%)
Illinois	16.1%	21.7%	74.1%	5.6%
Indiana	5.9%	4.2%	139.3%	(1.7%)
Iowa	1.4%	1.4%	105.2%	(0.1%)
Kansas	8.0%	5.4%	148.4%	(2.6%)
Kentucky	12.6%	12.2%	103.2%	(0.4%)
Louisiana	4.6%	3.6%	129.4%	(1.1%)
Maine	5.5%	4.5%	122.3%	(1.0%)
Maryland	7.3%	7.7%	94.5%	0.4%
Massachusetts	6.6%	8.5%	77.0%	2.0%
Michigan	5.4%	4.6%	116.7%	(0.8%)
Minnesota	1.0%	1.1%	92.9%	0.1%
Mississippi	2.1%	2.8%	74.1%	0.7%
Missouri	4.0%	4.5%	90.0%	0.4%
Montana	5.3%	5.5%	95.4%	0.3%
Nebraska	1.7%	1.1%	150.6%	(0.6%)
Nevada	2.6%	3.2%	82.0%	0.6%
New Hampshire	2.3%	2.0%	112.2%	(0.2%)
New Jersey	7.3%	11.3%	64.8%	4.0%
New Mexico	1.7%	2.7%	62.1%	1.0%
New York	2.0%	1.7%	117.2%	(0.3%)
North Carolina	1.6%	1.2%	133.9%	(0.4%)
North Dakota	0.7%	1.6%	41.6%	1.0%
Ohio	1.3%	1.6%	79.3%	0.3%
Oklahoma	6.7%	2.2%	311.8%	(4.6%)
Oregon	1.8%	2.7%	66.4%	0.9%
Pennsylvania	8.8%	8.7%	101.6%	(0.1%)
Rhode Island	6.2%	6.1%	102.8%	(0.2%)
South Carolina	5.7%	6.7%	83.8%	1.1%
South Dakota	1.8%	1.5%	118.7%	(0.3%)
Tennessee*	1.5%	1.1%	140.3%	(0.4%)
Texas	4.6%	7.3%	62.4%	2.7%
Utah	2.6%	1.8%	148.0%	(0.8%)
Vermont	4.7%	4.7%	101.8%	(0.1%)
Virginia	2.3%	2.3%	99.4%	0.0%
Washington	2.9%	1.0%	290.7%	(1.9%)
West Virginia	7.5%	4.2%	177.6%	(3.3%)
Wisconsin*	1.3%	0.9%	152.1%	(0.5%)
Wyoming	1.8%	1.7%	101.1%	(0.0%)
TOTAL	4.9%	5.2%	94.1%	0.3%
MEAN	4.4%	4.4%	111.2%	0.0%
MEDIAN	4.0%	3.1%	102.1%	(0.1%)

*Tread water figures reflect fiscal 2018 tread water indicator because of insufficient information to calculate pension tread water indicator for fiscal 2019.
Certain states' fiscal 2019 pension tread water calculations exclude tread water payments of missing plans. See page 9 for more information.
Sources: Moody's Investors Service, state financial statements

Exhibit 19

Fixed costs as % of own-source governmental revenue

State	FY 2019 debt service	FY 2019 OPEB contribution	FY 2019 pension contribution	FY 2019 pension tread water	FY 2019 fixed costs (contribution)	FY 2019 fixed costs (tread water)	FY 2018 fixed costs (contribution)	FY 2018 fixed costs (tread water)
Alabama	3.8%	0.6%	2.0%	2.1%	6.4%	6.5%	6.7%	7.0%
Alaska	1.3%	0.7%	4.6%	4.5%	6.6%	6.5%	6.3%	7.5%
Arizona*	3.1%	0.1%	2.2%	2.8%	5.5%	6.0%	6.0%	6.9%
Arkansas	1.9%	0.7%	2.5%	2.6%	5.0%	5.1%	5.6%	6.2%
California*	4.2%	1.3%	5.8%	5.0%	11.4%	10.5%	10.0%	10.6%
Colorado	1.2%	0.3%	4.8%	6.5%	6.3%	8.0%	6.0%	7.4%
Connecticut	14.7%	3.5%	12.9%	11.7%	31.0%	29.8%	29.7%	30.7%
Delaware	5.7%	3.4%	3.9%	3.4%	13.0%	12.5%	12.8%	13.1%
Florida	3.6%	0.4%	1.2%	1.5%	5.2%	5.5%	5.9%	6.3%
Georgia	5.4%	2.4%	4.1%	3.0%	12.0%	10.8%	12.2%	11.3%
Hawaii	9.8%	7.0%	5.4%	8.0%	22.1%	24.7%	21.3%	23.3%
Idaho	1.4%	0.3%	1.8%	1.5%	3.5%	3.1%	3.2%	2.9%
Illinois	9.0%	2.1%	16.1%	21.7%	27.3%	32.9%	29.1%	36.4%
Indiana	1.1%	0.1%	5.9%	4.2%	7.1%	5.5%	6.7%	6.2%
Iowa	2.2%	0.2%	1.4%	1.4%	3.9%	3.8%	2.2%	2.4%
Kansas	4.3%	0.1%	8.0%	5.4%	12.3%	9.7%	9.9%	9.5%
Kentucky	9.3%	1.6%	12.6%	12.2%	23.5%	23.1%	18.2%	21.1%
Louisiana	4.7%	2.0%	4.6%	3.6%	11.3%	10.3%	10.8%	10.0%
Maine	4.6%	2.5%	5.5%	4.5%	12.7%	11.7%	13.0%	12.3%
Maryland	6.8%	1.9%	7.3%	7.7%	15.9%	16.4%	17.0%	17.8%
Massachusetts	10.5%	1.5%	6.6%	8.5%	18.6%	20.5%	18.9%	20.7%
Michigan	2.4%	3.5%	5.4%	4.6%	11.3%	10.6%	10.8%	9.6%
Minnesota	3.2%	0.1%	1.0%	1.1%	4.3%	4.4%	4.4%	4.8%
Mississippi	6.4%	0.1%	2.1%	2.8%	8.6%	9.3%	10.1%	11.0%
Missouri	3.3%	0.8%	4.0%	4.5%	8.2%	8.6%	8.2%	8.8%
Montana	0.9%	0.1%	5.3%	5.5%	6.3%	6.6%	7.0%	6.8%
Nebraska	0.2%	0.0%	1.7%	1.1%	1.9%	1.3%	2.0%	1.6%
Nevada	3.9%	0.4%	2.6%	3.2%	6.9%	7.5%	7.3%	7.9%
New Hampshire	3.8%	1.5%	2.3%	2.0%	7.6%	7.3%	7.6%	7.7%
New Jersey	9.6%	4.3%	7.3%	11.3%	21.3%	25.2%	20.4%	26.0%
New Mexico	3.5%	0.3%	1.7%	2.7%	5.5%	6.5%	5.7%	6.6%
New York	7.5%	1.7%	2.0%	1.7%	11.1%	10.8%	10.8%	10.6%
North Carolina	2.9%	0.7%	1.6%	1.2%	5.2%	4.8%	5.3%	4.9%
North Dakota	0.2%	0.1%	0.7%	1.6%	1.0%	2.0%	1.2%	2.2%
Ohio	5.5%	0.0%	1.3%	1.6%	6.8%	7.1%	6.8%	6.8%
Oklahoma	1.6%	0.2%	6.7%	2.2%	8.5%	4.0%	8.3%	4.8%
Oregon	4.8%	0.2%	1.8%	2.7%	6.7%	7.6%	7.3%	8.2%
Pennsylvania	3.5%	1.5%	8.8%	8.7%	13.8%	13.7%	13.9%	13.8%
Rhode Island	5.8%	1.0%	6.2%	6.1%	13.1%	12.9%	12.6%	12.8%
South Carolina	2.0%	0.7%	5.7%	6.7%	8.4%	9.4%	8.1%	10.1%
South Dakota	2.0%	0.0%	1.8%	1.5%	3.8%	3.5%	4.2%	3.8%
Tennessee*	1.2%	1.4%	1.5%	1.1%	4.1%	3.7%	3.3%	2.8%
Texas	2.5%	1.3%	4.6%	7.3%	8.4%	11.1%	8.2%	10.4%
Utah	3.7%	0.3%	2.6%	1.8%	6.6%	5.7%	7.1%	6.4%
Vermont	2.1%	3.1%	4.7%	4.7%	9.9%	9.8%	8.3%	8.2%
Virginia	4.6%	0.5%	2.3%	2.3%	7.4%	7.4%	7.3%	7.4%
Washington	7.3%	0.3%	2.9%	1.0%	10.6%	8.7%	10.4%	9.0%
West Virginia	4.1%	2.2%	7.5%	4.2%	13.7%	10.5%	16.4%	12.9%
Wisconsin*	5.1%	0.2%	1.3%	0.9%	6.6%	6.2%	6.7%	6.2%
Wyoming	0.1%	0.6%	1.8%	1.7%	2.5%	2.5%	1.9%	2.4%
TOTAL	5.0%	1.3%	4.9%	5.2%	11.2%	11.5%	10.9%	11.7%
MEAN	4.2%	1.2%	4.4%	4.4%	9.8%	9.8%	9.7%	10.1%
MEDIAN	3.8%	0.7%	4.0%	3.1%	7.9%	7.8%	7.9%	8.0%

*Tread water figures reflect fiscal 2018 tread water indicator because of insufficient information to calculate pension tread water indicator for fiscal 2019.
Certain states' fiscal 2019 pension tread water calculations exclude tread water payments of missing plans. See page 9 for more information.
Source: Moody's Investors Service, state financial statements

Exhibit 20

Fiscal 2019 state pension assets

FY 2019 rank	State	Pension assets ($000)	Pension assets as a % of own-source revenue	Pension asset shock indicator	Assets / benefits for largest plan	NICF for largest plan
1	Montana	6,484,885	172.0%	7.8%	13.4	-3.3%
2	Maryland	48,926,384	181.0%	7.1%	13.4	-2.2%
3	West Virginia	12,899,911	169.8%	6.8%	9.4	-3.4%
4	Texas	133,350,878	163.4%	5.2%	13.4	-2.7%
5	Maine	11,408,541	219.5%	5.0%	13.9	-3.0%
6	Connecticut	30,555,227	136.7%	4.5%	6.5	0.3%
7	Kansas	13,487,453	122.8%	4.3%	11.2	-1.3%
8	Massachusetts	56,790,804	148.1%	4.3%	9.0	-2.8%
9	Kentucky	22,185,910	142.1%	4.2%	9.5	-3.4%
10	Illinois	87,172,491	168.6%	3.5%	7.8	-2.5%
11	Alaska	9,168,341	102.3%	3.4%	11.1	-3.8%
12	Washington	34,883,492	119.7%	2.4%	33.9	0.6%
13	Nevada	6,863,103	108.7%	2.1%	16.7	-1.4%
14	Delaware	8,739,860	130.8%	1.6%	13.6	-3.6%
15	South Dakota	4,235,847	168.5%	1.6%	20.7	-2.8%
16	Pennsylvania	53,492,084	112.2%	1.5%	8.6	-2.1%
17	Wisconsin	27,172,684	126.3%	1.5%	17.8	-3.6%
18	Oklahoma	14,276,144	109.5%	1.3%	14.9	-3.3%
19	Colorado	17,603,129	106.9%	1.2%	9.3	-4.6%
20	South Carolina	16,752,117	104.6%	1.1%	8.8	-2.5%
21	Vermont	3,641,001	93.5%	1.1%	9.7	-2.0%
22	Georgia	28,941,849	105.2%	1.0%	15.6	-2.2%
23	California	202,201,170	105.4%	0.7%	13.6	-1.5%
24	Louisiana	11,877,189	78.2%	0.5%	8.8	-3.7%
25	Hawaii	8,520,704	95.1%	0.3%	11.6	-2.0%
26	Arkansas	8,365,527	81.3%	0.3%	15.1	-2.5%
27	Oregon	14,647,117	82.9%	0.3%	14.4	-4.5%
28	New Jersey	33,194,378	75.2%	0.2%	5.0	-7.3%
29	New York	87,035,333	88.0%	0.2%	16.6	-3.6%
30	Rhode Island	4,067,491	84.7%	0.1%	7.3	-4.6%
31	Nebraska	4,318,138	66.2%	0.1%	19.4	-1.6%
32	New Mexico	8,250,540	70.8%	0.1%	12.3	-4.1%
33	Michigan	34,007,250	103.3%	0.1%	9.9	-3.9%
34	Mississippi	5,148,463	55.3%	0.1%	9.8	-4.5%
35	Idaho	4,127,437	74.7%	0.1%	17.5	-2.0%
36	Virginia	21,332,876	71.5%	0.0%	13.6	-3.4%
37	Missouri	9,119,859	63.8%	0.0%	9.2	-5.4%
38	Minnesota	15,985,360	54.1%	0.0%	15.9	-3.4%
39	Alabama	6,915,251	49.9%	0.0%	10.5	-3.8%
40	Arizona	9,815,151	51.8%	0.0%	11.5	-2.7%
41	Utah	6,220,360	59.9%	0.0%	15.5	-3.1%
42	Tennessee	10,558,051	51.1%	0.0%	16.1	-3.3%
43	Ohio	17,968,725	51.8%	0.0%	13.5	-3.6%
44	Iowa	6,225,362	53.1%	0.0%	15.2	-2.8%
45	Florida	28,628,521	52.9%	0.0%	15.0	-4.3%
46	North Carolina	16,606,526	52.7%	0.0%	15.1	-2.7%
47	Wyoming	1,473,499	48.1%	0.0%	12.8	-3.8%
48	New Hampshire	1,682,884	43.0%	0.0%	11.3	-1.7%
49	North Dakota	1,688,004	27.5%	0.0%	15.5	-1.1%
50	Indiana	8,174,578	37.0%	0.0%	7.6	0.4%
	TOTAL	1,237,187,879	100.9%	NA	NA	NA
	MEAN	24,743,758	96.8%	1.5%	13.0	-2.9%
	MEDIAN	12,388,550	90.7%	0.3%	13.4	-3.1%

Certain states' own-source governmental revenue has been adjusted. See page 9 for more information.
NICF stands for non-investment cash flow.
Sources: Moody's Investors Service, state financial statements

Exhibit 21

Allocation of pension plan liabilities by state

Alabama	Alabama Employees Retirement System	100.0%
	Alabama Judicial Retirement Fund	100.0%
	Teachers' Retirement System of Alabama	4.6%
Alaska	Alaska National Guard and Alaska Naval Militia Retirement System	100.0%
	Alaska Judicial Retirement System	100.0%
	Alaska Public Employees' Retirement System Defined Benefit Retirement Pension	60.9%
	Alaska Teachers' Retirement System	60.1%
Arizona	Arizona Corrections Officer Retirement Plan	100.0%
	Arizona Public Safety Personnel Retirement System	100.0%
	Arizona Elected Officials' Retirement Plan - State	33.1%
	Arizona State Retirement System	21.9%
Arkansas	Arkansas Judicial Retirement System Defined Benefit Plan	100.0%
	Arkansas State Highway Employees Retirement System	100.0%
	Arkansas State Police Retirement System Defined Benefit Plan	100.0%
	Arkansas Public Employees Retirement System	65.8%
	Arkansas Teacher Retirement System	3.6%
California	California Judges' Retirement Fund	100.0%
	California Judges' Retirement Fund II	100.0%
	California Legislators' Retirement Fund	100.0%
	California Public Employees' Retirement System - Peace Officers and Firefighters Plan	98.9%
	California Public Employees' Retirement System-Highway Patrol	100.0%
	California Public Employees' Retirement System-Industrial	100.0%
	California Public Employees' Retirement System-MIS	78.5%
	California Public Employees' Retirement System-SFT	100.0%
	California State Teachers' Retirement System	36.4%
Colorado	DPS Division Trust Fund	34.1%
	Judicial Division Trust Fund	94.9%
	School Division Trust Fund	12.0%
	State Division Trust Fund	96.0%
Connecticut	Connecticut Judicial Retirement System	100.0%
	Connecticut State Employees' Retirement System	98.8%
	Connecticut Teachers' Retirement System	100.0%
Delaware	Closed State Police Pension Plan	100.0%
	Delaware Transit Corporation Contributory Plan	100.0%
	Delaware Transit Corporation Pension Plan	100.0%
	Judiciary Pension Plans (Closed and Revised)	100.0%
	New State Police Pension Plan	100.0%
	Special Fund	100.0%
	State Employees'	89.7%
Florida	Florida National Guard Supplemental Retirement Benefit Plan	100.0%
	Florida Retirement System	17.7%
	Retiree Health Insurance Subsidy Pension Plan	14.6%
Georgia	Peace Officers' Annuity and Benefit Fund	100.0%
	Employees' Retirement System of Georgia	90.6%
	Georgia Firefighters' Pension Fund	100.0%
	Georgia Judicial Retirement System	100.0%
	Georgia Public School Employees' Retirement System	100.0%
	Teachers Retirement System of Georgia	17.2%
	Employees Retirement System of Georgia - Component Units	1.4%
	Teachers Retirement System of Georgia - Component Units	0.6%
Hawaii	Employees' Retirement System of the State of Hawaii	56.1%
Idaho	Judges' Retirement Fund	100.0%
	Public Employee Retirement System of Idaho	24.8%
Illinois	Illinois General Assembly Retirement System	100.0%
	Illinois Judges' Retirement System	100.0%
	Illinois State Employees' Retirement System	100.0%
	State Universities Retirement System of Illinois	100.0%
	Teachers' Retirement System of the State of Illinois	96.3%

Exhibit 22

Allocation of pension plan liabilities by state (continued)

Indiana	Indiana Judges' Retirement System	100.0%
	Legislators' Retirement System	100.0%
	Prosecuting Attorneys' Retirement Fund	100.0%
	State Police Retirement Fund	100.0%
	The State Excise Police, Gaming Agent, Gaming Control Officer, and Conservation Officers' Retirement Plan	100.0%
	Indiana State Teachers' Retirement Fund	0.4%
	Pre-1996 Teachers Retirement	100.0%
	Public Employees' Retirement Fund of Indiana	25.6%
Iowa	Iowa Judicial Retirement System	100.0%
	Peace Officers' Retirement, Accident and Disability System	100.0%
	Iowa Public Employees' Retirement System - Aggregate	16.6%
	Iowa Public Employees Retirement System - Component Units	0.4%
Kansas	Kansas Police and Firemen's Retirement System	9.1%
	Kansas Public Employees Retirement System - School and State	100.0%
	Retirement System for Judges	100.0%
Kentucky	Judicial Retirement Plan	100.0%
	Legislators' Retirement Plan	100.0%
	State Police Retirement System	100.0%
	Kentucky Employees Retirement System (Hazardous)	97.5%
	Kentucky Employees Retirement System (Non-Hazardous)	74.5%
	Teachers' Retirement System of the State of Kentucky	97.1%
Louisiana	Louisiana State Police Retirement System	100.0%
	District Attorneys' Retirement System of Louisiana	45.9%
	Louisiana Clerks of Court Retirement and Relief Fund	8.3%
	Louisiana State Employees' Retirement System	80.2%
	Registrar of Voters Employees' Retirement System	74.5%
	State of Louisiana School Employees' Retirement System	0.4%
	Teachers' Retirement System of Louisiana	4.0%
Maine	Legislative Retirement Program	100.0%
	The Judicial Retirement	100.0%
	MPERS State Employee and Teacher Plan	97.4%
Maryland	State of Maryland- Maryland Transit Administration Pension Plan	100.0%
	Maryland State Retirement and Pension System	93.8%
Massachusetts	Boston Retirement System (State Only)	100.0%
	State Employees' Retirement System	94.6%
	State Teachers Contributory Retirement System	100.0%
Michigan	Michigan Military Retirement System	100.0%
	Michigan State Employees' Retirement System	100.0%
	Michigan State Police Retirement System	100.0%
	Michigan Legislative Retirement System	100.0%
	Judges' Retirement System	100.0%
	Michigan Public School Employees' Retirement System	38.7%
Minnesota	Judges Retirement Fund	100.0%
	Legislators Retirement Fund	100.0%
	State Patrol Retirement Fund	100.0%
	Correctional Employees Retirement Fund	99.9%
	General Employees Retirement Fund	3.6%
	Public Employees Police and Fire Fund	5.3%
	St. Paul Teachers' Retirement Fund	27.6%
	State Employees Retirement Fund	74.5%
	Teachers Retirement Association of Minnesota	11.0%
Mississippi	Mississippi Highway Safety Patrol Retirement System Plan	100.0%
	Mississippi Supplemental Legislative Retirement Plan	100.0%
	Public Employees' Retirement System of Mississippi	17.2%
Missouri	Judicial Plan	100.0%
	Missouri Department of Transportation and Highway Patrol Employees' Retirement System	100.0%
	Missouri State Employees' Plan (MSEP)	82.8%

Exhibit 23

Allocation of pension plan liabilities by state (continued)

Montana	Montana Highway Patrol Officers Retirement System	100.0%
	Montana Judges Retirement System	100.0%
	State of Montana Game Wardens & Peace Officers Retirement System-Primary Government	100.0%
	Firefighters' Unified Retirement System	70.3%
	Montana Teachers' Retirement System	40.3%
	Municipal Police Officers' Retirement System	67.1%
	Public Employees' Retirement System-Defined Benefit Retirement Plan	64.5%
	Sheriffs Retirement System	4.9%
	Volunteer Firefighters' Compensation Act	100.0%
Nebraska	Judges Retirement System	100.0%
	Omaha School Employees' Retirement System	11.1%
	Service Annuity Plan	100.0%
	State Employees'Retirement	100.0%
	State Patrol Retirement System	100.0%
	Nebraska School Employees' Retirement System	17.4%
Nevada	Legislators'Retirement System of Nevada	100.0%
	Nevada Judicial Retirement System	90.2%
	Public Employees' Retirement System of Nevada	16.5%
New Hampshire	New Hampshire Judicial Retirement Plan	100.0%
	New Hampshire Retirement System	18.4%
New Jersey	Public Employees' Retirement System -State Only	100.0%
	Police and Firemen's Retirement System - State Only	100.0%
	New Jersey Consolidated Police and Firemen's Pension Fund	100.0%
	New Jersey State Police Retirement System	100.0%
	New Jersey Judicial Retirement System	100.0%
	New Jersey Prison Officers' Pension Fund	100.0%
	Teachers' Pension and Annuity Fund of New Jersey	100.0%
New Mexico	New Mexico Judicial Retirement Fund	100.0%
	Magistrate Retirement Fund	100.0%
	Volunteer Firefighters Retirement Fund	100.0%
	Educational Employees' Retirement Plan	0.3%
	Public Employees Retirement Fund	52.7%
New York	New York State and Local Employees' Retirement System	45.4%
	New York State and Local Police and Fire Retirement System	20.8%
North Carolina	Consolidated Judicial Retirement System	100.0%
	Legislative Retirement System	100.0%
	North Carolina National Guard Pension Fund	100.0%
	Firefighters and Rescue Squad Workers Pension Fund	0.0%
	Teachers' and State Employees'	21.8%
	Teachers and State Employees - Other	0.2%
North Dakota	Retirement Plan For The Employees of Job Service North Dakota	100.0%
	The North Dakota Highway Patrolmen's Retirement System	100.0%
	North Dakota Public Employees Retirement System - Main System	50.4%
	North Dakota Teachers Fund for Retirement	0.7%
Ohio	State Highway Patrol Retirement System	100.0%
	Ohio Public Employees Retirement System - Combined Benefit Plan	19.6%
	Ohio Public Employees Retirement System - Traditional Plan	20.9%
	State Teachers Retirement System of Ohio	0.4%
Oklahoma	Oklahoma Law Enforcement Retirement System	100.0%
	Uniform Retirement System for Justices and Judges	100.0%
	Wildlife Conservation Retirement Plan	100.0%
	Oklahoma Police Pension and Retirement Plan	48.4%
	Oklahoma Public Employees Retirement System	78.1%
	Teachers' Retirement System of Oklahoma	26.5%
Oregon	Oregon Public Employees Retirement System	21.1%
Pennsylvania	Commonwealth of Pennsylvania State Employees' Retirement System	82.6%
	Pennsylvania Public School Employees' Retirement System	55.4%

Exhibit 24
Allocation of pension plan liabilities by state (continued)

Rhode Island	Judicial Non-Contributory Retirement Plan	100.0%
	Judicial Retirement Benefits Trust	100.0%
	RI Judicial Retirement Fund Trust	100.0%
	State Police Retirement Fund Trust	100.0%
	State Police Retirement Benefits Trust	100.0%
	Employees' Retirement System of Rhode Island - State Employees	89.5%
	Employees' Retirement System of Rhode Island - Teachers	42.7%
South Carolina	General Assembly Retirement System	100.0%
	Judges and Solicitors Retirement System	100.0%
	National Guard Supplemental Retirement Plan	100.0%
	South Carolina Police Officers Retirement System	29.2%
	South Carolina Retirement System	57.6%
South Dakota	South Dakota Retirement System	21.1%
	South Dakota Retirement System - Component Units	15.3%
Tennessee	Closed State and Higher Education Employee Pension Plan	69.8%
	State and Higher Education Employee Pension Plan	71.0%
Texas	Texas Employees Retirement System of Texas Plan	100.0%
	Texas Law Enforcement and Custodial Officer Supplemental Retirement Plan	100.0%
	Texas Judicial Retirement System of Texas Plan One	100.0%
	Texas Judicial Retirement System of Texas, Plan Two	100.0%
	Teacher Retirement System of Texas	67.4%
	Texas Emergency Services Retirement System	27.8%
Utah	Public Employees Contributory Retirement System - State and School	28.9%
	Public Employees Non-Contributory Retirement System - State and School	23.0%
	Public Safety Retirement System - State	97.6%
	The Judges Retirement System	100.0%
	The Utah Governors and Legislators Retirement Plan	100.0%
	Firefighters Retirement System	3.8%
	Tier 2 Public Employees Contributory Retirement System	18.2%
	Tier 2 Public Safety and Firefighter Contributory Retirement System	24.1%
Vermont	Vermont State Retirement System	98.2%
	State Teachers' Retirement System	100.0%
Virginia	Virginia Judicial Retirement System	100.0%
	State Police Officers' Retirement System	100.0%
	Virginia Law Officers' Retirement System	100.0%
	Virginia Retirement System - State	100.0%
Washington	Judges' Retirement Fund	100.0%
	Judicial Retirement System	100.0%
	State Patrol Retirement System Plan 1/2	100.0%
	Law Enforcement Officers' and Fire Fighters' Retirement System Plan 1	87.1%
	Law Enforcement Officers' and Fire Fighters' Retirement System Plan 2	40.2%
	Public Employees' Retirement System Plan 1	42.0%
	Public Employees' Retirement System Plan 2/3	50.4%
	Public Safety Employees' Retirement System Plan 2	50.5%
	Teachers' Retirement System Plan 1	1.1%
	Teachers' Retirement System Plan 2/3	1.1%
West Virginia	West Virginia Judges' Retirement System Plan	100.0%
	West Virginia Police Retirement System Plan	100.0%
	West Virginia State Police Death, Disability, and Retirement System Plan	100.0%
	Public Employee' Retirement System	66.4%
	Teachers' Retirement System	94.9%
Wisconsin	Wisconsin Retirement System	27.7%
Wyoming	Air Guard Firefighter Pension Plan	100.0%
	Judicial Pension Plan	100.0%
	Highway Patrol, Game and Fish Warden, Division of Criminal Investigators and Capital Police	40.1%
	Public Employees Pension Plan	18.7%
	Wyoming Law Enforcement	18.5%

Sources: Moody's Investors Service, state financial statements and actuarial reports

Moody's related publications

Sector Research

- Public Finance - US: Lingering weak revenue environment will lead to fiscal austerity and higher leverage, August 10, 2020
- State and local government - US: Tension rises between pension funding and budgets strained by coronavirus shock, July 10, 2020
- State Government - US: Coronavirus will weigh on fiscal 2021 state tax revenue despite bump in employment, July 8, 2020
- State government - US: Medians - State debt declined in 2019, but likely to grow in coming years, May 12, 2020
- State and local government - US: Low interest rates do not insulate governments from pension bond risks, April 24, 2020
- State government - US: Revenue recovery from coronavirus hit will lag GDP revival, prolonging budget woes, April 24, 2020
- State and local government - US: 2020 pension investment losses poised to inflict material credit damage, March 24, 2020
- Local government - US: Pensions remain the dominant liability for most of the largest local governments, December 19, 2019
- State government - US: Growing school pension burdens will require more state support, April 9, 2019
- State and local government - US: New OPEB accounting sheds light on credit impact of retiree healthcare liabilities, October 17, 2018

Outlook

- State government - US: State outlook revised to negative as coronavirus impact deepens, May 1, 2020

Methodology

- Adjustments to Pension and OPEB Data Reported by GASB Issuers, Including US States and Local Governments, October 7, 2019
- US States and Territories, April 12, 2018

Endnotes

1 Own-source revenue is the total governmental revenue, less funds received from federal sources plus net transfers in, as reported in audited financial statements.

2 We forecast a nominal US GDP decline of 5.1% to $20.3 trillion in 2020.

3 The average pension plan investment return is based on a 56-plan representative sample.

4 The FTSE Pension Liability Index is published monthly by the Society of Actuaries and was formerly called the Citi Pension Liability Index (CPLI).

5 Our tread water indicator is calculated as the sum of employer service cost for the fiscal year and interest on the reported net pension liability at the start of the fiscal year. A pension plan that receives contributions equal to tread water will end the year with an unchanged net pension liability from the beginning of the year, if plan assumptions hold exactly.

6 The Arizona State Retirement System comprehensive annual financial report (CAFR) does not provide a breakdown of all plan members. To approximate the percentage of plan members related to school districts, we used the share of school district employees from the top 10 participating employers, excluding the state.

REPORT NUMBER 1239084

APPENDIX C

FitchRatings

Public Finance
Tax-Supported
U.S.A.

State of Vermont

Ratings

Long-Term Issuer Default Rating	AA+

New Issues

$80,260,000 General Obligation Bonds, 2021 Series A	AA+
$31,860,000 General Obligation Refunding Bonds, 2021 Series B	AA+
$39,315,000 General Obligation Refunding Bonds (Vermont Citizen Bonds), 2021 Series C	AA+

Outstanding Debt

General Obligation Bonds	AA+

Rating Outlook

Stable

Applicable Criteria

U.S. Public Finance Tax-Supported Rating Criteria (March 2020)

Related Research

Fitch Rates Vermont's $151MM GOs 'AA+'; Outlook Stable (April 2021)

U.S. States Labor Markets Tracker (Employment Recovery Remained Muted Through February, Pickup Expected in March) (April 2021)

Global Economic Outlook - March 2021 (March 2021)

2020 State Liability Report (Liability Burdens Fall in Final Year of Economic Expansion) (October 2020)

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New Issue Summary

Sale Date: The 2021 series A and B bonds are expected to sell the week of April 26, 2021, competitively. The 2021 series C bonds are expected to sell the week of April 26, 2021, via negotiation.

Series: $80,260,000 General Obligation Bonds, 2021 Series A; $31,860,000 General Obligation Refunding Bonds, 2021 Series B; and $39,315,000 General Obligation Refunding Bonds (Vermont Citizens Board), 2021 Series C.

Purpose: Proceeds from the new issuance will be used to fund various capital projects and refund certain outstanding series of GO bonds.

Security: The bonds are general obligations of the State of Vermont (the state), backed by the state's full faith and credit.

The 'AA+' Long-Term Issuer Default Rating (IDR) and GO rating reflect conservative financial management, positioning the state well to absorb the budgetary implications of the coronavirus pandemic. Fitch Ratings anticipates that the moderate long-term liability burden will remain relatively stable.

Economic Resource Base: Vermont's small and modestly growing economy has a larger-than-average reliance on health and educational services, manufacturing and tourism; as such, it remains exposed to several key large employers. The state's population is older than most states, and growth has been relatively limited. Leading into the pandemic, Vermont's labor force had been flat to declining over the prior decade. As with several other New England states, high educational attainment levels provide some potential for economic gains, but Vermont has not fully benefited from that potential to date.

Key Rating Drivers

Revenue Framework: 'aa': Fitch anticipates Vermont's revenues used for state operations will grow at a modest pace, consistent with the agency's long-term expectations for the state's economy. Although property taxes represent the largest component of state revenues and have grown at a robust rate, these revenues do not drive the state's overall revenue framework. Property tax revenues are essentially passed through to school districts and are adjusted annually based on multiple factors, including voter decisions in those districts. The state has complete legal control over its revenues.

Expenditure Framework: 'aaa': The state maintains ample expenditure flexibility with a low burden of carrying costs for liabilities and a broad expense-cutting ability that is common to most U.S. states. Vermont has been particularly focused on addressing healthcare spending, including Medicaid, which is a key expense driver.

Long-Term Liability Burden: 'aa': Vermont's long-term liabilities burden is above the median for U.S. states but remains moderate. Positively, the state's leadership team maintains close oversight and management of debt issuance and engages in ongoing efforts to adjust policies to improve the sustainability of retirement liabilities over time.

Operating Performance: 'aaa': Fitch anticipates Vermont will utilize its broad gap-closing capacity to manage its finances through economic downturns while maintaining a high level of fundamental financial flexibility. The state took steps during the pre-pandemic economic growth period to expand its fiscal flexibility.

Rating Sensitivities

Factors that could, individually or collectively, lead to positive rating action/upgrade:

- Material and sustained improvement in the state's demographic profile, e.g. through consistent population and labor force gains, could support stronger revenue growth prospects and a more robust revenue framework assessment.

Factors that could, individually or collectively, lead to negative rating action/downgrade:

- An inability to prudently manage the long-term liability burden in the context of modest growth expectations for the economic base available to support repayment.

Rating History (IDR)

Rating	Action	Outlook/ Watch	Date
AA+	Affirmed	Stable	4/16/21
AA+	Downgraded	Stable	7/10/19
AAA	Revised	Stable	4/5/10
AA+	Affirmed	Stable	4/13/06
AA+	Upgraded	—	10/25/99
AA	Assigned	—	8/18/92

Current Developments

Federal Relief Provides Critical Support

Federal aid measures enacted in 2020 provided direct fiscal support and bolstered economic activity in Vermont and nationwide. The American Rescue Plan Act (ARPA) could prove to be even more of a direct benefit for the state. Direct fiscal aid authorized last year included a 6.2 percentage point (pp) increase in the Federal Medical Assistance Percentage (FMAP) for Medicaid and $1.25 billion from the Coronavirus Relief Fund (CRF) included within the Coronavirus Aid, Relief and Economic Security (CARES) Act. Vermont directed its allocation primarily to economic relief for businesses and individuals, with more than three fourths of CRF expenditures in the form of grants.

The Committee for a Responsible Federal Budget (CRFB) estimates that Vermont's residents, businesses and healthcare providers received approximately $4.8 billion in additional federal funding from the multiple stimulus and relief bills enacted by Congress since the pandemic's onset in March 2020, with the majority coming in the form of various federal loan programs such as the Paycheck Protection Program. This significant influx of federal funding played a key role in supporting a rebound in economic activity.

Under the ARPA, Vermont's state government is also in line to receive just over $1 billion in direct aid from the Coronavirus State and Local Fiscal Recovery Fund, with the first installment arriving within 60 days of the ARPA's enactment on March 11, 2021. The statute allows the U.S. Treasury Department to withhold up to 50% of any state's allocation for up to 12 months based on the treasury secretary's evaluation of the state's unemployment rate. Fitch anticipates details on that evaluation, along with allowable uses of the direct aid, will be forthcoming from the Treasury Department. Vermont will also receive $113 million from the Coronavirus Capital Projects Fund established by ARPA.

Vermont’s House of Representatives has enacted a plan to allocate about $650 million of the ARPA direct aid, primarily toward infrastructure measures. The governor recently put forward his own plan for utilizing the ARPA receipts, focusing primarily on one-time infrastructure investments that include broadband, affordable housing and water/sewer infrastructure. The combination of direct aid and a significant amount of economic stimulus should have a positive near-term effect on state revenues. Although Fitch does not expect the stimulus aid to alter Vermont’s long-term credit fundamentals, it should help to bridge near-term fiscal gaps.

Vermont Economic and Budgetary Update

Vermont’s economic performance has improved since the pandemic’s onset but slightly trails current national trends. Following a steep decline in April 2020 of more than 20% from the prior month, Vermont’s nonfarm payrolls had recovered 56.5% through February. This compares to a national decline of just under 14.7% in April 2020 and a slightly more robust recovery of 57.6% through February. For details, see “U.S. States Labor Markets Tracker (Employment Recovery Remained Muted Through February, Pickup Expected in March),” published April 15, 2021, on www.fitchratings.com. Vermont's employment growth waned beginning in October 2020 but should benefit from the accelerating rate of coronavirus vaccinations. As of April 15, 2021, Vermont ranks seventh among all states with 29.1% of its population fully vaccinated, compared to about 23.6% nationally, according to the Centers for Disease Control and Prevention (CDC).

State revenue performance has outperformed expectations and, in some cases, even exceeds pre-pandemic forecasts. The state reports revenues over three primary operating funds: the general, education and transportation funds. Collectively, the state's January 2021 revenue forecasting body (the Emergency Board, or “E-Board”) anticipates revenues in the three funds will be largely unchanged in the current fiscal year, relative to both fiscal 2020 and fiscal 2019, at $2.4 billion. This represents a $254.3 million (or 11.6%) improvement compared to the previous E-Board forecast in August 2020.

Versus the most recent pre-pandemic forecast from January 2020, the January 2021 forecast for the three funds combined is essentially flat. The education fund forecast (comprising predominantly sales tax) is 2.7% ahead of the pre-pandemic outlook, while the general fund and transportation fund forecasts still slightly lag pre-pandemic expectations.

Through February, the state reports revenue collections are running 2.5% ahead of the January 2021 forecast, at $1.8 billion across the three primary operating funds. Administrative issues, including a delay in the start of the federal tax filing season and the individual income tax filing deadline extension into May, imply a potentially slower pace of growth over the rest of fiscal 2021 in income tax collections. The individual income tax, representing nearly half of total revenues in the three funds, is over 5% ahead of the target through February. Sales tax revenues, at one fifth of total revenues, were essentially in line with the January 2021 forecast.

Based on the January 2021 E-Board revenue forecast and appropriations as revised under a March 2021 budget adjustment act, the state anticipates a strong $225 million general fund operating surplus in fiscal 2021 on $1.7 billion in spending. Vermont is also anticipating modest surpluses in the education and transportation funds. This follows small operating surpluses in 2020 for the general and education funds and a minor deficit in the transportation fund. The likely strong fiscal 2021 operating results position Vermont well for fiscal 2022.

The state did not draw on its operating reserves last year and has no plans to draw on them in 2021 or 2022. All three funds maintain budget stabilization reserves (BSR) at their statutory maximum levels of 5% of prior year appropriations. For the general fund, the BSR equals $80 million. The state also maintains several additional general fund reserves that total nearly $150 million.

For fiscal 2022, the E-Board anticipates strong 5.4% growth in revenues, attributable to an anticipated acceleration in economic recovery through the year. Notably, the E-Board completed this forecast before passage of the ARPA, which Fitch expects will provide a significant boost to national economic activity (see “Global Economic Outlook - March 2021,” published March 17, 2021, on www.fitchratings.com). The governor's executive budget for fiscal 2022 is built on the January 2021 E-Board forecast, leaving budgetary upside for lawmakers to consider as they settle on a final budget. Prudently, the governor's proposal uses the anticipated $200 million (approximate) fiscal 2021 operating surplus for one-time needs, mainly capital, in fiscal 2022, rather than building it into the base budget.

The executive budget includes full actuarial contributions for the state's pension systems, consistent with prior years. Fiscal 2022 contributions are materially higher than current-year levels based on recent updates to actuarial assumptions, including a decrease in the investment return assumption. The Vermont House of Representatives passed its version of the budget in late March, and the State Senate is now deliberating.

Credit Profile

Fitch considers the state's economic growth trajectory to be modest and midrange relative to its New England peers. Vermont's population has been largely unchanged since 2010, falling below the national trend of slow and steady growth. Pre-pandemic, the state's unemployment rate was the lowest in New England and among the lowest nationally, as labor force weakness had been a primary factor. Vermont's government remains focused on addressing its demographic challenges, with multiple policy efforts to enhance the state's attractiveness for new residents and businesses that include a grant program for remote workers relocating to Vermont.

Given Vermont's small population of 623,347 as of July 2020 (the second lowest among all states), even minor shifts in migration trends could lead to notable population and workforce changes. Early data, including rapid growth in housing prices and unanticipated spikes in property transfer tax receipts, imply at least a short-term boost in migration into the state during the pandemic. The sustainability of these recent gains could be an important consideration in determining the state's longer-term economic and credit implications.

Revenue Framework

The state's revenues used for direct state operations consist primarily of personal and corporate income taxes, sales and use taxes and a meals and rooms tax (MRT) intended to export a share of the tax burden to visiting tourists. Vermont also levies a state property tax for education, which is an unusual feature for state governments yet comprises the largest source of Vermont's total revenues. Since Vermont essentially passes through property tax collections to local school districts, Fitch discounts the importance of this stream in its revenue framework assessment. There are no legal limitations on the state's ability to raise revenues.

Fitch anticipates limited growth in Vermont's revenues over the long term, relatively in line with inflation, given the state's modest economic growth prospects. Vermont's historical total tax revenue growth, adjusted for policy changes, has been essentially flat on a real basis over the past decade. The limited growth reflects the state's ongoing constraints on economic and revenue growth.

Vermont has no legal limitations on its ability to raise revenues through base broadenings, rate increases or the assessment of new taxes or fees.

Expenditure Framework

Education is the state's largest expenditure item from own-source revenues; this is driven by Vermont's unique funding system whereby the state covers the full cost for locally administered K–12 schools, primarily through the property tax and the sales and use tax. Health and human services, primarily Medicaid, is the second-largest expenditure area.

Spending growth, absent policy action, will likely be slightly ahead of revenue growth. This is driven primarily by Medicaid, requiring regular budget measures to ensure ongoing balance. The fiscal challenge of Medicaid is common to all U.S. states, and the nature of the program along with federal government rules limits states' options in managing the pace of spending growth. Federal action to revise Medicaid's fundamental programmatic and financial structure does not appear to be a near-term priority of the current federal administration or the U.S. Congress. As with all federal initiatives, Medicaid remains subject to regulatory changes that could affect various aspects of the program.

Vermont has been particularly aggressive in addressing the long-term national trend of steadily rising healthcare costs (including Medicaid), including a recent shift toward outcome-based care under an "all-payer" system, rather than the traditional fee-for-service model. Under terms of the agreements with the federal government for the all-payer system, Vermont is transitioning Medicare and Medicaid to an outcome-based accountable care organization model, with the goal of gaining participation from private insurers and providers as well over the program's initial five-year period. The state began an initial all-payer pilot program with Medicaid patients in January 2017, and it has since expanded the program to cover the vast majority of Vermont's Medicaid members.

Medicaid Spending Growth Remains Modest

Leading into the pandemic, healthcare spending had leveled off in recent years, with the state reporting that Medicaid spending growth slowed considerably from fiscal 2016 onward. The state also reported a sharp decline in Medicaid enrollment during this period (by 21% between fiscal years 2016 and 2019). This trend was observed in numerous other states given the then-expanding economy and was a key factor in the slower Medicaid spending growth.

Through the early months of the pandemic, despite the deep job losses noted above, Vermont's Medicaid spending increased only modestly. The state's Agency for Health Services notes enrollment growth since the onset of the pandemic has been offset by a decline in utilization, partially due to the pandemic's limiting effects on public interaction. Fiscal 2020 spending (combined state and federal spending) was flat yoy at 0.2%, while the state currently projects fiscal spending to increase 2.1% and 1.6% in fiscal years 2021 and 2022, respectively. Both levels actually trail the pre-pandemic five-year average for Medicaid spending growth (through 2019) of 2.6%. Medicaid spending growth during the pandemic-driven downturn also trailed the fiscal 2009 growth rate of over 12%, which coincided with the peak of the Great Recession.

Lake Champlain Cleanup Costs

Following a June 2016 agreement between the EPA and the state to address pollution issues in Lake Champlain, the Vermont Legislature enacted legislation (Act 76 of 2019) to meet a federal mandate to establish an ongoing funding source for cleanup efforts. As such, Act 76 dedicates 6% of the state's MRT collections to a clean water fund. The state estimates the MRT dedication, along with other allocated state revenues, will yield approximately $20 million annually for cleanup costs. The EPA indicated last April that the state's recent statutory dedication of revenues puts it on track to meet its obligations under the June 2016 agreement. However, sharp declines in the MRT over the past year will decrease dedicated revenues; should MRT receipts fail to recover within the next several years, the EPA may require the state to supplement its annual contributions.

Fitch anticipates Vermont's low fixed carrying cost burden (5.8% of governmental expenditures in fiscal 2020) will increase modestly based on the most recent actuarial valuation reports given the state's commitment to, at minimum, full actuarial contributions to its pension systems. The state has regularly contributed in excess of actuarially determined amounts for pensions in an effort to manage and reduce its net pension liabilities (NPLs). Overall, the state retains ample flexibility to adjust its main expenditure items.

New Pension Valuations Will Trigger Higher Contributions

In October, the state's primary pension systems released new actuarial valuations based on the most recent experience study (completed in September 2020), which reported sizable growth in unfunded liabilities and actuarially determined employer contributions. Combined contributions to the Vermont State Employees' Retirement System (VSERS) and the Vermont State Teachers' Retirement System (VSTRS) will increase 44% in fiscal 2022. This approximately $96 million increase is not a material concern in the context of the state's fiscal 2020 governmental funds expenditures of $6.2 billion.

Long-Term Liability Burden

On a combined basis, Vermont's debt and NPLs as of Fitch's "2020 State Liability Report" (published Oct. 26, 2020, on www.fitchratings.com) totaled 11.5% of 2019 personal income, compared with a U.S. states median of 5%. Based on the state's fiscal 2020 audited financial statements, Fitch calculates a long-term liability burden of 11.9% of 2020 personal income. This ratio includes special obligation transportation infrastructure bonds (TIBs) supported by a dedicated share of Vermont's gasoline and diesel taxes, along with Vermont Housing Finance Agency bonds paid from the state's real property transfer tax. Vermont considers the TIBs to be self-supporting from the dedicated tax revenues as part of its legal and policy calculations for tax-supported debt.

Debt levels remain modest at approximately 2% of personal income and are closely monitored through the state's Capital Debt Affordability Advisory Committee (CDAAC). The governor and legislature consistently stay within CDAAC recommendations for annual bond issuance.

NPLs are more significant, with Fitch-adjusted NPLs representing approximately 10% of personal income. The pension liability calculations include essentially 100% of the liability in the VSERS and VSTRS, for which the state makes the full actuarial contribution. Market losses during the last two recessions contributed to recent growth in NPLs for both systems.

State Looks To Address Growth in Pension and Other Post-Employment Benefit Liabilities

The October valuations noted earlier will lead to an approximate 25% increase in the reported actuarial unfunded liability for VSERS and VSTRS, although Fitch anticipates Vermont's long-term liability burden will remain consistent with an 'aa' assessment over the long term. An analysis from the Vermont State Treasurer's Office attributed the growth to a change in the discount rate assumption to 7.0% from 7.5%, along with various demographic changes based on the experience study findings.

Earlier this year, the Vermont Legislature considered a bill to revise pension benefits and increase both employer and employee contributions in an effort to reduce the projected growth in liabilities. The state treasurer had previously presented a January 2021 report to the legislature with a series of recommendations. However, instead of enacting legislation, the legislature elected to create a task force to study the issue and propose new legislation for the next session in 2022.

Other post-employment benefit (OPEB) liabilities are also significant, with the reported 2020 net OPEB liability equal to 7.3% of the state's personal income, up from 6.6% the prior year. The treasurer's office notes that the increase is due entirely to interest rate changes; given the lack of full actuarially determined contributions, the state (following guidelines from the Governmental Accounting Standards Board) reports its OPEB liability using a 20-year AA municipal bond rate to calculate the present value of its benefit obligation. The prescribed rate declined last year, lowering the discount rate used for the OPEB liability calculation and increasing the liability.

The state has taken modest steps toward prefunding OPEB liabilities and has made some progress in reducing liabilities through collective bargaining with unions. Fitch anticipates Vermont will continue to seek ways to reduce OPEB costs and long-term liabilities. The treasurer's January 2021 report to the Vermont Legislature also included recommendations regarding OPEB.

Operating Performance

Vermont's exceptionally strong gap-closing capacity derives from institutional and statutory mechanisms and a demonstrated ability to prudently manage through economic downturns. Official revenue forecasts are updated at a minimum of twice a year through the E-Board, a consensus process involving the administration and legislature. During the Great Recession, the state moved to quarterly updates to enhance its ability to respond to rapidly changing fiscal circumstances. At the onset of the pandemic in early 2020, the state implemented more frequent "revenue risk assessment analyses."

The governor can implement a spending reduction plan either unilaterally, in the event a revenue forecast lowers revenues less than one percent from the prior forecast, or with approval from the legislature's Joint Fiscal Committee (a bipartisan and bicameral committee comprising legislative fiscal leaders) for larger forecast revenue shortfalls. As noted earlier, the state has been able to engage key stakeholders, including labor, to develop spending reduction plans during economic and fiscal downturns. The state's recent pattern has been to focus on expenditure cuts, such as negotiated wage reductions or programmatic cuts, rather than revenue increases.

Last year, the Vermont Legislature and the governor implemented two budget adjustment acts, including one in May 2020 that was expressly in response to the pandemic. The state focused on reducing spending primarily by holding back on planned expenses and freezing hiring, rather than resorting to deep programmatic cuts or widespread layoffs.

Vermont's multiple budget reserves also support the state's robust financial resilience. These include fully funded budget stabilization reserves (5% of prior year appropriations) in each of its three primary operating funds (general, education and transportation), along with separate, fund-specific reserves or unreserved balances of lesser amounts. The state estimates the various general fund reserves will total $228.1 million at fiscal YE21, representing approximately 15% of forecast general fund uses. Combined reserves across the three primary operating funds total 13% of revenues, net of the statewide property tax.

FAST Scenario Analysis for Vermont

The Fitch Analytical Stress Test (FAST) scenario analysis tool relates historical tax revenue volatility to GDP to support the assessment of operating performance under Fitch's criteria. Although the FAST is not a forecast, it represents Fitch's estimate of possible revenue behavior in a downturn based on historical revenue performance. Hence, actual revenue declines will vary from FAST results. The FAST does provide a relative sense of the risk exposure of a particular state compared to other states.

Vermont has robust financial resilience that should allow it to absorb the budgetary effects of the pandemic. Fitch's standard FAST scenario of a 1% GDP decline in year 1 results in a 1% decline in Vermont's revenue, versus an approximate 3% median decline for all states. The state appears to be less vulnerable to cyclical revenue declines tied to economic downturns than most other states.

Prudent Management Prepares the State for Downturns

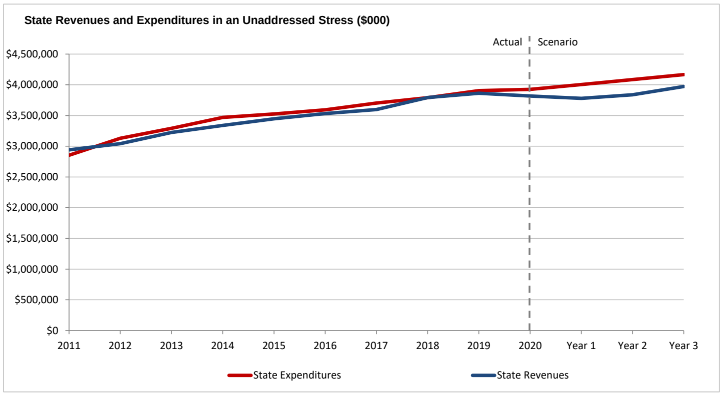
The state's budgeting practices tend to be conservative in forecasting and proactive through the fiscal year, with most fiscal years ending with at least a modest general fund budget surplus despite the lack of a statutory or constitutional balanced budget requirement. In the years leading into the pandemic, the state took steps to build in additional fiscal resilience through additional reserves, including the general fund balance reserve, established in 2012 to replace the revenue shortfall reserve; a human services caseload reserve, established in 2017 and used primarily for Medicaid; and a "27/53" reserve, established in 2016 to address years that feature a 27th biweekly payroll or a 53rd week of Medicaid disbursements.

ESG Considerations

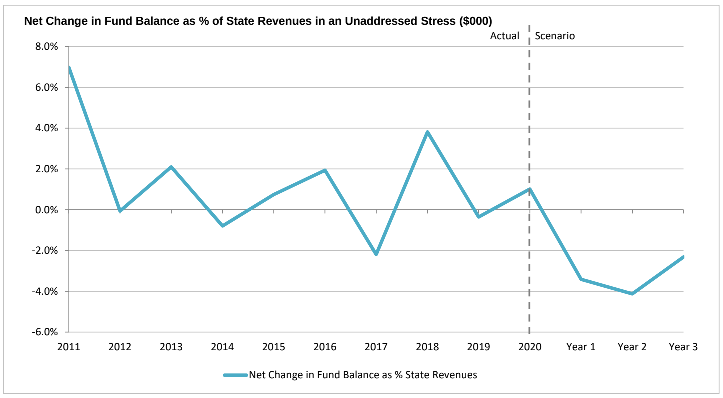
Unless otherwise disclosed in this section, the highest level of ESG credit relevance is a score of '3'. This means ESG issues are credit-neutral or have only a minimal credit impact on the entity, due to either their nature or the way in which they are being managed by the entity. For more information on Fitch's ESG Relevance Scores, visit www.fitchratings.com/esg.

Vermont, State of (VT)

Scenario Analysis



State Revenues and Expenditures in an Unaddressed Stress ($000)



Net Change in Fund Balance as % of State Revenues in an Unaddressed Stress ($000)

Analyst Interpretation of Scenario Results:

FAST Scenario Analysis for Vermont

The Fitch Analytical Stress Test (FAST) scenario analysis tool relates historical tax revenue volatility to GDP to support the assessment of operating performance under Fitch's criteria. FAST is not a forecast, but it represents Fitch's estimate of possible revenue behavior in a downturn based on historical revenue performance. Hence, actual revenue declines will vary from FAST results. FAST does provide a relative sense of the risk exposure of a particular state compared to other states.

Vermont has robust financial resilience that should allow it to absorb the budgetary effects of the ongoing pandemic. Fitch's standard FAST scenario of a 1% decline in GDP in year 1 results in a 1% decline in Vermont's revenue compared to an approximately 3% states' median decline. The state appears to be less vulnerable to cyclical revenue declines tied to economic downturns than most other states.

Scenario Parameters:	Year 1	Year 2	Year 3
GDP Assumption (% Change)	(1.0%)	0.5%	2.0%
Expenditure Assumption (% Change)	2.0%	2.0%	2.0%
Revenue Output (% Change)	(1.0%)	1.5%	3.5%

Minimum Y1 Stress: -1% *Case Used:* **Moderate**

Revenues, Expenditures, and Net Change in Fund Balance	Actuals										Scenario Output		
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Year 1	Year 2	Year 3
Expenditures													
Total Expenditures	4,860,504	5,017,124	5,157,410	5,408,365	5,611,911	5,614,127	5,695,460	5,787,926	5,912,667	6,198,921	6,322,899	6,449,357	6,578,344
% Change in Total Expenditures	4.2%	3.2%	2.8%	4.9%	3.8%	0.0%	1.4%	1.6%	2.2%	4.8%	2.0%	2.0%	2.0%
State Expenditures	2,852,399	3,129,968	3,291,870	3,470,157	3,524,751	3,592,491	3,703,795	3,791,118	3,906,257	3,925,660	4,004,173	4,084,256	4,165,942
% Change in State Expenditures	4.1%	9.7%	5.2%	5.4%	1.6%	1.9%	3.1%	2.4%	3.0%	0.5%	2.0%	2.0%	2.0%
Revenues													
Total Revenues	4,949,512	4,929,587	5,088,868	5,276,849	5,532,771	5,554,187	5,589,659	5,790,446	5,868,514	6,091,766	6,099,046	6,202,882	6,386,041
% Change in Total Revenues	5.8%	(0.4%)	3.2%	3.7%	4.8%	0.4%	0.6%	3.6%	1.3%	3.8%	0.1%	1.7%	3.0%
Federal Revenues	2,008,105	1,887,156	1,865,540	1,938,208	2,087,160	2,021,636	1,991,665	1,996,808	2,006,409	2,273,261	2,318,726	2,365,101	2,412,403
% Change in Federal Revenues	4.2%	(6.0%)	(1.1%)	3.9%	7.7%	(3.1%)	(1.5%)	0.3%	0.5%	13.3%	2.0%	2.0%	2.0%
State Revenues	2,941,407	3,042,431	3,223,328	3,338,641	3,445,611	3,532,550	3,597,994	3,793,638	3,862,104	3,818,505	3,780,320	3,837,781	3,973,639
% Change in State Revenues	6.9%	3.4%	5.9%	3.6%	3.2%	2.5%	1.9%	5.4%	1.8%	(1.1%)	(1.0%)	1.5%	3.5%
Excess of Revenues Over Expenditures	89,008	(87,537)	(68,542)	(131,516)	(79,140)	(59,941)	(105,801)	2,519	(44,153)	(107,154)	(223,853)	(246,475)	(192,303)
Total Other Financing Sources	116,561	85,505	136,216	104,926	104,723	128,397	26,941	142,304	30,416	145,866	94,785	88,063	100,287
Net Change in Fund Balance	205,569	(2,032)	67,674	(26,590)	25,583	68,456	(78,859)	144,823	(13,737)	38,712	(129,068)	(158,413)	(92,016)
% Total Expenditures	4.2%	(0.0%)	1.3%	(0.5%)	0.5%	1.2%	(1.4%)	2.5%	(0.2%)	0.6%	(2.0%)	(2.5%)	(1.4%)
% State Expenditures	7.2%	(0.1%)	2.1%	(0.8%)	0.7%	1.9%	(2.1%)	3.8%	(0.4%)	1.0%	(3.2%)	(3.9%)	(2.2%)
% Total Revenues	4.2%	(0.0%)	1.3%	(0.5%)	0.5%	1.2%	(1.4%)	2.5%	(0.2%)	0.6%	(2.1%)	(2.6%)	(1.4%)
% State Revenues	7.0%	(0.1%)	2.1%	(0.8%)	0.7%	1.9%	(2.2%)	3.8%	(0.4%)	1.0%	(3.4%)	(4.1%)	(2.3%)

Notes: Scenario analysis represents an unaddressed stress on issuer finances. Fitch's scenario analysis assumes the GDP and expenditure growth sequence shown in the 'Scenario Parameters' section. For further details, please see Fitch's US Tax-Supported Rating Criteria.

The ratings above were solicited and assigned or maintained at the request of the rated entity/issuer or a related third party. Any exceptions follow below.

APPENDIX D

MOODY'S INVESTORS SERVICE

CREDIT OPINION
18 June 2021

Rate this Research

Vermont (State of)

Update following assignment of ESG scores

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Summary

The State of Vermont (Aa1 stable) maintains a strong financial position, putting it in a good place to weather lingering challenges that may be brought about by the coronavirus pandemic. Employment recovery in Vermont is slow among US states, though it is sufficient to drive current year revenue that is outpacing the state's budget assumption. As a result, the state is on track to close the fiscal year (June 30) with a solid fund balance and healthy cash reserves.

Vermont has the smallest US state economy and has the second smallest population, but resident income is above average and educational attainment is high. Over the long term, an aging population may be a drag on future growth and Vermont's performance on multiple economic measures has lagged that of the US for years.

With slower than average growth, Vermont's long-term liabilities will weigh more heavily on its economic base. Vermont's leverage, measured by combined debt and unfunded post-employment obligations relative to GDP, is high among US states. Still, we do not anticipate a major negative shift in the state's fixed cost burden in the coming years and, overall, we expect the state's credit standing to remain strong. As a US state, Vermont has broad flexibility to adjust its finances in response to operating challenges.

Exhibit 1

Vermont's outstanding debt, as of the close of fiscal year 2020 (June 30, 2020)

Type of debt	Principal outstanding ($m)	Moody's rating
General Obligation	$613	Aa1
Special tax - motor fuel assessment	$23	Aa2
Special tax - property transfer tax	$33	Aa2
Appropriation - mental health services	$8	A1
Moral obligation - student loan revenue	$8	Aa3
Capital leases	$9	N/A

We exclude the student loan revenue bonds from the calculation of Vermont's net tax-supported debt.
Source: State of Vermont and Moody's Investors Service

Credit strengths

» Although Vermont's economy is the smallest of all US states, resident income is above average, educational attainment is high, and unemployment is low

» Financial operations and budget reserves are sound and stable, and liquidity is very healthy

Credit challenges

» The state's economic performance lags that of the US and many state peers, and an aging population may be a drag on future growth

» Relative to state GDP, Vermont's leverage (combined debt and unfunded post-employment liabilities) is higher than most states

Rating outlook

The stable outlook reflects the expectation that Vermont's economic fundamentals, financial position and fiscal management will remain strong and support the current rating.

Factors that could lead to an upgrade

» Improved demographic and economic trends that more closely track those of the nation and other highly rated states

» Moderated leverage, especially unfunded pensions and retiree health care liabilities, relative to state GDP

Factors that could lead to a downgrade

» Substantial growth in debt or unfunded post-employment liabilities

» A slowdown in economic expansion or revenue growth

» A departure from strong fiscal management practices

Key indicators

Exhibit 2

Vermont (State of)	2016	2017	2018	2019	2020	50-State Median (2019)
Operating Fund Revenues (000s)	$2,927,613	$2,963,227	$3,113,669	$3,542,301	$3,503,207	$12,439,906
Available Balances as % of Operating Fund Revenues	6.2%	5.0%	7.1%	7.8%	8.8%	9.1%
Nominal GDP (billions)	$31.4	$32.0	$33.0	$34.0	$33.3	$250.6
Nominal GDP Growth	2.5%	1.9%	2.9%	3.1%	-2.2%	3.6%
Total Non-Farm Employment Growth	0.3%	0.6%	0.2%	0.1%	-9.7%	0.9%
Fixed Costs as % of Own-Source Revenue	7.6%	8.1%	8.2%	8.4%	9.7%	7.8%
Adjusted Net Pension Liabilities (000s)	$4,034,179	$5,123,076	$4,882,266	$4,563,037	$5,737,409	$11,258,253
Net Tax-Supported Debt (000s)	$666,935	$615,759	$713,886	$661,983	$687,007	$3,864,531
(Adjusted Net Pension Liability + Net Tax-Supported Debt) / GDP	15.0%	17.9%	17.0%	15.4%	19.3%	6.9%

Source: Vermont's audited financial statements, the US Bureau of Economic Analysis and Moody's Investors Service

Profile

The State of Vermont is located in the northeast United States. Its population of just under 624,000 is the second lowest in the country. It has the smallest economy among US states, measured by a 2020 gross domestic product of about $32 billion.

Detailed credit considerations

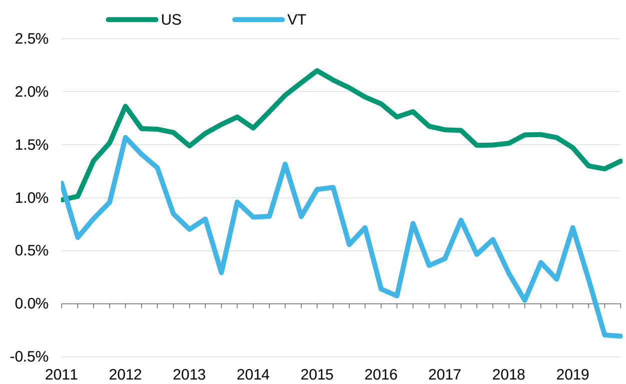
Economy

Vermont is recovering jobs more slowly than most states. As of April 2021, Vermont's total nonfarm employment was 7.3% below its level as of February 2020. For the nation as a whole, April 2021 nonfarm employment was down 5.4% relative to February 2020.

The long-term economic impact of the coronavirus outbreak on Vermont remains uncertain, as it is for the other forty-nine states. Vermont's capacity to recover jobs at a rate more on par with other states may be stymied by the role that certain sectors play in the state's employment base and other underlying demographic challenges. Tourism and hospitality play important roles in the state's economy and those sectors could face delays in returning to their prior levels of output. Further, slow population growth in Vermont has been a driver of economic performance that lagged the US for several years (see Exhibits 3 & 4) and could be a drag on the state's long-term growth.

Exhibit 3

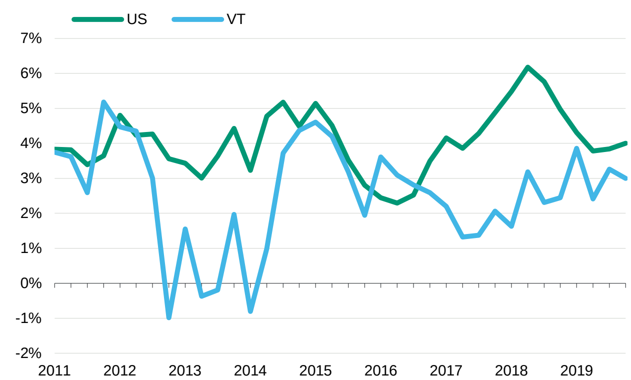
Year-over-year change in quarterly nonfarm employment



Source: US Bureau of Labor Statistics

Exhibit 4

Year-over-year change in quarterly nominal GDP



Source: US Bureau of Economic Analysis

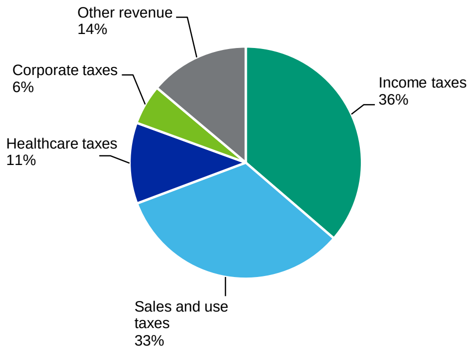
Finances

Vermont's year-to-date financial performance in fiscal 2021 is sound. Through May of the current fiscal year 2021, revenue collected within the state's three primary operating funds – general, transportation and education – was tracking about 8% above forecast assumptions. Vermont relies most heavily on personal income and sales taxes (see Exhibit 5). The state also accounts for school district property taxes in its financial statements because the taxes are pooled in the state's education fund. However, the property taxes are restricted for education and levied, per statute, as an education tax. The state cannot use the property taxes to cover state spending other than education.

Despite the disruption to revenue caused by the coronavirus outbreak, Vermont still closed fiscal 2020 with healthy reserves. The state maintained its formal budget stabilization balances in its three main operating funds at a total $127 million, which was down only slightly from the $129 million with which the state had closed fiscal 2019. Vermont maintains its formal budget stabilization reserves at 5% of the prior year's spending. In addition to its budget stabilization reserves, Vermont's unrestricted fund balance across its key operating funds remained strong as a share of state revenue in fiscal 2020 (see Exhibit 6).

Exhibit 5

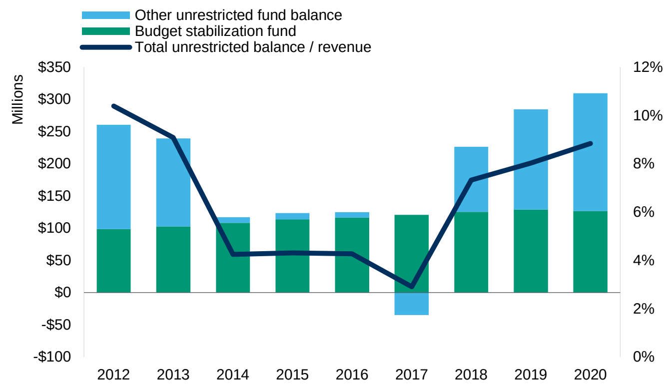
Composition of revenue in Vermont's three primary operating funds, fiscal 2019



Sources are shown as percentages of combined general, transportation and education fund revenue less property taxes and federal funds.
Source: State of Vermont

Exhibit 6

Budget stabilization reserves and other fund balance across Vermont's three primary operating funds



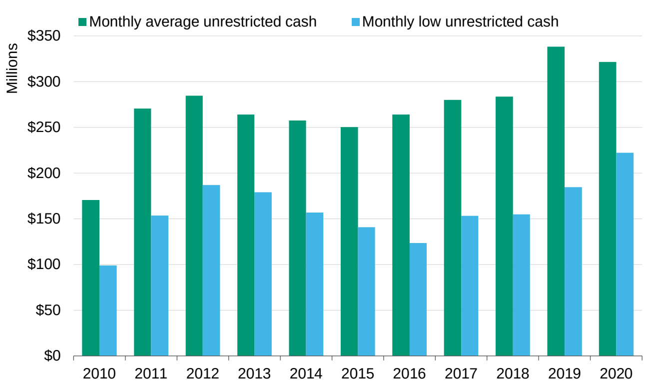
Balances and revenue reported in the state's general, transportation and education funds.
Source: Vermont's comprehensive annual financial reports and Moody's Investors Service

Liquidity

Across government activities, Vermont's cash balances also remain healthy. Exhibit 7 below shows the monthly low and average balance of unrestricted cash held for core operations by fiscal year as reported by the state treasurer. Exhibit 8 shows year-end cash and investments held across all governmental funds as reported in the state's comprehensive annual financial reports. Both charts exclude federal CARES Act funds.

Exhibit 7

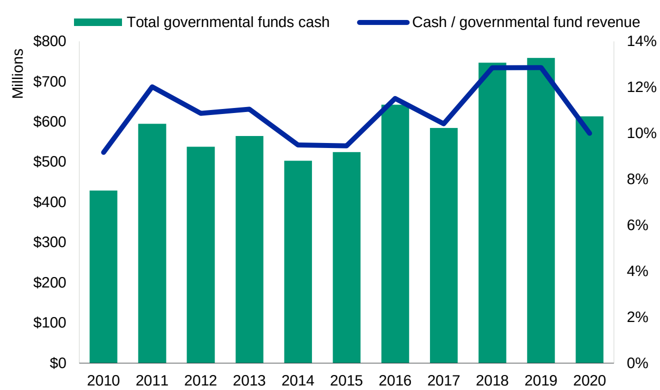
Monthly unrestricted cash balances reported by state treasurer



Source: State of Vermont and Moody's Investors Service

Exhibit 8

Cash and investments across total governmental funds



Source: Vermont's comprehensive annual financial reports and Moody's Investors Service

Debt and pensions

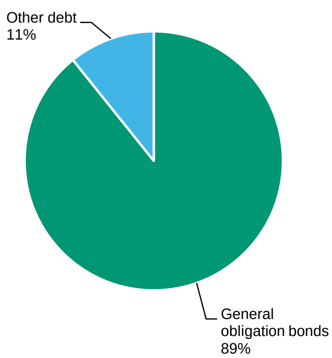
Vermont's debt burden will remain moderate, but it will continue to carry a heavy post-employment liability burden. Vermont's net tax supported debt (NTSD) primarily consists of general obligation bonds (see Exhibit 9) and its debt ratios are very close to the state medians. However, as a share of state nominal GDP, Vermont's adjusted net pension liability (ANPL) is consistently among the ten highest of the 50 states. The ANPL is our measure of a state or local government's pension burden that uses a market-based interest rate to value accrued liabilities.

Vermont's unfunded pension liability, as measured by our ANPL, is the principal component of its leverage (see Exhibit 10). Though Vermont's combined debt and pension burden remains above the state median, it is not on a rapidly growing path and the state's contribution practices are sound. ANPL growth in 2020 is largely a consequence of a decline in the market-based interest rate we use to discount liabilities, an effect that will be fairly consistent across states.

Despite being above average, Vermont's debt and pension burden is much lower than those of the most highly leveraged states. And, importantly, Vermont's pension burden incorporates all liabilities associated with statewide school districts because the state accounts for all primary and secondary education financial activities in its own financial statements. This is a big driver of Vermont's high pension burden relative to other states.

Exhibit 9

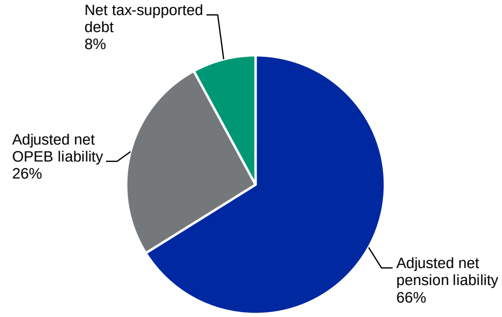
The majority of net tax-supported debt consists of general obligation bonds



Source: State of Vermont

Exhibit 10

Unfunded post-employment benefits liabilities dominate Vermont's leverage



Source: State of Vermont and Moody's Investors Service

Legal security

Exhibit 1 above details the different types of bonds outstanding that we consider to be net tax-supported debt of Vermont. Exhibit 11 below details the legal security associated with each type of bond.

Exhibit 11

Legal security of Vermont's debt

Type of debt	Legal security
General obligation	Full faith and credit obligation of the state backed by the state's authority to levy taxes without limitation as to rate or amount.
Special tax - motor fuel assessment	Receipts of a 2% assessment on the retail price of each gallon of gasoline sold by distributors in the state and receipts of a $0.03 assessment on each gallon of diesel fuel sold in the state.
Special tax - property transfer tax	Statutory transfer of the first $2.5 million of property transfer tax receipts from the state to the Vermont Housing Finance Agency (HFA). Act 85 of 2017 specifically allocates the first $2.5 million of collections to the HFA to pay debt service on the authorized bonds. The bonds have been issued by the HFA.
Appropriation - mental health services	Payments appropriated by the state to providers of developmental disability services; the bonds have been issued by the Vermont Economic Development Authority and Vermont Educational and Health Buildings Finance Agency.
Moral obligation - student loan revenue	Payments made by student loan borrowers and a debt service reserve fund that the state pledges to replenish, subject to appropriation, should a draw on the reserve be made to pay debt service; the bonds have been issued by the Vermont Student Assistance Corporation.

Source: Respective bond offering documents and Moody's Investors Service

Debt structure

All of Vermont's debt is fixed rate.

Debt-related derivatives

Vermont is not party to any debt-related derivatives.

Pensions and OPEB

Across both of its retirement plans (the Vermont State Retirement System and State Teachers' Retirement System), Vermont's pension contribution of $211 million in fiscal 2020 consumed 5.5% of own-source revenue. This contribution was just below the $220 million we calculate as the state's aggregate pension "tread water" indicator. The "tread water" indicator, which we calculate based on pension plan disclosures, measures the annual employer contribution necessary to forestall growth in plan reported net pension liabilities, assuming other plan actuarial assumptions hold and after accounting for employee contributions. It is a measure of a government's capacity and willingness to control growth in unfunded liabilities. The gap between Vermont's actual contribution and the "tread water" indicator was a modest 0.2% of own-source revenue. Vermont's fiscal 2018 and 2019 contributions had slightly exceeded those years' respective "tread water" indicators.

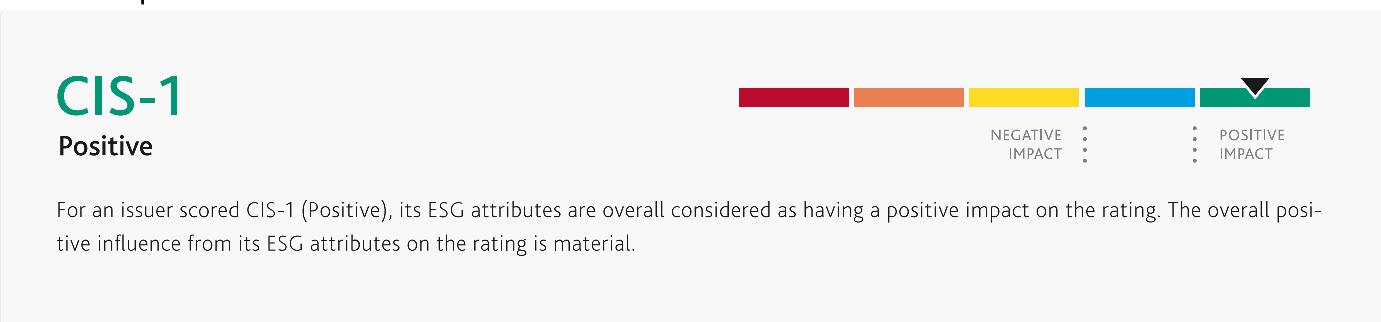
As of fiscal 2020, Vermont reported a net OPEB liability of $2.3 billion under GASB statement 75. As with pensions, we adjust OPEB liabilities using a market-based interest rate. However, because many public OPEB plans are not prefunded, they are already discounted at a lower rate than public pensions plans tend to use. In the case of Vermont, our discount rate adjustment results in an adjusted net OPEB liability of $2.3 billion as well, which is about 6.5% of the state's 2019 GDP. As with pensions, Vermont's net OPEB liability includes 100% of state teacher retiree health care liabilities. Vermont contributed $73 million to its OPEB plans in fiscal 2020, which is also incorporated in our fixed cost ratio reported in Exhibit 2.

ESG considerations

Vermont (State of)'s ESG Credit Impact Score is positive CIS-1.

Exhibit 12

ESG Credit Impact Score

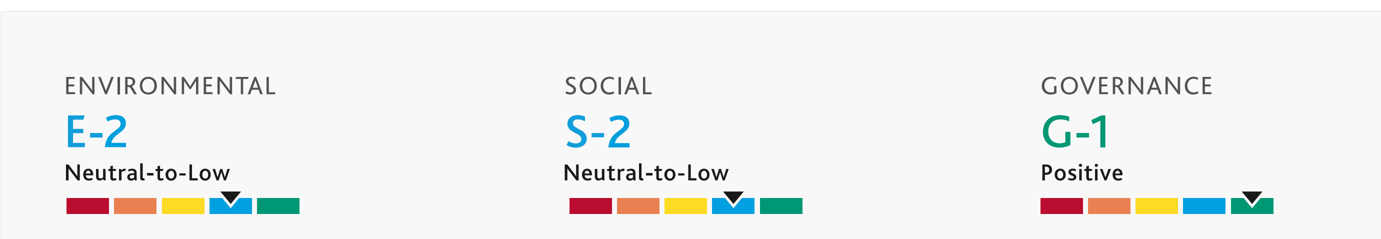


Source: Moody's Investors Service

Vermont's ESG Credit Impact Score positive (**CIS-1**), reflecting neutral to low exposures to environmental and social risks and positive governance profile.

Exhibit 13

ESG Issuer Profile Scores



Source: Moody's Investors Service

Environmental

Vermont's E issuer profile score is neutral-to-low (**E-2**). Among US states, Vermont's environmental risks are low. With no coastal exposure, Vermont local governments are primarily exposed to extreme rainfall risk, according to data from Moody's affiliate

Four Twenty Seven. Increased rainfall could result in more frequent local or regional flooding. We expect the state and most of its local governments have the resources and capacity to address flood events.

Social

Vermont's S issuer profile score is neutral-to-low (**S-2**). Vermont's key social challenge is slow population growth. The state has one of the slowest growing populations in the US and the most rapid decline in prime working age population (residents aged 25-54). Since 2000, the state's prime working age population fell just over 16% and it has fallen nearly 10% since 2010. These are the highest rates of decline over these two periods among the 50 states and the District of Columbia. Since 2010, the prime working age population in the US grew nearly 5%. Mitigating this challenge is Vermont's highly educated resident base and stability in other indicators.

Support for health services by the federal government, mainly through Medicaid grants, represents a vulnerability for states and Vermont is no exception. According to data of the federal government, approximately 27% of Vermont residents are currently enrolled in Medicaid and the Children's Health Insurance Program (CHIP), a ratio higher than the 24% of the national population enrolled. This indicates that Vermont is a bit more vulnerable to a change in federal policy or funding than other states. Statewide, housing affordability has not fallen as much in Vermont as it has in many parts of the US. Though slow population growth could be a drag on future economic growth, it could keep housing affordable in most parts of the state.

Governance

Vermont's governance is strong, reflected in its positive G issuer profile score (**G-1**). The state updates its consensus revenue forecast twice per year, in January and July. The January update covers the remainder of the current fiscal year as well as the two upcoming fiscal years. The July update then revises the forecast for the newly begun fiscal year and the immediately following fiscal year. The two forecast updates are required by statute. During economic downturns, such as the 2007-09 recession, the state has updated its revenue forecast more frequently to aid responses to weakened revenue performance.

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

Rating methodology and scorecard factors

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

Exhibit 14

US state and territories rating methodology scorecard

Vermont (State of)

Rating Factors	Measure	Score
Factor 1: Economy (25%)		
a) Per Capita Income Relative to US Average [1]	97.9%	Aa
b) Nominal Gross Domestic Product ($ billions) [1]	$33.3	A
Factor 2: Finances (30%)		
a) Structural Balance	Aa	Aa
b) Fixed Costs / State Own-Source Revenue [2]	9.7%	Aa
c) Liquidity and Fund Balance	Aa	Aa
Factor 3: Governance (20%)		
a) Governance / Constitutional Framework	Aaa	Aaa
Factor 4: Debt and Pensions (25%)		
a) (Moody's ANPL + Net Tax-Supported Debt) / State GDP [2] [3]	19.3%	Aa
Factors 5 - 10: Notching Factors [4]		
Adjustments Up: Financial Stability	0.5	
Adjustments Down: None	0	
Rating:		
a) Scorecard-Indicated Outcome		Aa1
b) Actual Rating Assigned		Aa1

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

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APPENDIX E

S&P Global Ratings

RatingsDirect®

Vermont; General Obligation; School State Program

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Vermont; General Obligation; School State Program

Credit Profile		
US$80.3 mil GO bnds ser 2021 A due 08/15/2040		
Long Term Rating	AA+/Negative	New
US$39.3 mil GO rfdg bnds ser 2021 C due 08/15/2030		
Long Term Rating	AA+/Negative	New
US$31.9 mil GO rfdg bnds ser 2021 B due 08/15/2030		
Long Term Rating	AA+/Negative	New
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed

Rating Action

S&P Global Ratings assigned its 'AA+' long-term rating to the State of Vermont's:

- $80.3 million series 2021A general obligation (GO) bonds;
- $31.9 million series 2021B GO refunding bonds; and
- $39.3 million series 2021C GO refunding bonds (Vermont Citizens Bonds).

S&P Global Ratings also affirmed its 'AA+' rating on Vermont's GO debt outstanding and its 'AA' rating on the Vermont Municipal Bond Bank's Vermont State Colleges system bonds outstanding that include an intercept mechanism dependent on appropriation funding from the State of Vermont to the Vermont State Colleges System.

The outlook on all ratings is negative.

The GO bonds are secured by the full faith and credit of the State of Vermont.

Credit overview

In our view, Vermont's proactive budget management practices and well-embedded strong financial policies have helped anchor the state's credit profile over time, as pressures have mounted from demographic trends and retirement liabilities. These strengths--which include regular forecast updates, annual midyear budget adjustments, consistent reserve levels across economic cycles, and debt affordability oversight--remain crucial to the state's credit quality. In our view, these practices have helped Vermont close a sizable 11.1% general fund budget gap in fiscal 2021, stemming from the COVID-19 pandemic, primarily by recurring measures. However, we anticipate that if the trajectory of current challenges persist, the state's structural budget balance could begin to slowly erode over the long term, given shrinking resources to address significant liabilities.

Vermont's credit profile remains challenged by a demographic profile that we expect will limit economic growth potential in the long term. The state, which has the second-lowest population in the nation, at approximately 623,000 residents in 2020, has recorded a cumulative population decline of 0.6% from 2011 to 2020, while the nation's population has grown by 5.7% over the same period, according to the U.S. Census Bureau. Although the state has recorded population gains in some years--including recently in 2017 and 2015--growth has been minimal. The state anticipates updated data from the yet-to-be-released 2020 Census will be crucial for its demographics strategy moving forward. We note the U.S. Census Bureau pushed back a Dec. 31, 2020, deadline to release updated state population totals informed by the 2020 census to April 30, 2021, given reporting challenges caused by the pandemic.

Although IHS Markit reports Vermont's net domestic migration has been negative for 15 consecutive years, the state believes the pandemic might have caused an uptick in in-migration--at least temporarily--because second-home buyers have been attracted to Vermont's low population density. Specifically, real estate activity in calendar 2020 showed a concentration of sales in resort towns, with a significant portion of sales activity from out-of-state buyers (such as from New York and Massachusetts), and property tax transfers during the first six months of fiscal 2021 were 40% higher than expectations. We believe it is unclear at present if Vermont, which has pursued workforce development initiatives in recent years aimed at attracting and retaining remote workers, will benefit from recent real estate activity in the long term.

At the same time, Vermont is facing demographic headwinds, its unfunded retirement liabilities have been rising (despite consistently meeting actuarially determined funding levels), and its contributions are expected to significantly increase. In our opinion, the state's pension funded ratio on a three-year average basis is weak at 59.7% and its unfunded liabilities are high at $4,883 per capita and 8.3% of personal income. We calculate that Vermont's contributions to the state's pension plans do not meet our view of minimum funding progress needed toward full funding and are just short of our calculation of static funding or the level typically needed to maintain its current funding levels. The state's pension system boards passed a motion to find ways to lower the unfunded liability and actuarially determined employer contributions following determination that budgetary contributions would rise in fiscal 2022 significantly (by 43% and 49% for the state employees and teachers plans, respectively)). We understand the legislature is considering a proposal to establish a task force to study options for pension and other postemployment benefit (OPEB) reforms that could include overhaul of the management system, contribution changes and benefit changes. While we believe the state is actively pursuing reform efforts, it is currently unclear what might be passed or when.

With an improving vaccination outlook, faster reopening schedule, and recent increases in federal stimulus, S&P Global Economics is optimistic that recovery in the U.S. is starting to accelerate. It recently raised its real GDP growth forecasts for 2021 and 2022 to 6.5% and 3.1%, respectively, from 4.2% and 3.0%, respectively, in our December 2020 report. S&P Global Economics expects this stronger economic growth will benefit state governments. For more on its views on the U.S. economy and state credit sector, respectively, see "Economic Outlook U.S. Q2 2021: Let The Good Times Roll" and "State, Local Government, School District, And Charter School Sector Views Revised Back To Stable," both published March 24, 2021, on RatingsDirect.

Vermont's latest consensus revenue forecast was conducted in January 2021. Projections for the general fund and partial education fund (including sales taxes but excluding property tax estimates not yet available at the time of the forecast) were increased compared with the previous August 2020 forecast and collections will nearly reach pre-pandemic levels by the close of fiscal 2021 before exceeding them in fiscal 2022. Specifically, the January forecast projects the general fund and the partial education fund will rise by 0.2% and 5.4%, and 10.0% and 5.5% for fiscal years 2021 and 2022, respectively, compared with previous estimates for which the governor's fiscal 2022 executive budget proposal was based due in part to federal stimulus. In our view, the state's forecast includes reasonable projections: Vermont anticipates its gross state product (GSP) growth will be 3.4% in 2021 and 4.9% in 2022, while IHS Markit expects Vermont's GSP to rise by 5.4% in 2021 and 4.3% in 2022. The next consensus revenue forecast is expected to be held in July.

On a year-to-date basis through February 2021, both general and education fund revenues are running ahead of projections. The general fund is $46.5 million (3.9%) above estimates but officials note at least a portion of this overperformance is due to fewer refunds in personal income tax going out in February than anticipated (given the later start to the opening of the filing season by the IRS this year). For the same period, the education fund is $2.7 million (0.7%) above estimates; management notes this overperformance is more likely to be lasting compared to the temporary boost in the general fund from the delayed filing season.

The governor's executive budget proposal for fiscal 2022 totals $1.90 billion for the general fund and $1.88 billion for the education fund for a combined $3.79 billion for the state's main operating funds, in our view. Key initiatives include funding for environmental projects, modernization of government technology, and housing. Management reports overall spending growth of 3% is mostly due to higher payments to retirement plans required for the fiscal year; pension obligations are fully funded at actuarially determined employer contribution levels. Officials also report that $200 million in one-time investments are funded by using one-time revenues from a growing fiscal 2021 budgetary surplus and additional federal Medicaid match. The proposal fully funds Vermont's reserve accounts at statutory maximums.

The state's reserve accounts have typically remained at their maximum statutory levels of 5% of the previous year's budgetary appropriations, which we consider good, along with some additional reserves in the general fund. Specifically, the state's budget stabilization reserve held $79.8 million at the close of fiscal 2020, which represents a good 5.0% of annual general fund expenditures. These three funds' stabilization reserves remained funded at their statutory maximums through the Great Recession and management reports are expected to remain at their statutory maximums through fiscal 2021.

Officials report the state did not need to obtain internal or external borrowing during fiscal 2020 and does not anticipate needing additional liquidity in fiscal 2021. If needed, Vermont has the statutory authority to seek external sources of liquidity.

The ratings reflect our opinion of the state's:

- Strong financial and budget management policies that have contributed to consistently good reserve and liquidity levels;
- Employment composition reflective of the U.S. economy, characterized by average income levels and low unemployment rates, although economic growth has been slow and demographic challenges persist;
- Well-defined debt affordability and capital-planning processes, in our view, that have limited leverage and

contributed to a modest tax-supported debt burden with rapid amortization of tax-supported debt; and

- Significant pension and OPEB, which remain sizable relative to those of state peers, despite some recent reform efforts.

The negative outlook reflects that there is at least a one-in-three chance we could lower our rating on Vermont. We believe the state's economic growth potential is limited by the social risk of Vermont's demographic profile, because the state's population has declined over the past decade (on a cumulative basis) and its population is among the oldest in the nation. While Vermont has rolled out various workforce development initiatives to address its demographics--including programs to retain college students and attract remote workers--and there have been reports of an uptick in domestic in-migration as the state's low population density attracts out-of-state residents during the COVID-19 pandemic, the long-term effects of these developments are currently unclear. At the same time, Vermont's unfunded retirement liabilities have grown, despite the state's history of meeting or exceeding actuarial determined contribution (ADC) levels. Should these trends continue, we expect this juxtaposition could lead Vermont to face heightened budgetary challenges not commensurate with the current rating level.

Based on the analytic factors we evaluate for states, on a four-point scale in which '1.0' is the strongest and '4.0' is the weakest, we have assigned a composite score of '1.9' for the State of Vermont, which is associated with a 'AA' indicative credit level. We have used the notch flexibility upward to 'AA+', reflecting the state's proactive fiscal management policies and practices, consistent reserve levels over multiple economic cycles, and modest debt burden guided by thorough capital planning. Vermont has historically pursued midyear budget updates each fiscal year, with emphasis on maintaining structural balance. This practice, along with regular forecast updates, has allowed the state to keep its reserve levels consistent over time, typically at levels we consider to be good. Vermont's debt affordability processes have reduced the state's debt burden over time and current authorization levels are expected to keep debt levels low in upcoming years.

Environmental, social, and governance (ESG) factors

In our opinion, the state is also exposed to some social risk through its demographic profile. The U.S. Census Bureau reports Vermont ranks among the oldest populations in the nation. In S&P Global Ratings' view, older-aged states reliant on older and higher-income households are more likely to experience revenue declines, in part the result of falling incomes at retirement. On the whole, S&P Global Ratings considers managing demographic trends a long-term factor affecting the credit quality of state governments and an important part of its holistic analysis of state credit quality.

We view the risks posed by the COVID-19 pandemic to public health and safety as a social risk, which, if sustained, could weaken the state's economy, liquidity, and budget performance. Absent the implications of COVID-19, we view Vermont's governance risks as being in line with our view of the sector as a whole, while the state's environmental risks are somewhat elevated because of the potential for severe flooding events along river corridors.

Negative Outlook

Downside scenario

We could lower our rating on Vermont if we believe that the trajectory of the state's economy will lead to softened economic metrics (such as demographic profile, GSP growth levels) in the long term, creating an increasingly challenged budgetary environment. In this scenario, the rating would no longer be commensurate with the current rating level, despite strong management practices and policies.

Although unexpected, increases to unfunded retirement liabilities driven by diversion of resources or lack of action to control the liability could also pressure the rating.

Return to stable scenario

Should Vermont's economy begin to show signs of structural improvement--such as from population gains caused by improved migration trends or from increased growth in GSP levels--or resiliency from economic pressures brought on by the current pandemic while the state's finances remain structurally balanced, we could revise the outlook back to stable.

Significant improvement to the funded status of Vermont's retirement liabilities would likely require additional budgetary resources in the near to medium term, given that contributions (which typically meet or exceed actuarially determined levels) fail to meet our calculation of minimum funding progress necessary to reduce the unfunded liability. In this scenario, we expect uplift to the state's credit profile would likely be recognized over the longer term.

Credit Opinion

Government Framework

Vermont does not have a constitutional or statutory requirement to enact or maintain a balanced budget, but it has consistently maintained sound finances. In our view, the state has significant flexibility to increase the rate and base of its major tax revenues, which include income taxes, sales taxes, and a statewide property tax that funds the state's support of local education. We view Vermont's revenue sources as diverse. The state does not allow voter initiatives and maintains the ability to adjust disbursements in order to maintain sufficient liquidity. Debt service can be paid without a budget, but there is no other legal priority for debt.

The state's tax structure is broad, and its revenue sources are diverse across several operating funds. The general fund relies primarily on unrestricted revenues from personal and corporate income, and meal taxes. The education fund relies primarily on a statewide property tax and sales and use taxes. The education stabilization reserve ended the year at the statutory maximum of 5% of expenditures. The transportation fund relies primarily on federal-match grant revenues, a motor vehicle license fee, and a motor fuel tax.

On a scale of '1.0' (strongest) to '4.0' (weakest), we have assigned a '1.6' to Vermont's government framework.

Financial Management

Financial Management Assessment: Strong

We consider Vermont's financial management practices strong under our Financial Management Assessment methodology, indicating financial practices are strong, well-embedded, and likely sustainable.

Much of Vermont's debt and financial management practices are embedded in state statute. These, along with internally developed policies, guide the state's long-term budget and capital planning, debt management, and investing practices. The state has a well-established consensus revenue-estimating process. According to statute, the joint fiscal office and administration provides its respective revenue estimates for the general, transportation, and federal funds for the current and succeeding fiscal years to the Vermont Emergency Board.

Vermont law also requires a long-term capital plan. The governor submits a capital budget annually to the General Assembly, based on debt management provisions outlined by the state's capital debt affordability advisory committee. The committee's estimate is nonbinding, but the state legislature has never authorized new long-term GO debt in excess of the committee's estimated amount. The state has formal debt management policies, including a statutory debt affordability analysis developed by the capital debt affordability advisory committee that Vermont integrates into the operating budget development process and updates at least annually. Vermont has not entered into any interest-rate swaps and, therefore, does not have an adopted swap-management policy. Statutory restrictions and adopted administrative policies govern investment management, and the office of the state treasurer monitors compliance.

Budget management framework

The state has multiple tools to assist financial management. Vermont monitors revenues and publishes results monthly and the emergency board typically meets at least twice annually--in July and January--to evaluate the revenue forecast and make adjustments, if necessary. The state forecasts also include Medicaid revenue and spending. These consensus forecasting meetings can be convened more frequently and were held quarterly during fiscal years 2008-2010 in response to the Great Recession and the potential effect on revenue and expenditures. The emergency board includes the governor and the legislative chairs of the house and senate money committees. The forecasting process includes traditional economic and revenue forecasting, which Vermont performs with the assistance of outside economists, for the current and succeeding fiscal years, as well as a less-detailed forecast for the next eight years.

The governor has statutory authorization to adjust the budget within certain revenue and expenditure change limits when the Vermont legislature is not in session. Vermont maintains stabilization reserve funds at statutory levels to reduce their effect on annual revenue variations. In 1993, the state created separate budget stabilization reserves within the general and transportation funds. The amount in each of these reserves is not to exceed 5% of previous-year appropriations. In fiscal 1999, the state created an education fund budget stabilization reserve, which is to not exceed 5.0% of nonproperty tax revenues. The governor included a proposal in the fiscal 2013 executive budget to increase the general fund stabilization fund to 5.25% from 5.00%, but the legislature instead added a general fund balance reserve fund with a separate cap of 5.00% of expenditures.

On a four-point scale, with '1.0' being the strongest score, we have assigned a '1.0' to Vermont's financial management.

Economy

Vermont has the second-lowest population in the nation, at approximately 623,000 residents in 2020. Over the past decade, the state's population has declined as the nation's has grown. Specifically, Vermont has lost 0.6% of its population from 2011 to 2010 (negative 0.04% compound annual growth rate) as the nation's population grew 6.1% (0.68% compound annual growth rate). Although the state has recorded population gains in some years--including recently in 2015 and 2017--growth has been minimal and uneven.

The state's quality of life and well-educated workforce provide economic development opportunities; however, Vermont ranks low among the states in its business-tax and regulatory environment, and its slow workforce expansion could continue to stifle future economic growth prospects. The state's net domestic migration has been negative for 15 consecutive years, while the natural increase in births over deaths has been minimal, according to IHS Markit. The state expects updated data from the yet-to-be-released 2020 Census will be crucial for its demographics strategy.

Vermont reports it has strategized its workforce-development initiatives in order to address its demographic issues. Broadly, the state has coordinated efforts with the U.S. Department of Labor, kindergarten through grade 12 education, and higher education. Specific initiatives include work-opportunity tax credits and a program to attract remote workers. We believe that, while Vermont is taking proactive steps, the effectiveness of these measures is not yet clear.

The state's economy is driven by tourism, higher education, electronics, consumer-goods manufacturing, and agriculture (including dairy farming). Exports are an important part of Vermont's economy, with a substantial portion going to Canada, according to IHS Markit. Exports in 2020 primarily consisted of computer and electronic products (60.2%), followed by machinery (7.0%). In 2020, Vermont's exports totaled more than $2.4 billion, 38.3% of which was with Canada.

Vermont's employment diversity by sector is generally in line with that of the nation, in our view, and has not demonstrated more cyclicality than when the U.S. Global Foundries completed its acquisition of IBM--the third-largest private-sector employer in the state, accounting for a large portion of Vermont's manufacturing employment and exports. Global Foundries, which manufactures semiconductors for consumer electronic products, including chips for cell phones and other devices, employs about 2,500 workers at its Essex Junction plant. According to IHS Markit, a large portion of the state's manufacturing exports includes computers and electronics products from the facility. The Vermont Yankee nuclear power plant ceased production at the end of 2014, and it will be demolished by 2026. Encore Renewable Energy, a Vermont solar panel company, received a total of $1 million in investment grants from Maine, New Hampshire, and Vermont to continue its expansion in the region, according to IHS Markit.

State income levels are average, in our opinion. State per capita income of $58,650 was 98.2% of that of the U.S. in 2020. GDP per capita of $52,614 was 82.8% of the U.S. in 2020 and has historically remained at about this level.

On a four-point scale, with '1.0' being the strongest, we have assigned a '2.4' to Vermont's economy.

Budgetary Performance

We believe Vermont has a history of proactive budget management. The state, by statute, establishes a consensus revenue forecast at least each July and January. It has authority to make midyear budget adjustments and has done so, with an emphasis on structural balance, each fiscal year since 2012 through various budget adjustment acts. The state's process for identifying and remediating budget shortfalls early in the fiscal year allows for flexibility of resolution, in our view.

S&P Global Ratings considers Vermont's combined general fund and education fund revenue to be diverse, with statewide education taxes, personal income taxes, and sales taxes constituting 36.4%, 24.3%, and 13.8% of fiscal 2020 revenue collections, respectively.

Several key changes were made to existing state revenue and expenditure distributions effective in fiscal 2019, as passed in Act 11 in 2018. The most significant changes were the shifts of the entirety of the sales-and-use tax and 25% of the meals-and-rooms tax from the general fund to the education fund. At the same time, the act eliminated a lump-sum annual transfer of general fund dollars to the education fund. Officials report the law was intended to remove the need for this interfund transfer. In our opinion, this shift puts an additional spotlight on the education fund as one of the state's core operating funds.

Vermont maintains separate budget stabilization funds in its general, transportation, and education funds that are available to offset undesignated fund deficits. The statutory maximum for the three stabilization reserves is 5% of the previous-year budgetary appropriations. The three stabilization funds have been at their statutory maximums since fiscal 2007. Vermont pools the cash reserves for these major funds, which result in sufficient liquidity for operations during the fiscal year. Officials indicate that the state has not externally borrowed for liquidity since fiscal 2004.

We note Vermont maintains other available reserves outside of its budget stabilization fund that are restricted for designated uses. These funds include the general fund balance reserve, the 27/53 reserve (to meet liabilities during years with a 27th biweekly payroll and a 53rd week of Medicaid payments), and the human services caseload reserve (for caseload-related needs of several human services agencies). The state projects these funds will contain $15.88 million, $16.27 million, and $98.24 million, respectively, at the close of fiscal 2021.

Audited fiscal 2020 results (generally accepted accounting principles basis)

Vermont's audited financial statements as of June 30, 2020, report positive operating results for the state's general fund, on a generally accepted accounting principles (GAAP) basis. Total general fund revenues were $1.57 billion and total general fund expenditures were $994.6 million, while net transfers out are sizable, at $523.5 million (53% of expenditures), attributable in part to providing funding for the state's Medicaid program waiver. The general fund ended the fiscal year with a total fund balance of $264.5 million, which represents 24.3% growth from fiscal 2019. The general fund balance is composed of $56.6 million in nonspendable funds, $12.4 million in assigned funds, and $195.5 million in unassigned funds. General fund cash and cash equivalents totaled $205.6 million, down slightly from $215.3 million in fiscal 2019.

The education fund, on a GAAP basis, closed the fiscal year with slightly negative operating results. Total education fund revenues were $1.66 billion and total education fund expenditures were $1.71 billion, resulting in an operating deficit of $47.4 million (2.8% of expenditures); net transfers into the fund were $40.1 million. The education fund ended the fiscal year with a total fund balance of $96.2 million, which is about level from fiscal 2019. The education fund balance is composed entirely of committed funds. Cash and cash equivalents totaled $68.5 million, down from $82.4 million in fiscal 2019.

Across total governmental funds, the state posted an ending balance of $1.1 billion, a slight increase from fiscal 2019. This ending balance consists of $64.0 million in nonspendable balances, $532.8 million in restricted funds, $287,9 million in committed funds, $15.0 million in assigned funds , and $195.5 million in unassigned funds. Available cash and cash equivalents are $1.6 billion, which represents a strong 25.4% of total governmental funds expenditures, in our view.

On a four-point scale, with '1.0' being the strongest, we have assigned a '1.4' to Vermont's budgetary performance.

Debt And Liability Profile

In our opinion, Vermont's total tax-supported debt burden is generally low to moderate at $1,036 per capita, 1.8% of personal income, and 1.9% of general government spending. Compared with GSP, the fiscal 2020 tax-supported debt service was low, in our view, at about 1.97%. We consider the debt amortization to be rapid, with officials retiring just over 74% of tax-supported debt over the next 10 years.

Vermont's debt portfolio consists of only fixed-rate debt, without any exposure to interest-rate swaps. The state also does not have any direct-placement debt.

The state has a debt affordability committee that annually recommends a maximum amount of debt issuance for the next two fiscal years, and while the committee's recommendations are not binding, Vermont has consistently adhered to them. The recommendation for fiscal years 2022 and 2023 is $123.18 million, reflecting no change from the recommendation in previous biennium fiscal years 2020 and 2021. Debt service can be paid without a budget, but there is no other priority for the payment of debt before other general state expenditures.

When determining the state's liabilities, we view in aggregate its proportionate share of liabilities in Vermont's two defined-benefit pension plans and its two OPEB plans that offer health care to retirees.

- We view the state's pension funding discipline as somewhat weak because, while contributions in recent years have met actuarially determined levels, they have not covered our calculation of minimum funding progress. We considered the funded ratio across all plans to be weak, at 56.1% in fiscal 2020.
- The state funds its retiree health care obligations on a pay-as-you-go basis but has made some progress toward reducing the unfunded liability in the past and is current exploring options for prefunding the liability. We view the state's net OPEB liability as significant.

Pension liabilities

In our view, Vermont's unfunded pension liabilities are significant compared with those of many state peers, despite various reform efforts in recent years. Although the state has consistently met or exceeded ADC funding levels, Vermont's contributions continue to fall below our calculation of minimum funding progress, which we anticipate will lead to growing liabilities over time.

We consider Vermont's three-year average, pension-funded ratio across its pension plans to be weak, at 59.7%. At the same time, the state's proportionate share of the plans' net pension liability reflects what we view as a high $4,883 per capita and 8.3% of personal income.

Vermont maintains three statutory defined-benefit pension plans. The VSERS is a single-employer plan and the VSTRS and Vermont Municipal Employees' Retirement System (MERS) are multiple-employer, cost-sharing plans. The state appropriates funding for the first two systems; the municipal system is supported entirely by municipal employers and employees and is not included in our calculation of the state's pension liabilities. The plans are funded as follows:

- VSERS: 63.81% funded, with the state's applicable net pension liability $1.09 billion.
- VSTRS: 50.00% funded, with the state's applicable net pension liability $1.95 billion.

On the whole, management factors and actuarial inputs do not significantly encumber or improve our view of Vermont's overall pension funding discipline. VSERS and VSTRS each assume a closed, 20-year amortization period and uses the level-percentage-of-pay method, which assumes rising future payroll and results in escalating absolute pension contributions over time, based on the method's deferral of current contributions. Neither plan projects an asset-depletion date under the most recent available Governmental Accounting Standards Board (GASB) reporting.

The plans' board of trustees agreed on Sept. 24, 2020, to lower its long-term investment return assumptions for the VSERS and VSTRS plans to 7.0% from 7.50%. The lower assumed discount rate is expected to increase required employer contribution rates in future fiscal years. Prior adjustments to the assumed long-term investment rate of return include an agreement made in July 2017 to lower the rate to 7.50% from 7.95%. Through 2014, actuarial valuations used a "select and ultimate" method for developing interest-rate assumptions, where return assumptions varied by period, ranging from 6.25% in year one to 9.0% in years 17 and later.

As of fiscal 2020, the VSERS and VSTRS plans reported five-year average rates of return of 5.7% and 5.8%, respectively, which are below the plans' assumed rate of return. The VSERS plan's ratio of active members to beneficiaries equals 1.2, significantly below the median national ratio of 1.3. The VSTRS plan's ratio is slightly lower, at 1.0. We believe the plans incorporate experience trends and industry standards in their experience studies conducted at least every five years.

State contributions for VSERS and VSTRS are actuarially based and funding has historically been at least 100% of the ADC, which we view positively. Vermont budgets for pension contributions based on percentage rates of each member's annual earnable compensation and the actuarial valuations two years prior. It budgets for the VSTRS ADC appropriation at the beginning of the year. The VSERS ADC accrues as a percent of salary expenses throughout the year, and the state adjusts subsequent appropriations to reconcile year-to-year variations in actual payroll to meet the projected ADC. Each plan's actuary recommends a contribution amount and each plan's retirement board reviews the actuary's recommendations annually before submitting their recommendation to the governor and both houses of the legislature for inclusion in Vermont's annual budget. The legislature is not required to follow the recommendations of the actuaries or the governor.

Since fiscal 2012, actual annual contributions to the systems have exceeded the respective ADCs, which state officials attribute to conservative budgeting. However, contributions for both plans continue to fall below our calculation of minimum funding progress, which we anticipate will lead to growing liabilities over time.

Other postemployment benefits liabilities

We believe Vermont's OPEB liabilities are significant. Notably, the state's unfunded retiree health care liabilities are the sixth-highest in the nation on a per capita basis and are nearly as large as the state's unfunded pension liabilities. We expect these liabilities will continue to rise, given the current pay-as-you-go financing structure; however, management notes the state is looking into various prefunding options.

Vermont offers two retiree health care plans to retirees of the VSERS and STRS. The Vermont State Postemployment Benefits Trust Fund (VSPB) is a single-employer, defined-benefit plan and the Retired Teachers' Health and Medical Benefit Fund (RTHMB) is a cost-sharing, multiple-employer, defined-benefit plan. The separate multiple-employer Vermont Municipal Employees Health Benefit Fund for local government is administered by the state, but has no liability to the state, and is not included in our OPEB calculations.

On a combined basis, Vermont's proportionate share of the net OPEB liability (NOL) was $2.67 billion in fiscal 2020, according to GASB 74/75 reporting. This translates into a NOL per capita of about $4,284, which is well above the median of $570 and average of $1,469 across the states (as of fiscal 2019, the latest aggregated data).

In the past, Vermont had taken steps to contain growth of unfunded retiree health care liabilities. The state's retiree health care plans enrolled retirees in a Medicare Part D Employer Group Waiver Plan (EGWP) from a retiree drug-subsidy program--effective Jan. 1, 2014, for VSPB and Jan. 1, 2015, for RTHMB--partially to achieve cost savings. The state has also established an OPEB trust fund for the VSERS, but it is minimally funded.

On a four-point scale, with '1.0' being the strongest, we have revised our score on Vermont's debt and liability profile to a '2.8' from a '2.9'.

Related Research

Through The ESG Lens 2.0: A Deeper Dive Into U.S. Public Finance Credit Factors, April 28, 2020

Ratings Detail (As Of April 15, 2021)		
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed

Ratings Detail (As Of April 15, 2021) (cont.)		
Vermont GO		
Long Term Rating	AA+/Negative	Affirmed
Vermont Bnd Bank, Vermont		
Vermont		
Vermont Mun Bnd Bank (Vermont) SCHSTPR		
Long Term Rating	AA/Negative	Affirmed

APPENDIX F

Title 32 : Taxation And Finance

Chapter 013 : Debts And Claims

Subchapter 008 : Management Of State Debt

(Cite as: 32 V.S.A. § 1001)

- **§ 1001. Capital Debt Affordability Advisory Committee**

(a) Committee established. A Capital Debt Affordability Advisory Committee is hereby created with the duties and composition provided by this section.

(b) Committee duties.

(1) The Committee shall review annually the size and affordability of the net State tax-supported indebtedness and submit to the Governor and to the General Assembly an estimate of the maximum amount of new long-term net State tax-supported debt that prudently may be authorized for the next fiscal year. The estimate of the Committee shall be advisory and in no way bind the Governor or the General Assembly.

(2) The Committee shall conduct ongoing reviews of the amount and condition of bonds, notes, and other obligations of instrumentalities of the State for which the State has a contingent or limited liability or for which the State Legislature is permitted to replenish reserve funds, and, when deemed appropriate, recommend limits on the occurrence of such additional obligations to the Governor and to the General Assembly.

(3) The Committee shall conduct ongoing reviews of the amount and condition of the Transportation Infrastructure Bond Fund established in 19 V.S.A. § 11f and of bonds and notes issued against the fund for which the state has a contingent or limited liability.

(c) Committee estimate of a prudent amount of net State tax-supported debt; affordability considerations. On or before September 30 of each year, the Committee shall submit to the Governor and the General Assembly the Committee's estimate of net State tax-supported debt which prudently may be authorized for the next fiscal year, together with a report explaining the basis for the estimate. The provisions of 2 V.S.A. § 20(d) (expiration of required reports) shall not apply to the report to be made under this subsection. In developing its annual estimate, and in preparing its annual report, the Committee shall consider:

(1) The amount of net State tax-supported indebtedness that, during the next fiscal year, and annually for the following nine fiscal years:

(A) will be outstanding; and

(B) has been authorized but not yet issued.

(2) A projected schedule of affordable net State tax-supported bond authorizations, for the next fiscal year and annually for the following nine fiscal years. The assessment of the affordability of the projected authorizations shall be based on all of the remaining considerations specified in this section.

(3) Projected debt service requirements during the next fiscal year, and annually for the following nine fiscal years, based upon:

(A) existing outstanding debt;

(B) previously authorized but unissued debt; and

(C) projected bond authorizations.

(4) The criteria that recognized bond rating agencies use to judge the quality of issues of State bonds, including:

(A) existing and projected total debt service on net tax-supported debt as a percentage of combined General and Transportation Fund revenues, excluding surpluses in these revenues which may occur in an individual fiscal year; and

(B) existing and projected total net tax-supported debt outstanding as a percentage of total state personal income.

(5) The principal amounts currently outstanding, and balances for the next fiscal year, and annually for the following nine fiscal years, of existing:

(A) obligations of instrumentalities of the State for which the State has a contingent or limited liability;

(B) any other long-term debt of instrumentalities of the State not secured by the full faith and credit of the State, or for which the State Legislature is permitted to replenish reserve funds; and

(C) to the maximum extent obtainable, all long-term debt of municipal governments in Vermont which is secured by general tax or user fee revenues.

(6) The impact of capital spending upon the economic conditions and outlook for the State.

(7) The cost-benefit of various levels of debt financing, types of debt, and maturity schedules.

(8) Any projections of capital needs authorized or prepared by the Agency of Transportation, the Joint Fiscal Office, or other agencies or departments.

(9) Any other factor that is relevant to:

(A) the ability of the State to meet its projected debt service requirements for the next five fiscal years; or

(B) the interest rate to be borne by, the credit rating on, or other factors affecting the marketability of State bonds.

(10) The effect of authorizations of new State debt on each of the considerations of this section.

(d) Committee composition.

(1) Committee membership shall consist of:

(A) As ex officio members:

(i) the State Treasurer;

(ii) the Secretary of Administration; and

(iii) a representative of the Vermont Municipal Bond Bank chosen by the directors of the Bank.

(B) Two individuals with experience in accounting or finance, who are not officials or employees of State government appointed by the Governor for six-year terms.

(C) The Auditor of Accounts who shall be a nonvoting ex officio member.

(D) One person who is not an official or employee of State government with experience in accounting or finance appointed by the State Treasurer for a six-year term.

(E) The Legislative Economist or other designee of the Joint Fiscal Office, who shall be a nonvoting ex officio member.

(2) The State Treasurer shall be the Chair of the Committee.

(e) Other attendants of committee meetings. Staff of the Legislative Council and the Joint Fiscal Committee shall be invited to attend Committee meetings for the purpose of fostering a mutual understanding between the Executive and Legislative Branches on the appropriate statistics to be used in committee reviews, debt affordability considerations, and recommendations.

(f) Information. All public entities whose liabilities are to be considered by the Committee shall annually provide the State Treasurer with the information the Committee deems necessary for it to carry out the requirements of this subchapter. (Added 1989, No. 258 (Adj. Sess.), § 1; amended 2007, No. 121 (Adj. Sess.), § 28; 2007, No. 200 (Adj. Sess.), § 25, eff. June 9, 2008; 2009, No. 50, § 31; 2013, No. 142 (Adj. Sess.), § 65.)