X00A00
Public Debt

Executive Summary

The Public Debt program appropriates funds for general obligation (GO) bonds' debt service payments. This includes principal and interest payments. GO bonds support the State's general construction program, such as prisons, office buildings, higher education facilities, school construction, and mental health facilities. GO bonds do not pledge specific revenues but rather pledge the State's full faith and credit. Debt service payments are supported by the Annuity Bond Fund (ABF). The ABF's largest revenue source is the State property tax.

Operating Budget Data

($ in Thousands)

	FY 18 Actual	FY 19 Working	FY 20 Allowance	FY 19-20 Change	% Change Prior Year
General Fund	$259,649	$286,000	$287,000	$1,000	0.3%
Adjustments	0	0	0	0	
Adjusted General Fund	**$259,649**	**$286,000**	**$287,000**	**$1,000**	**0.3%**
Special Fund	963,725	1,004,000	1,033,970	29,970	3.0%
Adjustments	0	0	0	0	
Adjusted Special Fund	**$963,725**	**$1,004,000**	**$1,033,970**	**$29,970**	**3.0%**
Federal Fund	11,547	12,831	11,533	-1,298	-10.1%
Adjustments	0	0	0	0	
Adjusted Federal Fund	**$11,547**	**$12,831**	**$11,533**	**-$1,298**	**-10.1%**
Adjusted Grand Total	**$1,234,921**	**$1,302,831**	**$1,332,503**	**$29,672**	**2.3%**

- Total debt service costs increase by $29.7 million in fiscal 2020.
- The budget assumes that bond sales will generate $140 million in premiums to apply to debt service costs, $70 million in the March 2019 sale and $70 million in fiscal 2020. This reduces the required general fund appropriation correspondingly and limits the general fund increases to $1 million.

Note: Numbers may not sum to total due to rounding.

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Key Observations

- By estimating $70 million in bond sale premiums, there is a risk that appropriations will be insufficient. The State should consider a more prudent approach for issuances in subsequent years. Instead of using premiums for debt service, GO bonds could be resized. The par value would be reduced, and the premium would support capital projects. This results in higher short-term costs but lower out-year costs. For every $1 in premiums used for debt service, the State pays at least $1.40.

- Proposed State debt levels are affordable according to longstanding ratios. The ratios can withstand limited revenue write-downs, but a deeper, multi-year recession could result in breaching the debt service to revenue ratio.

- The Administration has proposed legislation (Building Opportunity Act of 2019) to leverage gaming revenues to support school construction. The legislation forbids these bonds from containing pledge of tax revenue or other State obligations as a backstop if the Education Trust Fund revenues are insufficient for debt service. Similar revenue bonds with no State backstop are typically viewed by the Capital Debt Affordability Committee (CDAC) as non-tax supported debt, meaning the CDAC ratios would be unaffected. However, revisions to the bill that would change the allowable revenue sources for debt service payments could cause these bonds to be considered tax-supported. CDAC will examine the bonds' provisions once they have been issue to make a final destination.

- Reducing taxable bond authorizations reduces interest costs. The Administration and the General Assembly are encouraged to reduce these authorizations to keep costs down.

Operating Budget Recommended Actions

1. Adopt narrative requiring a review of debt affordability policies related to increasing general obligation bond authorizations.

Updates

- New accounting changes to leasing standards could affect debt affordability calculations.

X00A00
Public Debt

Operating Budget Analysis

Program Description

The Public Debt program appropriates funds for general obligation (GO) bonds' debt service payments. This includes principal and interest payments. GO bonds support the State's general construction program, such as prisons, office buildings, higher education facilities, school construction, and mental health facilities. GO bonds do not pledge specific revenues but rather pledge the State's full faith and credit. Issuances include:

- tax-exempt bonds sold to institutional investors;
- tax-exempt bonds sold to retail investors;
- taxable bonds sold to institutional investors;
- Build America Bonds that were taxable bonds for which the State receives a direct subsidy from the federal government;
- Qualified Zone Academy Bonds that support specific education projects. Depending on the date of issuance, these bonds have received federal tax credits or direct federal subsidies;
- Qualified School Construction Bonds that supported specific education projects. Depending on the date of issuance, these bonds have received federal tax credits or direct federal subsidies; and
- Qualified Energy Conservation Bonds that are direct federal subsidy bonds that support energy efficiency capital expenditures in public buildings, renewable energy production, and other related projects.

GO bond debt service payments are supported by the Annuity Bond Fund (ABF). ABF revenues include State property tax revenues; federal subsidies; bond sale premiums; and repayments from certain State agencies, subdivisions, and private organizations. General funds may subsidize debt service if these funds are insufficient.

The State usually issues tax-exempt GO bonds to institutional investors twice a year. Other bonds are issued as they become authorized as needed (taxable) or as they are in demand (retail bonds). The goal is to minimize the bonds' debt service costs.

Property Tax Revenues Remain Steady, and Premiums Continue to Offset General Fund Appropriations

Most of the revenues supporting GO bond debt service are derived from State property taxes. **Exhibit 1** shows that for fiscal 2020, State property taxes provide $860.5 million, which represents 64.7% of the appropriation. The Department of Budget and Management (DBM) projects that the March 2019 bond sale will realize a $70 million premium, increasing total fiscal 2019 premiums supporting debt service to $95.1 million. Even with bond premiums, the current State property tax rate (at $0.112 per $100 of assessable base) and the ABF balance are insufficient to fully fund debt service costs. To support debt service without raising State property taxes, the allowance includes $287 million in general fund appropriations.

Exhibit 1
Annuity Bond Fund Forecast
Fiscal 2018-2020 Allowance
($ in Thousands)

	2018 Expenditures	2019 Appropriation	2020 Allowance
ABF Activity			
Beginning Balance	$162,094	$158,963	$96,882
Property Tax Receipts	800,820	834,081	860,514
Interest and Penalties on Property Taxes	2,232	2,240	2,240
Other Repayments and Receipts	121	181	181
Bond Premium	150,685	95,071	70,000
Transfer to Reserve	-158,963	-96,882	-4,894
ABF Special Fund Appropriations	**$956,990**	**$993,653**	**$1,024,924**
General Fund Appropriations	$259,649	$286,000	$287,000
Transfer Tax Special Fund Appropriations	6,735	7,059	6,851
Federal Fund Appropriations	11,547	11,613	11,533
Budgeted Appropriation	**$1,234,921**	**$1,298,326**	**$1,332,503**
Changes to the Fiscal 2019 Legislative Appropriation			
Savings from August 2018 bond sale	$0	-$1,327	$0
Projected Total Debt Service Expenditures	**$1,234,921**	**$1,298,326**	**$1,329,723**

ABF: Annuity Bond Fund

Note: Data in this exhibit varies from the data published in the budget books. The fiscal 2019 debt service costs reflect the August 2018 bond sale. Federal fund estimates are reduced to reflect the effect of sequestration.

Source: Department of Budget and Management; Department of Legislative Services

The exhibit also recognizes savings from the August 2018 bond sale. The State issued $510 million. Fiscal 2019 debt service costs for the new bonds were $1.3 million less than projected, which reduces the fiscal 2019 debt service requirements to $1,298.3 million. In this analysis, the Department of Legislative Services (DLS) will use this adjusted appropriation as the fiscal 2019 debt service cost. The difference is added to the end of the fiscal 2019 fund balance, which reduces the fiscal 2019 general fund appropriation.

Exhibit 2 provides a breakdown of debt service costs projected for fiscal 2020. The allowance includes $1,292.6 million in debt service from bonds that have already been issued and $37.1.million in debt service from issuances projected in March and August 2019. Since the first debt service payments are due approximately six months after they are issued, bonds sold in fiscal 2020 after January 1 do not have any effect on fiscal 2020 debt service costs.

Exhibit 2
Fiscal 2020 Debt Service Costs
($ in Millions)

Type of Debt	Principal	Interest	Sinking Fund	Total
GO Bonds Sold to Institutional Investors	$742.2	$358.3	$0.0	$1,100.5
Retail Bonds	35.1	1.1	0.0	36.2
Taxable Bonds	61.7	3.4	0.0	65.1
Build America Bonds	53.9	23.2	0.0	77.1
Qualified Zone Academy Bonds	2.4	1.4	1.3	5.1
Qualified School Construction Bonds	0.0	2.0	6.4	8.3
Qualified Energy Conservation Bonds	0.0	0.3	0.0	0.3
Subtotal	***$895.3***	***$389.6***	***$7.7***	***$1,292.6***
Debt Issued after Allowance Submitted				
March 2019 Bond Sale	$0.0	$24.5	$0.0	$24.5
Summer 2019 Bond Sale	0.0	12.6	0.0	12.6
Subtotal	***$0.0***	***$37.1***	***$0.0***	***$37.1***
Total	**$895.3**	**$426.7**	**$7.7**	**$1,329.7**

GO: general obligation

Note: Numbers may not sum to total due to rounding.

Source: Comptroller's Office; Department of Budget and Management; Department of Legislative Services

Prior to fiscal 2001, State debt service was comprised of traditional GO bonds (tax-exempt debt issued to institutional investors). The exhibit identifies debt service payments attributable to the new kinds of debt and methods of issuance that have been added since 2001.

Federal Funds and the Effect of Sequestration

The Budget Control Act (BCA) of 2011 included automatic across-the-board spending reductions if the U.S. Congress and the President failed to enact a Joint Select Committee bill by January 15, 2012. The bill was required to reduce the federal budget deficit by at least $1.2 trillion over 10 years. The U.S. Congress was unable to enact the bill, and the BCA required that automatic spending reductions, referred to as sequestration, take effect. A number of federal programs, such as Social Security and Medicaid, were exempt from these reductions. The Murray-Ryan Bipartisan Budget Act raised sequestration budget caps in federal fiscal 2014 and 2015 but also extended sequestration for two more years, from federal fiscal 2022 to 2023. Similarly, the Bipartisan Budget Act of 2015 raised caps in federal fiscal 2016 and 2017. The Act also extended sequestration to federal fiscal 2025.

Federal subsidies on State and local bonds are not deemed to be exempt from sequestration. Reductions to federal grants are also influenced by the timing of the transfer of the subsidy. **Exhibit 3** shows that sequestration reduces federal funds by approximately $700,000 to $800,000, or 6% to 7%, annually.

Exhibit 3
Issuances Receiving Federal Fund Appropriations and Reductions Attributable to Federal Sequestration
Fiscal 2018-2020
($ in Thousands)

Fiscal Year	2018	2019	2020	Total
July 2009 Build America Bonds	$796	$796	$796	$2,389
October 2009 Build America Bonds	942	942	942	2,825
February 2010 Build America Bonds	6,036	6,036	5,302	17,373
July 2010 Build America Bonds	1,094	1,094	1,094	3,281
July 2010 Qualified School Construction Bonds	1,965	1,965	1,965	5,895
December 2010 Qualified Zone Academy Bonds	228	228	228	684
August 2011 Qualified Zone Academy Bonds	660	660	660	1,980
August 2011 Qualified Energy Conservation Bonds	234	234	234	703
August 2012 Qualified Zone Academy Bonds	426	426	426	1,279
Less Sequestration	*-834*	*-768*	*-699*	*-2,301*
Total	**$11,547**	**$11,613**	**$10,948**	**$34,108**

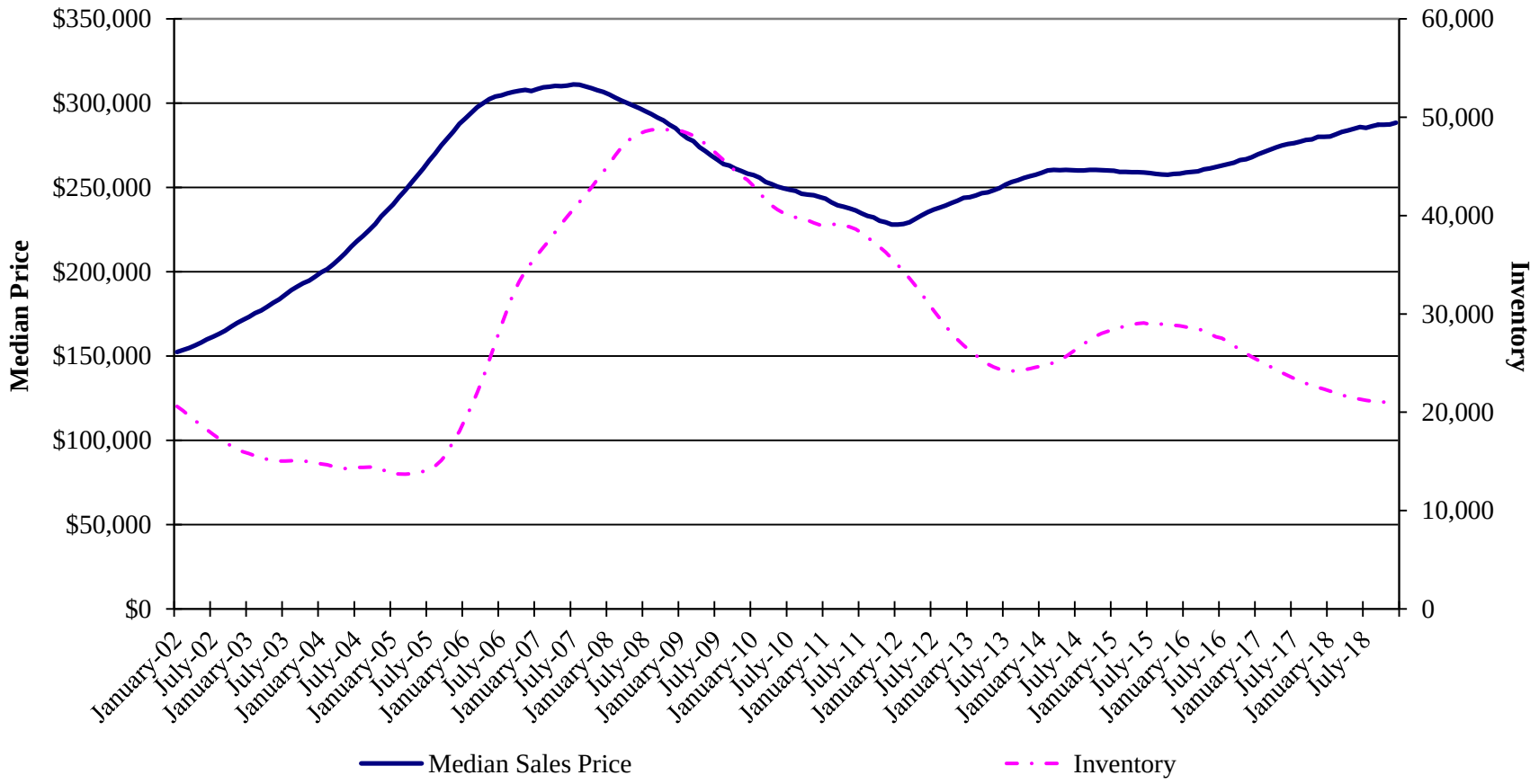
Source: Comptroller's Office; State Treasurer's Office; Department of Budget and Management; Department of Legislative Services

Annuity Bond Fund Six–year Forecast

GO bond debt service costs are supported by the ABF. The fund's largest revenue source is the State property tax. In April 2006, the State property tax rate was set at $0.112 per $100 of assessable base and has remained at that level since fiscal 2007. Other revenue sources include proceeds from bond sale premiums, interest and penalties on property taxes, and repayments for local bonds. The State has refrained from increasing State property tax rates. Instead, general funds have subsidized debt service payments.

State property tax collections are influenced by trends in the housing market. **Exhibit 4** shows that there was a substantial increase in real estate values, which peaked in summer 2007, followed by a decline in values. The year-over-year decline began in July 2007 and continued until February 2012. That was 55 straight months of year-over-year declines in median home values. In recent years, home values have trended upward, but this trend has not been uninterrupted. Inventories went through a similar increase and decline. However, they lagged behind the pattern seen in home prices for much of the period. Recently, there has been a dip in inventories, and home prices have increased.

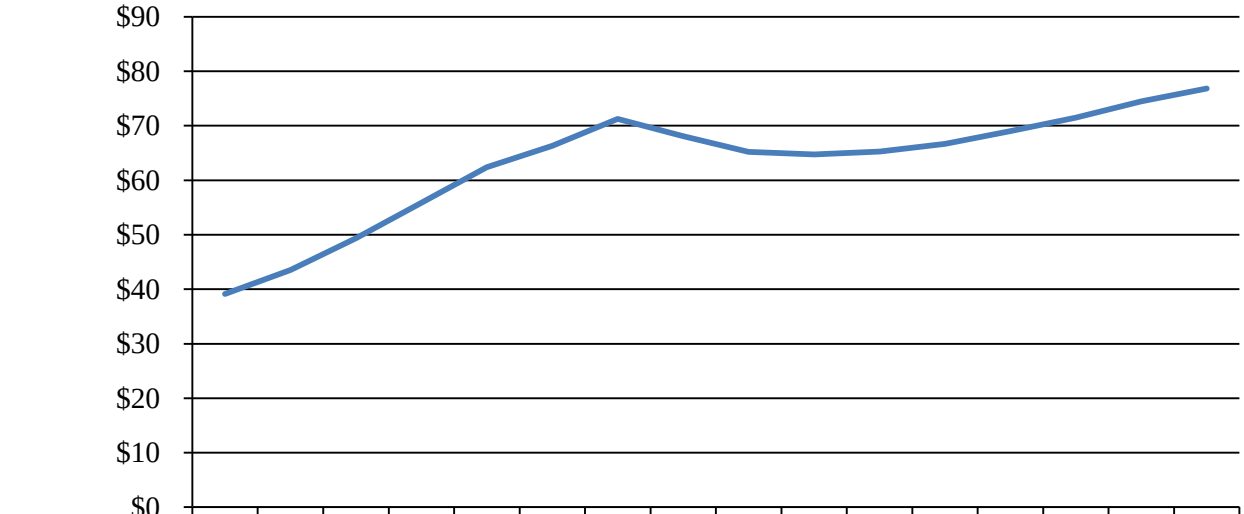
Exhibit 4
Maryland Housing – Median Prices and Inventory
12-month Moving Average
January 2002 to December 2018



Source: Maryland Association of Realtors; Department of Legislative Services

Rising property values from fiscal 2002 to 2007 increased State property tax receipts. **Exhibit 5** shows how much revenue that one cent on the State property tax has generated since fiscal 2006. From fiscal 2006 to 2011, the increases were quite steep. Revenues declined from fiscal 2011 to 2014 and increased again since fiscal 2015. Revenues are expected to increase about 2% annually in the out-years.

Exhibit 5
Revenues Generated by One Cent of State Property Taxes
Fiscal 2005-2020
($ in Millions)



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Revenues	$39	$44	$49	$56	$62	$66	$71	$68	$65	$65	$65	$67	$69	$72	$74	$77

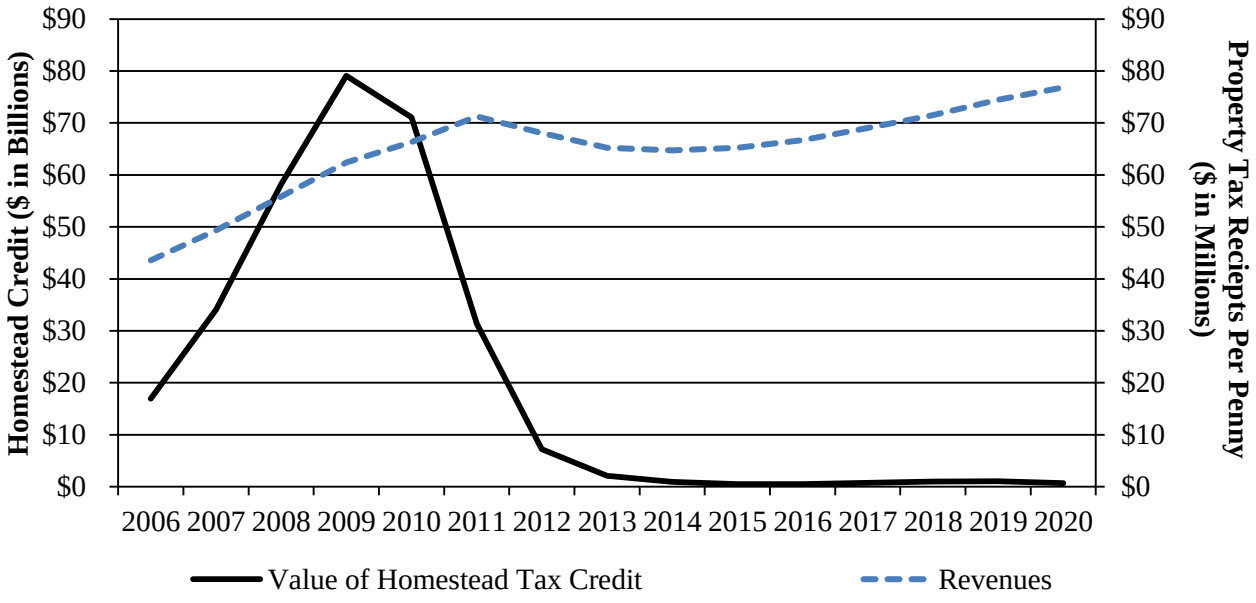
Source: State Department of Assessments and Taxation; Department of Budget and Management; Department of Legislative Services

Assessment policies and the Homestead Tax Credit account for a lag between changes in the real estate market and tax receipts. Property values are assessed every three years, and increases are phased in over three years. For example, if a property's value increases by 9%, the increase would be 3% in the first year, 6% in the second year, and 9% in the third year.

The Homestead Tax Credit limits the annual increase in State property assessments subject to the property tax to 10%. If reassessing a resident's assessed property value results in an increase that exceeds 10%, the homeowner receives a credit for any amount above 10%. This limits revenue growth when property values rise quickly. Taken together, the three-year assessment process and the Homestead Tax Credit slowed the revenue increases and delayed the peak until after the decline in property values.

The homestead credit provides the State with a hedge against declining property values. With the homestead credit, there was a $79 billion gap between the value of the property and what homeowners were charged in State property taxes in fiscal 2009. The drop in values narrowed this gap. The result was declining home values and increasing State revenues as assessments grew. When the gap narrowed to under $10 billion, there was a modest decline in State property tax revenue. The result smoothed State revenue so that there was not a large drop in revenues in fiscal 2010, which some jurisdictions in other states experienced. **Exhibit 6** shows that State credits increased to $79 billion in fiscal 2009 in response to increases in assessments. Since fiscal 2014, the aggregate homestead credits have been near $1 billion annually.

Exhibit 6
State Property Tax Homestead Tax Credits and Property Tax Receipts
Fiscal 2006-2020



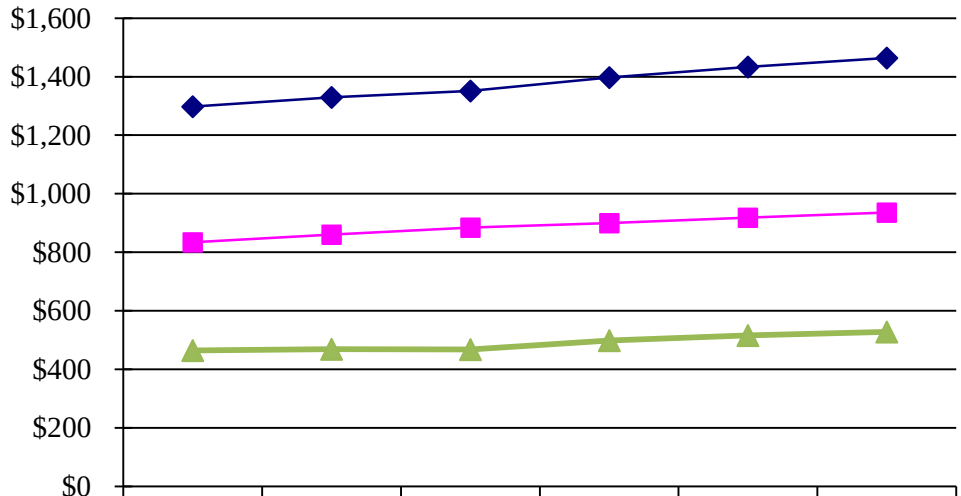
Source: State Department of Assessments and Taxation; Department of Budget and Management; Department of Legislative Services

State property tax revenues are estimated to increase at a rate of 2.3% annually from fiscal 2019 to 2024. This rate is similar to the increase in debt service costs, which are expected to increase at a rate of 2.4% annually over the same period.

Projected debt service growth rates have slowed in recent years. In calendar 2015, debt service was expected to increase 5.6% annually over the forecast period. Later that year, the Spending Affordability Committee (SAC) recommended limiting increases in authorizations to 1% annually to slow the growth in debt service costs. This has been effective as debt service is now increasing at less

than half the rate that it was four years ago. **Exhibit 7** shows how State property tax revenues, which are $464 million less than debt service costs in fiscal 2019, are expected to be $528 million less than debt service costs in fiscal 2024.

Exhibit 7
GO Bond Debt Service Costs and State Property Tax Revenue Collections
Fiscal 2019-2024
($ in Millions)



	2019	2020	2021	2022	2023	2024
State Property Tax Receipts	$834	$861	$884	$900	$918	$936
GO Bond Debt Service Costs	1,298	1,330	1,352	1,398	1,434	1,464
Difference	464	469	468	498	516	528

GO: general obligation

Source: Department of Legislative Services

From fiscal 2009 to 2013, the shortfall in State property tax receipts did not require general fund appropriations because the ABF had a large fund balance. This fund balance was largely attributable to the low interest rates offered for AAA-rated State and municipal bonds and high property tax receipts attributable to the housing bubble. These low interest rates have reduced GO bonds' true interest cost (TIC). At the same time, investors have preferred higher coupon rates. This combination has resulted in large bond sale premiums. Most premiums have been deposited into the ABF to support debt service costs.

Exhibit 8 shows the DLS estimate of fiscal 2019 to 2024 ABF activity. The most significant trend is a decline in projected premiums as estimates decline from $95 million in fiscal 2019 to no

premiums by fiscal 2021. General fund appropriations are required for fiscal 2020 despite the availability of $97 million in fund balance at the end of fiscal 2019 and an estimated $70 million in bond sale premiums in fiscal 2020. DLS projects that fiscal 2020 will end with a $5 million fund balance if $287 million in general funds are appropriated in fiscal 2020. General fund appropriations are projected to increase to $512 million in fiscal 2024

Exhibit 8
Revenues Supporting Debt Service
Fiscal 2019-2024
($ in Millions)

	2019	2020	2021	2022	2023	2024
Special Fund Revenues						
State Property Tax Receipts	$834	$861	$884	$900	$918	$936
Bond Sale Premiums[1]	95	70	0	0	0	0
Other Revenues	2	2	2	2	2	2
ABF Fund Balance Transferred from Prior Year	159	97	5	1	1	1
Subtotal Special Fund Revenues	***$1,091***	***$1,030***	***$892***	***$903***	***$921***	***$939***
General Funds	$286	$287	$444	$479	$498	$512
Transfer Tax Special Funds[2]	7	7	7	7	7	7
Federal Funds[3]	12	11	10	9	8	7
Total Revenues	**$1,395**	**$1,335**	**$1,353**	**$1,399**	**$1,434**	**$1,465**
Debt Service Expenditures[4]	**$1,298**	**$1,330**	**$1,352**	**$1,398**	**$1,434**	**$1,464**
ABF End-of-year Fund Balance	**$97**	**$5**	**$1**	**$1**	**$1**	**$1**

ABF: Annuity Bond Fund

[1] The budget submitted by the Department of Budget and Management estimates $70 million bond premiums in March 2018 and $70 million in fiscal 2020. Fiscal 2019 bond sale premiums also supported $55 million in capital projects instead of debt service costs.
[2] Payments for $70 million of general obligation bonds issued in 2010 for Program Open Space and the Maryland Agricultural Land Preservation Fund.
[3] Includes federal interest subsidies for Build America Bonds, Qualified Zone Academy Bonds, Qualified School Construction Bonds, and Qualified Energy Conservation Bonds. These amounts are adjusted to reflect federal sequestration.
[4] Fiscal 2019 debt service costs are adjusted to reflect savings from the August 2018 bond sale.

Source: Department of Budget and Management; Department of Legislative Services

Issues

1. Fiscal 2020 Funding Relies on Bond Sale Premiums

Over the last decade, the State has been realizing substantial bond sale premiums. It has been common for these premiums to exceed 10% of the par value of bonds being issued. Under current market conditions, investors are concerned about rising interest rates. To project the value of their investments if rates rise, the investors are maximizing returns by purchasing bonds at a premium. Investors are paying more for the bonds than the par value of the bonds. In return investors also get higher debt service payments. At the time of the sale, the value of bonds sold at par and at a premium are identical. If interest rates increase, both investments lose value. However, bonds sold at a premium lose less value. Bond sale premiums are described in more detail, with an example, in **Appendix 2**.

The Administration is projecting $140 million in premiums in three bond sales: winter 2019; summer 2019; and winter 2020. The budget assumes $70 million in bond sale premiums will be realized at the March 26, 2019 bond sale, and $70 million in bond sale premiums will be realized in fiscal 2020. All of the anticipated bond premium revenues are allocated in the budget to pay debt service.

Exhibit 9 shows DLS' bond sale premium estimates. In February 2019, DLS updated the estimate for the March 26, 2019 bond sale. Using the same methodology as used in prior years, DLS projects that the premium will be $62.2 million, which is $7.8 million less than the amount that DBM is assuming in the budget. DBM's fiscal 2020 assumptions are consistent with DLS' estimates.

Exhibit 9
Projected Bond Sale Premiums
Fiscal 2019-2020
($ in Thousands)

Bond Sale	Amount Issued	Premium for Debt Service	Average Coupon Rate	True Interest Cost
Fiscal 2019 Sale in Winter 2019[1]	$490,000	$62,214	4.25%	2.68%
Summer 2019	515,000	36,808	4.25%	3.32%
Winter 2020	520,000	33,162	4.25%	3.42%
Fiscal 2020 Subtotal	***$1,035,000***	***$69,970***		
Total	**$1,525,000**	**$132,184**		

[1] The Department of Legislative Services updated the premiums estimate for the winter 2019 bond sale in March 2019.

Source: *The Bond Buyer* Index; Moody's Analytics; IHS Markit; Department of Legislative Services

Bond Sales Premiums Are Difficult to Project: Small Changes in Assumptions Mean Big Changes in Results

A concern with budgeting premiums is that small changes in interest rates can generate substantial changes in the amount of premiums realized. For example, DLS estimates that increasing TIC by 0.25% reduces a $520 million[1] bond sale's premium by $12.5 million.

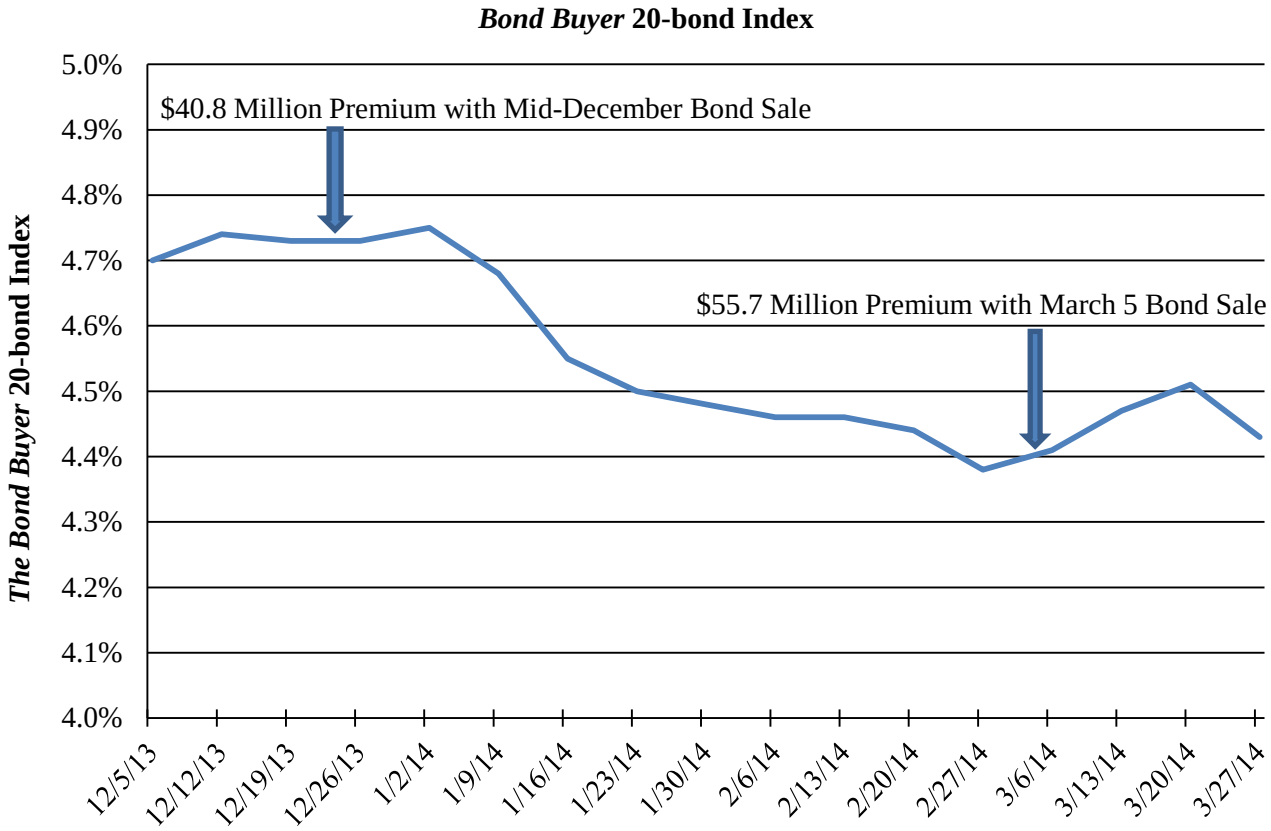
This is especially problematic because interest rates can be highly volatile, so rates can climb or plummet in a matter of weeks. For example, from April 9, 2015, to May 7, 2015, *The Bond Buyer* 20-bond Index increased by 25 basis points, from 3.49% to 3.74%. Such an increase substantially decreases a bond sale premium. Most of this volatility cannot be foreseen. This means that the key variables used to estimate premiums are impossible to predict with any precision.

An example of this is the March 6, 2014 bond sale. The State projected a $40.8 million premium. This forecast was prepared in December 2013 and used in the Governor's fiscal 2015 budget. Using interest rates from December 2013, DLS forecasted a $43.2 million premium. DLS concluded that the premium in the budget was entirely reasonable, based on the data that was available when the budget was prepared.

However, the actual bond sale premium for the March sale was $55.7 million. This is $14.9 million more than DBM projected. The reason for this difference is a sudden decline in interest rates. **Exhibit 10** shows that *The Bond Buyer* 20-bond Index declined from over 4.7% in December 2013 to approximately 4.4% in early March 2014. The State benefited from the change by receiving a larger premium.

[1] $520 million is the proposed amount to be sold at the summer 2019 bond sale.

Exhibit 10
Timing of Bond Sale Influences Interest Rates and Premiums
December 2013 to March 2014
($ in Millions)

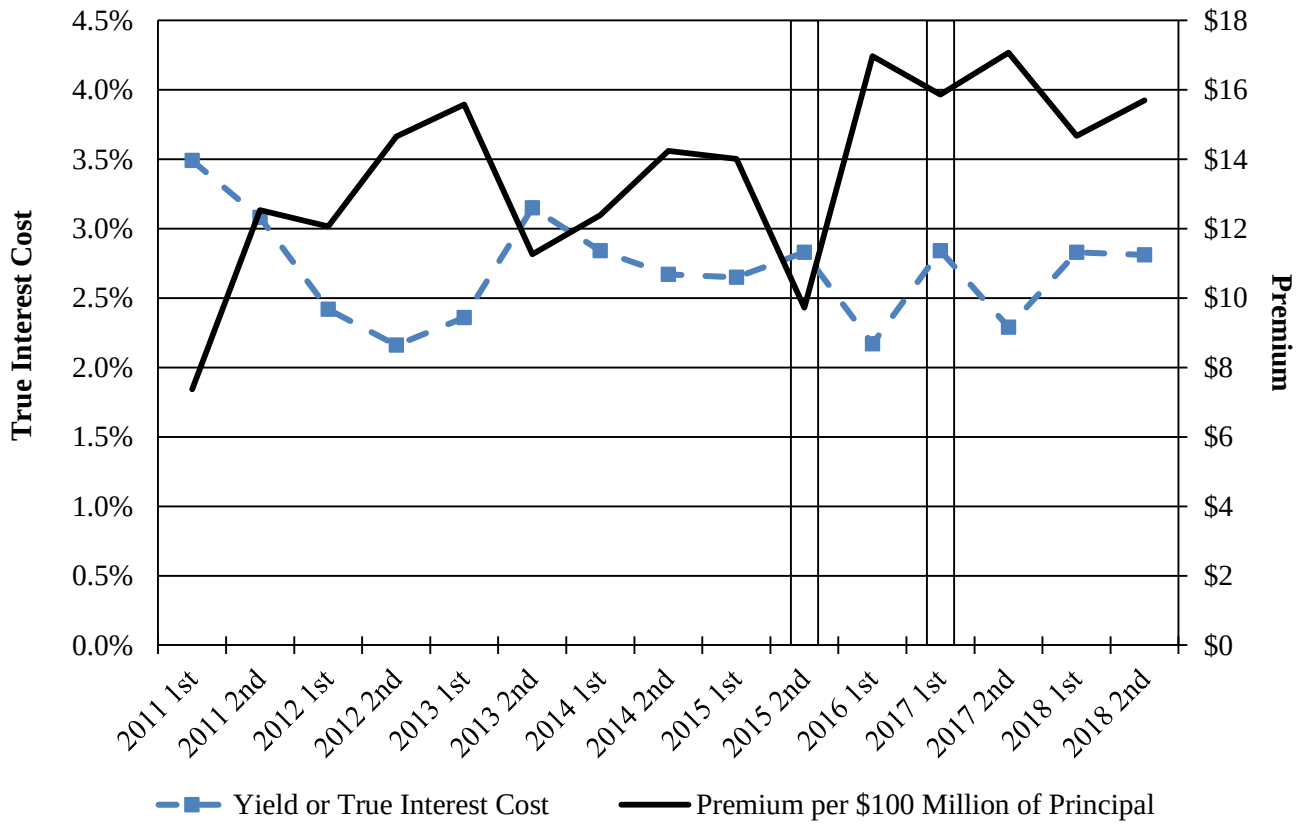


Source: Department of Legislative Services; The Bond Buyer.

This volatility goes both ways. For example, the State issued bonds on July 24, 2013. There was a sharp increase in interest rates during July 2013. From July 3, 2015, to July 25, 2015, the index interest rates increased from 4.39% to 4.77%. This increase of 38 basis points could have substantially decreased a forecasted premium. More recently, the index increased from 3.98% on September 6, 2018, to 4.37% on October 11, 2018. That is 39 basis points in five weeks, which is at least a $20 million reduction in the bond sale premiums. An unexpected increase in rates could result in substantially reduced bond sale premiums.

Another concern is that interest rates are not the only factor that influence bond sale premiums. **Exhibit 11** compares the interest rate for all bond sales since March 2011 with the premium per $100 million of principal realized by those sales. It clearly shows that declining interest rates result in larger premiums. However, a careful look shows that interest rates are not the only factor. For example, the 2015 second and 2017 first bond sales sold at almost the same interest rate[2], but the 2017 first sale yielded an additional $6.1 million in premiums for each $100 million sold, which is 63% more. Clearly, other factors influence the size of the premium. One factor is the coupon rate that the winning bidder sets. This is the underwriters' estimate of what is the most marketable issuance. In the last three bond sales alone, the average coupon rate has ranged between 4.29% and 4.71%. The value of the difference between these rates is more than $20 million in bond sale premiums.

Exhibit 11
Timing of Bond Sale Influences Interest Rates and Premiums
Calendar 2011-2018
($ in Millions)



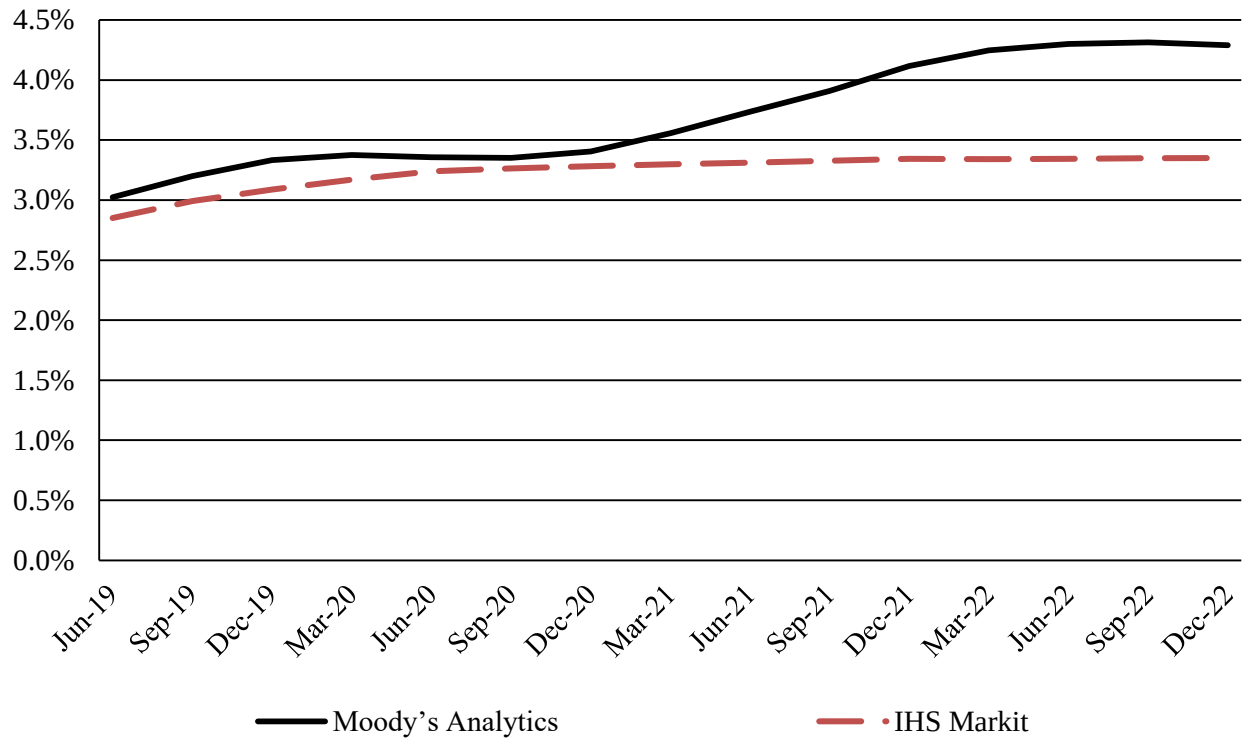
Source: Public Resources Advisory Group; Public Financial Management, Inc.; Department of Legislative Services

[2] The TIC for the 2015 second sale was 2.83%, and the TIC for the 2017 first sale is 2.84%.

Forecasts Suggest That There Is Less Consensus about Interest Rates

Another concern is that there seems to be less consensus about how interest rates will change in the next few years. DLS receives interest rate forecasts from Moody's Analytics and IHS Markit. DLS uses the federal 10-year Treasury notes estimates. This matches GO bonds nicely, since the average maturity of State bonds is about 10 years. **Exhibit 12** shows the difference between the two forecasts. By 2022, the difference between the two forecasts is over 0.90% (90 basis points), which is $43 million in premiums. The data shown below are the February 2019 forecast.

Exhibit 12
Interest Rate Estimates
June 2019 to December 2022



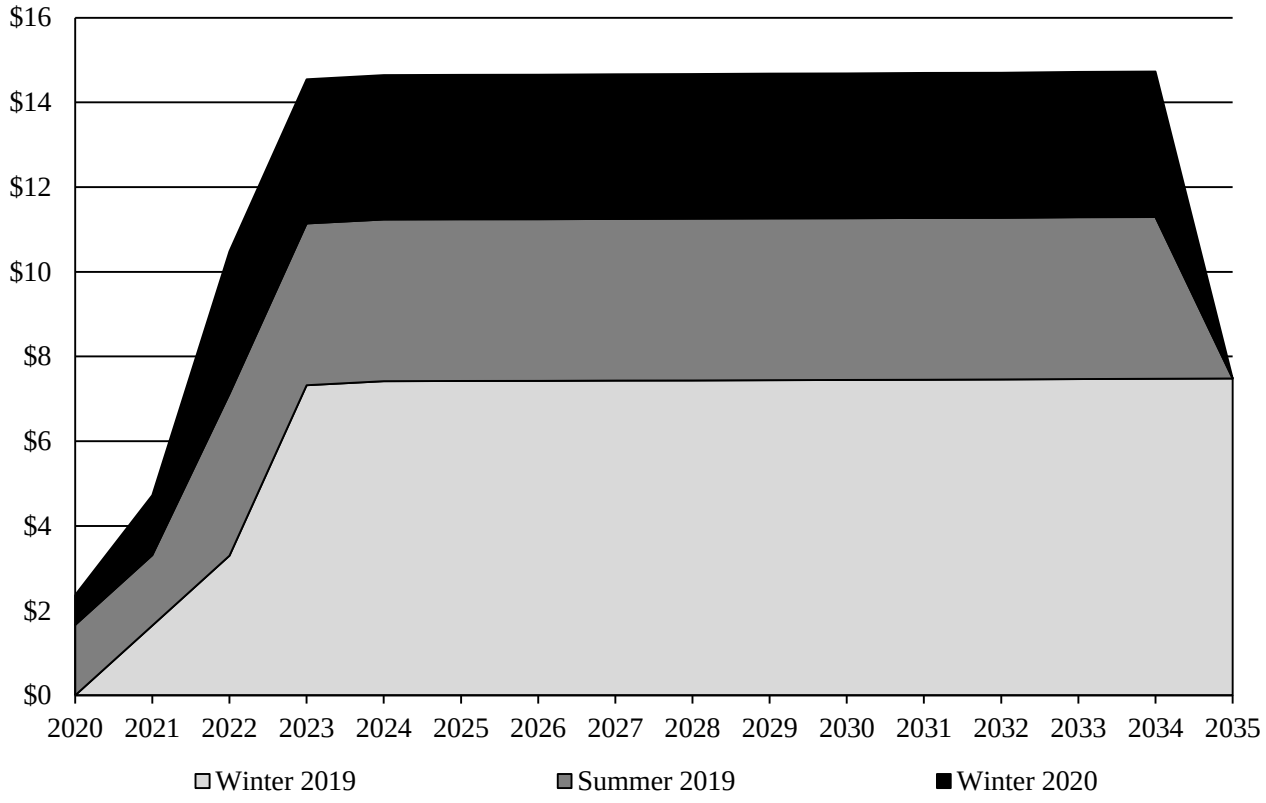
Source: Moody's Analytics; IHS Markit

The forecast from Moody's shows a smooth growth in steps, while the IHS forecast expects interest rates to plateau between 3.3% and 3.4%. Reality may not be so smooth. There could be a shock to which interest rates respond by changing rapidly and unexpectedly. This could result in the State receiving substantially less premiums.

Selling Bonds at a Premium Increases Debt Service Costs

The effect of selling bonds at a premium is to increase bond proceeds in the short term and debt service costs in the long term. The budget assumes that the State will realize $140 million in premiums over the next three bond sales. **Exhibit 13** shows that this increases annual debt service costs by $14.7 million from fiscal 2024 to 2034. Total debt service costs for $140 million in premiums are $201.3 million.

Exhibit 13
Debt Service Costs of $140 Million in Bond Sale Premiums
Fiscal 2020-2035
($ in Millions)



Source: Department of Legislative Services

State Property Tax Rate Required to Fund Debt Service without Fiscal 2020 Premiums

Issuing additional debt to pay fiscal 2020 debt service costs is not the only source of revenues for GO bond debt service. Instead of assuming bond sale premiums will support fiscal 2020 debt service costs, the State could raise State property tax rates to increase revenues by the $70 million assumed in fiscal 2020. The current State property tax rate is $0.112 per $100 of assessable base. DLS estimates that increasing the rate by $0.009 per $100 of assessable base generates $68.6 million, as shown in **Exhibit 14**. This increase and available fund balance is sufficient to support fiscal 2020 debt service costs. An advantage of this approach is that it eliminates the need for $99.5 million in debt service costs from fiscal 2020 to 2035.

Exhibit 14
State Property Tax Rate Required to Generate Costs
Fiscal 2020

	Current	Increase	Difference
State Property Tax Rate	$0.112	$0.121	$0.009
State Property Tax Receipts ($ in Millions)	$860.5	$929.1	$68.6
Median Home Value[1]	$284,000	$284,000	$0
State Property Taxes Due for Median Home Value	$318	$344	$26

[1] As reported by the Maryland Association of Realtors in December 2018.

Source: Maryland Association of Realtors; Department of Legislative Services

Using Premiums for Capital Projects or Resizing Bond Sales Lessen Fiscal Risks

In the past, the budget submitted by the Administration has budgeted premiums in the current fiscal year but has not assumed premiums in the allowance year. In other words, it is common to assume premiums in fiscal 2019 but not in fiscal 2020. This is because the Governor can propose a deficiency appropriation for additional funds for debt service if bonds sold during the legislative session (fiscal 2019) do not generate sufficient bond sale premiums. There are more fiscally prudent approaches to managing bond sale premiums in our environment including:

- ***Resize the Bond Sale:*** If the objective is to generate a specific level of bond proceeds, the amount of bonds sold can be reduced, and bond sale premiums can be used to support capital projects. This is referred to as resizing the bond sale. This has been done by the

Maryland Department of Transportation (MDOT) at its December 2015 bond sale. For example, if the State determines that $500 million in bond proceeds are needed and a $45 million premium is anticipated, the State could reduce the par value of the bonds by $40 million and use any premiums to support projects. Bond documents, such as the Preliminary Official Statement, already clarify that bonds could be resized prior to opening the bids.

- ***Support Capital Programs:*** Premiums are bond sale proceeds. Bonds are sold so that the proceeds support capital projects. The State has authorized premiums for capital projects in the past. For example, premiums supported capital projects in the capital budget bill enacted during the 2018 legislative session. Sections 8-125 and 8-132 of the State Finance and Procurement Article require that premiums are deposited into the ABF, so any authorization for capital projects would require capital budget bill authorization.

2. Capital Debt Affordability Committee Process Underestimates the Cost of Increasing Debt

The Capital Debt Affordability Committee (CDAC) has two affordability criterion: State debt outstanding cannot exceed 4% of State personal income; and State debt service cannot exceed 8% of State revenues. CDAC prepares estimates of debt authorizations and issuances each fall when the committee evaluates affordability. Debt is issued when capital projects or grants require funding. As such, there is a lag between authorizations and issuances. At the end of fiscal 2018, the State had issued $9.5 billion in GO bonds. The Comptroller's Office advises that another $2,399 million has been authorized but unissued. This includes $1,075 million authorized during the 2018 legislative session and another $1,324 million authorized in prior years.

Why Bond Issuances Lag Authorizations

Two factors are responsible for the lag between bond authorizations and debt service payments:

- ***Bonds Do Not Pay Principal Until the Third Year:*** The State issues 15-year bonds that pay interest only for the first 2 years and pay interest and principal for the final 13 years. For example, selling $100 million in bonds with a 5% interest rate would result in $5 million annually in interest in the first 2 years and $11 million in total debt service annually in the following 13 years.

- ***Capital Projects and Programs Do Not Need the Complete Authorization in the First Year:*** State bonds support various programs and projects, many of which have payments that stretch over a number of years. To manage the cash flow efficiently, bonds are sold when payments are due. On average only 31% of authorized bonds are issued in the first year. The remaining 69% is spread over four years.

A typical authorization's first payment is an interest-only payment for less than one-third of the bonds authorized. For example, if the State were to increase authorizations in fiscal 2020 by $100 million more than proposed by SAC, there would be additional debt service costs of $1.8 million in fiscal 2021. Annual costs would gradually increase to $10.5 million in about eight years.

The Debt Affordability Process Understates the Cost of Increasing Authorizations

CDAC has been successful at constraining State debt. When CDAC first introduced the criteria in fiscal 1979, State debt outstanding was 5.4% of personal income, and debt service was 11.3% of revenues. These ratios were steadily reduced by fiscal 1987, when debt outstanding was 3.2% of income, and debt service was less than 8.0% of revenues. The State has also reduced authorizations after revenues declined. During the Great Recession, State general fund revenue declined as much as 5.0% in fiscal 2009. Realizing that revenues were insufficient to meet the debt service to revenue criterion, CDAC reduced the fiscal 2011 to 2015 capital program by $400 million.

Although the affordability process is generally cautious and has been successful in restraining debt service costs, the process tends to undervalue the cost of expanding the capital program. The affordability process does not recognize debt service costs until the bonds are issued, and even then, the process recognizes only a fraction of the costs that are imminent. Once a bond is authorized, the bonds will be issued, and then, typically, the State will be paying the authorization's debt service cost for 20 years.[3] It usually take 8 years until the full annual debt service cost is appropriated, which is over $10 million for a $100 million authorization. Over the life of the debt, the authorization's debt service costs will total $148 million but less than $1 million is booked in the first year.

Recognizing the full cost of increased authorizations provides a short-term hedge against declining, or even slowing, revenues. When CDAC calculates the debt service to revenue ratio, it assumes that revenues increase as projected by the Board of Revenue Estimates (BRE). Should these revenues underperform, the ratio could be breached. Computing ratios with the full cost of increased authorizations allows the State time to absorb the increased spending in the ratios while the capital program is ramped up.

DLS recommends that CDAC consider developing a more cautious approach when evaluating the cost of increasing GO bond authorizations. During the 2019 interim, CDAC should convene a study group of State agencies to examine how to evaluate the cost of increasing GO bond authorizations without undervaluing the costs of expanding the program. Committee narrative is recommended.

[3] It takes each authorization an average of 5 years to issue bonds. Each bond sold has a maturity of 15 years, so it takes about 20 years to retire the full amount of debt that is authorized.

3. Revenue Losses from a Two-year Recession Could Result in Breaching of the Debt Service to Revenues Affordability Ratio

When the State is close to the affordability limits, changing revenue estimates can lead to breaching the limits if GO bond issuances are not reduced. Such a situation occurred during the Great Recession.

In December 2009, BRE reduced State general fund revenues estimates to a level that made the planned capital program unaffordable. Out-year debt service costs would have exceeded 8% of revenues. In response, CDAC met and reduced the fiscal 2011 to 2015 capital program by $400 million.

Revenues have recovered since the Great Recession, and some GO bond authorizations have been restored. Although the State's fiscal condition has improved, a recession could still place the State in a similar position. **Exhibit 15** shows that affordability ratios would not be breached if there were a mild recession but would be breached in another deep recession. The first column shows that fiscal 2019 revenues, as estimated by BRE in December 2018, could decline by $319 million over two years without breaching the debt service to revenues ratio. It also shows that if revenues were to decline as they had in the two most recent recessions, when they declined 3% to 4%, debt service would exceed 8% of revenues. This analysis assumes that authorizations increase by 1% annually and that no new capital spending initiatives are adopted.

Exhibit 15
Revenues Required to Maintain Debt Affordability Ratios above 8%
Comparing December 2018 Revenues to the Most Recent Recessions
($ in Millions)

	December 2018: Fiscal 2019 Base Year	2007-2009 Recession: Fiscal 2008 Base Year	2001 Recession: Fiscal 2001 Base Year
Base Year: State Supported Debt Total Revenues	$23,650	$23,650	$23,650
Revenues Two Years After Base Year	23,331[1]	22,698	22,934
Total Change in Revenues	-319	-952	-715
Percent Change	-1.3%	-4.0%	-3.0%

[1] These are the maximum decline in revenues that the State can absorb so that debt service is 8% of revenues.

Source: Department of Legislative Services

4. Administration Proposes $1.8 Billion for School Construction

The Administration has introduced SB 159 and HB 153, the Building Opportunity Act. The bills fund K-12 school construction projects for local jurisdictions. Under the proposal, the Maryland Stadium Authority would issue $1.8 billion of 20-year revenue bonds. The source of the debt service on the revenue bonds would be a share of casino revenues from the Education Trust Fund programmed at $125 million annually until the debt is retired. Local governments would match the State school construction funding using the local cost share formula for school construction. The bills note that the revenue bonds are "not a debt, liability, or pledge of the faith and credit or the taxing power of the State, the Authority, or any other governmental unit." **The State Treasurer's Office advises that similar revenue bonds with no State backstop are typically viewed by CDAC as non-tax supported debt, meaning the CDAC ratios would be unaffected. However, revisions to the bill that would change the allowable revenue sources for debt service payments could cause these bonds to be considered tax-supported. CDAC will examine the bonds' provisions once they have been issued to make a final determination.**

If school construction bonds are issued without pledging any State revenues, the rating will be lower than if there are additional pledged revenues. The State of Mississippi recently issued casino-backed bonds that received an A+ rating from S&P Global Ratings and FitchRatings. Although Maryland casino-backed bonds could be rated differently, this is an indication that casino-backed bonds are rated quite a bit lower that the State's AAA rating. The consequence of a lower rating is that it increases interest rates and debt service costs, thus reducing the number of projects that can be undertaken.

When the State authorized the issuance of Grant Anticipation Revenue Vehicles (GARVEE)[4] in 2005, similar concerns about lower bond ratings were raised. To improve the rating and reduce debt service costs, the legislation pledged Transportation Trust Fund revenues in case federal funds were insufficient. This improved the rating, but it also required the State to count GARVEEs as State debt. Similarly, the State could pledge State revenues if there are concerns about the rating. **Exhibit 16** shows that this would breach the State debt service to revenue ratio, which may not exceed 8.00%. This program is so large that it would be difficult to fit it into the State debt program without making reductions to other capital programs.

[4] GARVEEs are securitized federal funds to construct the Intercounty Connector.

Exhibit 16
Effect of School Construction Bonds on Affordability Ratios
Fiscal 2020-2024
($ in Millions)

Current Ratios				Effect of Including School Construction in State Debt				
Fiscal Year	Debt Service	Revenues	Ratio	School Debt Service	ETF Revenue	Ratio with Debt Service	Annual School Payments	Fully Funded Ratio
2020	$1,827	$24,497	7.46%	$0	$529	7.30%	$125	7.80%
2021	1,866	24,618	7.58%	16	520	7.49%	125	7.92%
2022	1,957	25,443	7.69%	37	527	7.68%	125	8.02%
2023	2,033	26,165	7.77%	73	532	7.89%	125	8.08%
2024	2,033	26,953	7.54%	119	537	7.83%	125	7.85%

ETF: Education Trust Fund

Source: State Treasurer's Office; Department of Budget and Management; Department of Legislative Services

To fund the full $1.8 billion, the Administration bills assume that the bond sales will generate $184 million in premiums that can be applied to the capital program. Using DLS' standard methodology, a separate premium estimate was prepared. Using Moody's Analytics and IHS Markit interest rate forecasts, DLS projected that a total of only $83 million in bond sale premiums would be generated. This estimate comes with all the caveats discussed in Issue 1.

5. Reducing Taxable Debt Authorizations Reduces Interest Costs

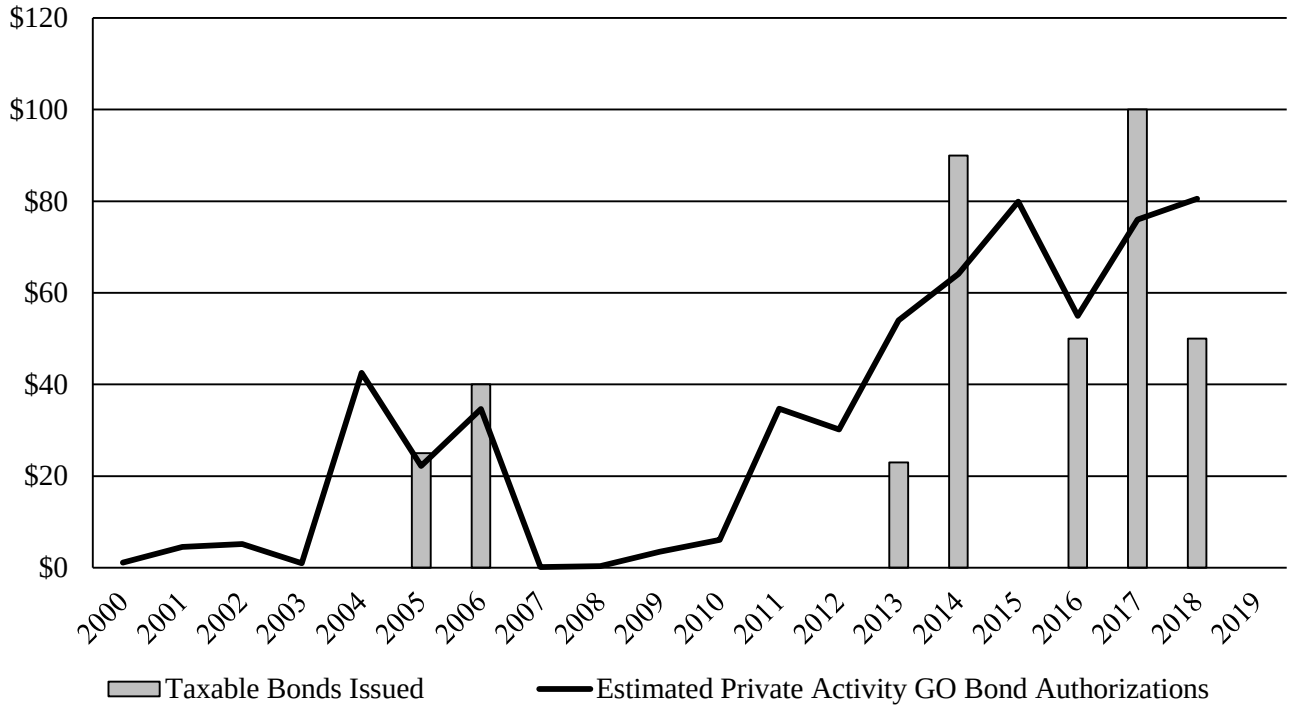
The State's capital program supports a number of different public policy areas, such as health, environment, public safety, education, housing, and economic development. Federal government regulations allow the State to issue debt that does not require the buyer to pay federal taxes on interest earnings. In cases where investors do not pay federal income taxes, they are willing to settle for lower returns. Investors in taxable debt require higher returns to offset their tax liabilities. Consequently, the State can offer lower interest rates on tax-exempt bonds.

Federal laws and regulations limit the kinds of activities that the proceeds from tax-exempt bonds can support. One such requirement limits private activities or private purposes of the bond proceeds to 5%. Another requirement limits the bonds to $15 million for business-use projects and $5 million for business loans. Examples of programs that support private activities or uses include the Partnership Rental Housing and Neighborhood Business Development programs of the Department of

Housing and Community Development and the Water Quality Revolving Loan Fund of the Maryland Department of the Environment.

To avoid exceeding the private activity limits imposed in the federal regulations, the State has previously appropriated funds in the operating budget instead of issuing debt for private purpose programs and projects. Recent years' fiscal constraints have limited the amount of operating funds available for capital projects. To continue these programs, the State authorized GO bonds. In fiscal 2011, the State began migrating private purpose programs from the operating budget into the capital budget. **Exhibit 17** shows that the State has authorized $572 million in private activity projects since fiscal 2011. To support these projects, the State issued $313 million in taxable debt over the same period. Insofar as the State has recently authorized GO bonds for additional private activity projects, additional taxable bond sales are expected, even if they have not yet been planned.

Exhibit 17
Private Activity Authorizations and Taxable Bond Issuances
Fiscal 2000-2019
($ in Millions)



GO: general obligation

Sources: Department of Budget and Management's *Capital Improvement Program*; Financial Advisor's *Report on Bond Sales*

Taxable Bonds Cost More and Taxable Bonds' Costs Are Expected to Increase

In August 2012, the State sold $23 million in taxable GO bonds to institutional investors with three- and four-year maturities. The issuance's TIC was 0.45%, and the State did not realize a premium. At the same bond sale, the State also issued $4 million in tax-exempt bonds to institutional investors. The tax-exempt bond sale had a TIC of 0.33%. In other words, the difference between the two bonds, which were both issued on the same day, was 0.12% (12 basis points). DLS estimates that if the taxable issuance had sold at a TIC of 0.33% instead of 0.45%, the bonds would have generated a premium totaling approximately $500,000.

In the out-years, the additional costs for issuing taxable debt are likely to increase. The current low interest rate environment is probably suppressing the additional costs paid by issuers of taxable debt. For example, the State issued taxable debt in fiscal 2005 and 2006. At the time, interest rates were higher, and DLS estimates that taxable bonds added $2.8 million in debt service costs for the $65.0 million issued.

The bottom line is that there is a measurable difference between the cost of taxable and tax-exempt debt. The additional price paid by issuers of taxable debt is more likely to increase than decrease when compared to tax-exempt debt.

Reliance on GO Bonds for Private Use and Activities Continues After Budget Improves

Exhibit 18 shows that out-year private activity authorizations planned in the 2020 *Capital Improvement Program* hovers at $91 million from fiscal 2021 to 2023 and then declines to $79 million. From fiscal 2011 to 2019, taxable authorizations exceeded taxable issuances by as much as $259 million. There is still a substantial reliance on GO bond funds to support projects and programs that are traditionally supported by pay-as-you-go (PAYGO) capital funding. These large authorizations are likely to result in the issuance of taxable bonds in the out-years.

Exhibit 18
Private Activity Authorizations by Department
Fiscal 2020-2024
($ in Millions)

	2020	2021	2022	2023	2024	Total
Private Business Use						
State Agency						
Maryland Public Television	$8.2	$0.0	$0.0	$0.0	$0.0	$8.2
Private Loans						
State Agency						
Department of Housing and Community Development	$68.9	$79.6	$79.8	$79.3	$67.6	$375.2
Maryland Department of the Environment	14.1	11.9	11.9	11.9	11.9	61.5
Subtotal	***$82.9***	***$91.4***	***$91.7***	***$91.2***	***$79.4***	***$436.7***
Total	**$91.1**	**$91.4**	**$91.7**	**$91.2**	**$79.4**	**$444.9**

Note: Numbers may not sum to total due to rounding.

Source: Department of Budget and Management, 2019 *Capital Improvement Program*

The operating budget as introduced has taken some steps to reduce reliance on taxable bond authorizations. The PAYGO budget provides $23 million in general funds that supports the Baltimore Regional Neighborhood Development Initiative ($12 million), the Seed Community Development Anchor Institution Fund ($5 million), Rental Housing Programs ($2 million), Neighborhood BusinessWorks ($2 million), and Strategic Demolition ($2 million).

To reduce debt service costs, DLS recommends that the State minimize GO bond authorizations to projects that do not qualify for tax-exempt bonds in fiscal 2020. To the extent practical, these activities should be funded with cash.

Operating Budget Recommended Actions

1. Adopt the following narrative:

Review Capital Debt Affordability Process: The State created the Capital Debt Affordability Committee (CDAC) to manage State debt. The committee has adopted two criteria to determine if State debt is affordable: State debt outstanding cannot exceed 4% of State personal income; and State debt service cannot exceed 8% of State revenues. These criteria have succeeded in reducing State debt, which was high in the late 1970s. However, there have been times when authorizations increased at a rapid rate. This forced the State to make substantial reductions to the capital program. For example, general obligation bond authorizations increased from $460 million in fiscal 2001 to $1.1 billion in fiscal 2010, an annual increase of 10.3%. When revenues declined during the Great Recession, the State reduced the capital budget by $400 million to avoid breaching the debt service to revenues ratio. The rapid expansion of debt was in part attributable to the CDAC process undervaluing the cost of increasing authorizations. CDAC should consider modifying policies to develop a more cautious approach when evaluating increases to general obligation bond authorizations. CDAC should convene a study group to examine the best approach to evaluating the cost of increasing authorizations without undervaluing the costs of expanding the program. The group should include the State Treasurer's Office, the State Comptroller's Office, the Department of Budget and Management, the Maryland Department of Transportation, and the Department of Legislative Services. The study group should report its findings to CDAC and the budget committees.

Information Request	Author	Due Date
Review of debt affordability policies	CDAC	November 1, 2019

Updates

1. Accounting Changes to Leasing Standards Could Affect Debt Affordability

When evaluating debt affordability, CDAC evaluates all State debt. Long-term leases are considered debt. Long-term leases funded by tax revenues are considered State debt. Classifying leases as debt, the State applies standards developed by the Governmental Accounting Standards Board (GASB), which is an independent, nonpolitical organization dedicated to establishing rules that require state and local governments to report clear, consistent, and transparent financial information.

Under current guidelines, leases that meet at least one of the following criteria are considered to be capital leases:

- the lease transfers ownership of the property to the lessee by the end of the lease term;
- the lease allows the lessee to purchase the property at a bargain price at a fixed point in the term of the lease for a fixed amount;
- the term of the lease is 75% or more of the estimated economic useful life of the property; and/or
- the present value of the lease payments is 90% or more of the fair value of the property.

Many leases that the State enters into are not considered to be capital leases. Even if the leases represent long-term commitments to make payments, no liabilities are reported. Similarly, no assets are reported on many leases, even if the State has long-term rights to receive operating lease payments.

In 2013, GASB initiated a project to reexamine issues associated with lease accounting. The objective of the project is to examine whether operating leases can meet the definitions of assets or liabilities, which could result in new standards for capital leases. A concern is that the current approach to operating leases undervalues liabilities. For example, there are a number of operating leases that include long-term commitments to make payments, but no liabilities are reported.

An exposure draft was issued in January 2016. This was followed by a comment period that ended in May 2016. A public hearing was held in June 2016. After the comment period, redeliberations began in August 2016. GASB unanimously approved Statement 87 that redefines lease rules. The requirements of the proposed statement would be effective for reporting periods beginning after December 15, 2019, with earlier application permitted.[5] This affects fiscal 2021.

The new rules require government lessees to recognize a lease liability and an intangible asset representing their right to use the leased asset with limited exception. Lessees would amortize the leased asset over the term of the lease and recognize interest expense related to the lease liability. The exposure draft provides exceptions for short-term leases lasting 12 months or less, along with financed purchases.

[5] One of the changes to the draft was to delay the effective data from December 15, 2018, to December 15, 2019.

The new rules would increase the amount of capital leases, which would affect State debt affordability. To estimate what the impact could be, the 2018 *Joint Chairmen's Report* asked that DBM, MDOT, and the Department of General Services examine the effect of the GASB ruling. In their response, the departments noted that fiscal 2018 capital lease debt outstanding totals $210 million and that debt service totals $27.2 million under the current rules. Total lease payments in fiscal 2018 were $91.2 million, and leases outstanding were $515.9 million. It is unclear if all these costs would qualify under the new rules.

Appendix 1
Current and Prior Year Budgets
Public Debt
($ in Thousands)

	General Fund	Special Fund	Federal Fund	Reimb. Fund	Total
Fiscal 2018					
Legislative Appropriation	$259,649	$975,867	$11,539	$0	$1,247,055
Deficiency/Withdrawn Appropriation	0	0	0	0	0
Cost Containment	0	0	0	0	0
Budget Amendments	0	0	8	0	8
Reversions and Cancellations	0	-12,142	0	0	-12,142
Actual Expenditures	**$259,649**	**$963,725**	**$11,547**	**$0**	**$1,234,921**
Fiscal 2019					
Legislative Appropriation	$286,000	$1,004,000	$12,831	$0	$1,302,831
Budget Amendments	0	0	0	0	0
Working Appropriation	**$286,000**	**$1,004,000**	**$12,831**	**$0**	**$1,302,831**

Note: The fiscal 2019 appropriation does not include deficiencies, a one-time $500 bonus, or general salary increases. The fiscal 2020 allowance does not include general salary increases. Numbers may not sum to total due to rounding.

Fiscal 2018

Actual fiscal 2018 debt service costs totaled $1,234.9 million, which is $12.1 million less than the legislative appropriation. The reduction is attributable to savings from the August 2017 bond sale, which reduced fiscal 2018 debt service costs by $3 million through lower annual interest costs and $9.1 million in refunding savings.

Fiscal 2019

To date, no budget amendments have been processed in fiscal 2019.

Appendix 2
Economics of Bond Sale Premiums

When bonds are sold, they have a par value (principal) and a coupon rate (interest rate paid to the bondholder based on par value). When the bonds are bid, the Treasurer's Office determines how many bonds are sold (par value of the bonds) and when the bonds mature. The underwriter determines the coupon rate (interest rate the issuer pays) and the sale price of the bonds, which is awarded to the underwriter with the lowest interest cost. If the coupon rate is greater than the market rate, the bonds sell at a premium, and the State's bond proceeds exceed par value of the bonds.

For example, at the bond sale in July 2015, the State issued $450 million in tax-exempt general obligation bonds (par value). The average coupon rate was 3.92%, and the true interest cost (TIC) (market interest rate) was 2.83%. Since the coupon rate exceeded the market interest rate, the bonds sold at a premium, and total bond proceeds totaled $494 million (after deducting the underwriters discount and cost of issuance expenses). This additional $44 million is the bond premium.

Why Do Bonds Sell at a Premium?

Economic theory tells us that in a world without uncertainty, there will be no difference in value between bonds selling at a high coupon rate or bonds selling at a low coupon rate. If bonds sell at a high coupon rate, the seller receives a large premium that offsets the high interest cost.

However, we do live in an uncertain world. Investors may see advantages in purchasing bonds at a premium. For investors of Maryland bonds, the primary risk is that the bonds will lose value if interest rates rise. Since Maryland bonds offer a fixed interest rate, the value of Maryland bonds decline if interest rates rise.

How investors value bonds is relative and depends on what interest rates the market offers. If low-risk rates such as U.S. government bonds are low, the State will be able to issue bonds at a lower rate than if these interest rates are high. In other words, a 2% interest rate can be a good deal if everyone else is offering less than 2%, but it is not such a good deal if everyone else is offering 3% or more.

In the current environment, interest rates are more likely to increase than decrease. Current interest rates are historically low. According to data from the Federal Reserve Board, the yield on 10-year treasury notes on Friday, August 3, 2018 (the time of the most recent bond sale), was among the lowest since 1962. In fact, only 400 out of 2,952 weeks had lower interest costs; 86% of the time, interest rates were higher than at the time of the last bond sale. In this environment, it certainly makes sense for investors to protect themselves against rising interest rates, and this is done by purchasing bonds at a premium.

The table examines a tranche of $36,125,000 in bonds sold with an eight-year maturity in the July 2015 bond sale. The top half of the exhibit compares the return if an investor buys bonds at par and at a premium. It shows that paying $6,080 and getting a 5.0% interest rate yields the same return as paying $5,000 and getting a 2.06% interest rate, since the TIC for both is 2.06%. The bottom half

shows what happens if market interest rates increase. In both examples, the bonds are worth less. The difference is that bonds sold at a premium lost 17.8% of their value, while bonds selling at par lost 19.2% of their value. For investors that are intent on preserving wealth or cash, this matters.

Effect of Higher Interest Rates on the Value of Bonds

Data from Bond Sale from July 2015 Bond Sale

	Premium Bonds	Sold at Par	Explanation
Par Value of Bonds	$5,000	$5,000	This is the principal you get back.
Coupon Rate	5.00%	2.06%	This is the interest rate on the bond's par value.
Premium	$1,080	$0	This is what you pay extra for the higher rate.
Value at Sale	$6,080	$5,000	This is what you pay.
Yield or TIC	2.06%	2.06%	This is what matters, rate of return.

If the Market Interest Rate Increases to 5%

Value at Sale	$6,080	$5,000	This is what you paid for the bonds.
Value After Interest Rates Increase	5,000	4,038	This is what your bonds are now worth.
Total Loss	-1,080	-962	This is how much you lose due to rate change.
Percent Loss	-17.8%	-19.2%	This is what matters, value lost.

TIC: true interest cost

Source: Public Financial Management, July 2015; Department of Legislative Services

In conclusion, why do bonds sell at a premium? Because buying bonds at a premium is a hedge against increasing interest rates, and it looks like interest rates are going to increase.

Appendix 3
Fiscal Summary
Public Debt

Program/Unit	FY 18 Actual	FY 19 Wrk Approp	FY 20 Allowance	Change	FY 19 - FY 20 % Change
01 Redemption and Interest on State Bonds	$ 1,234,920,771	$ 1,302,831,083	$ 1,332,502,885	$ 29,671,802	2.3%
Total Expenditures	**$ 1,234,920,771**	**$ 1,302,831,083**	**$ 1,332,502,885**	**$ 29,671,802**	**2.3%**
General Fund	$ 259,648,777	$ 286,000,000	$ 287,000,000	$ 1,000,000	0.3%
Special Fund	963,724,880	1,004,000,000	1,033,970,021	29,970,021	3.0%
Federal Fund	11,547,114	12,831,083	11,532,864	-1,298,219	-10.1%
Total Appropriations	**$ 1,234,920,771**	**$ 1,302,831,083**	**$ 1,332,502,885**	**$ 29,671,802**	**2.3%**

Note: The fiscal 2019 appropriation does not include deficiencies, a one-time $500 bonus, or general salary increases. The fiscal 2020 allowance does not include general salary increases.