STATE OF CALIFORNIA | DEBT AFFORDABILITY REPORT

OCTOBER 2018

JOHN CHIANG | CALIFORNIA STATE TREASURER

John Chiang

Treasurer

State of California

October 1, 2018

Fellow Californians:

This report is being submitted ten years after a profound financial crisis that threatened — and almost succeeded — to cripple our national economy. While we are still feeling many of the effects of that event today, the passage of time has largely helped California bounce back.

Today, California's economy is not only the largest among all 50 states, but is one of the planet's largest and most dynamic economies — now ranked number five in the world. Often overlooked is the important characteristic that California's economy closely resembles that of our national economy in its diversity. We are much more than agriculture, or Silicon Valley, or the entertainment industry — despite the individual importance each of these sectors bring to our state.

As I mentioned in my letter introducing last year's report, we are driving ahead to create a dynamic, practical, and profitable market for "green bonds," to pay for billions of dollars of climate-friendly infrastructure. We already know the future is green, but the essential question of how we finance the conversion from a fossil fuel-based economy and infrastructure to cleaner, greener, and more sustainable alternatives remains.

A few weeks ago — with the full endorsement of Governor Brown — I signed the Green Bond Pledge on behalf of California, making our state the first in the nation to pledge to use green financing to combat climate change. This pledge commits the world's fifth largest economy to using green bonds to efficiently raise billions of dollars in new and affordable capital so we can build climate-friendly infrastructure. It is time our major infrastructure projects align with climate realities, and that we make the most of every dollar we borrow for essential public works.

We are closing in on the finish of an initial effort to offer local government officials a resource to help them better understand the complexities of issuing governmental bonds in a safe and effective manner. I expect to unveil the first installment of that series of training resources in early December. These are just the most recent installments of my efforts to modernize the State Treasurer's Office to lower costs and maximize efficiency.

Since the last Debt Affordability Report, we have sold $6.8 billion in general obligation bonds, in four offerings. California enjoys high-grade ratings from each of the major credit-rating agencies: Aa3 from Moody's, AA- from Fitch, and AA- from S&P. Those high ratings give us in the Golden State the confidence to explore and tap into the potential of green bonds for financing the fight to counter global warming.

By the end of the current fiscal year, California will have accumulated nearly $14 billion in rainy day reserves — a distinctly different picture from the one we saw following the financial crisis and the subsequent Great Recession. The Legislature has passed eight on-time budgets in a row. Our long-term liabilities — post-employment benefits and pension obligations being the most crucial — and our state, as a whole, are much better positioned today to weather an economic downturn than it has been in recent memory. California has, indeed, earned the title of the "world's fifth largest economy," and investors have — as a result of all these efforts — responded affirmatively and offered our state more favorable rates than we've seen in the last 10 years.

With the U.S. economy now on solid footing, it is hard to imagine a recession on the horizon. Nevertheless, there are growing signs that the end of the current expansion may be closer than we might think. This Debt Affordability Report will help all Californians see that the real progress made toward greater financial resiliency will pay dividends when the inevitable reversal of economic fortunes occurs.

Sincerely,

JOHN CHIANG
California State Treasurer

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PREFACE

Government Code section 12330 requires the State Treasurer to submit an annual Debt Affordability Report (DAR) to the governor and Legislature. The report must provide the following information:

- A listing of authorized but unissued debt the Treasurer intends to sell during the current year (2018-19) and the following year (2019-20), and the projected increase in debt service as a result of those sales.
- A description of the market for state bonds.
- An analysis of state bonds' credit ratings.
- A listing of outstanding debt supported by the General Fund and a schedule of debt service requirements for the debt.
- A listing of authorized but unissued bonds that would be supported by the General Fund.
- Identification of pertinent debt ratios, such as debt service to General Fund revenues, debt to personal income, debt to estimated full value of property and debt per capita.
- A comparison of the pertinent debt ratios for the state with those of the 10 most populous states.
- The percentage of the state's outstanding general obligation (GO) bonds comprised of fixed rate bonds, variable rate bonds, bonds that have an effective fixed interest rate through a hedging contract and bonds that have an effective variable interest rate through a hedging contract.
- A description of any hedging contract, the outstanding face value, the effective date, the expiration date, the name and ratings of the counterparty, the rate or floating index paid by the counterparty, and an assessment of how the contract met its objectives.

NOTES ON TERMINOLOGY

- This report frequently uses the words "bonds" and "debt" interchangeably, even when the underlying obligation behind the bonds does not constitute debt subject to limitation under California's constitution. This conforms to the municipal market convention that applies the terms "debt" and "debt service" to a wide variety of instruments, regardless of their precise legal status.
- The report references fiscal years without using the term "fiscal year" or "fiscal." For example, 2018-19 means the 2018-19 fiscal year ending June 30, 2019.

SECTION 1 | MARKET FOR STATE BONDS

The state is one of the largest issuers in the $3.8 trillion U.S. municipal bond market. Over the last five fiscal years, the state has issued an average of $7.5 billion of General Obligation (GO) bonds annually. In 2017-18, the state issued $8.4 billion of GO bonds. Of that total, $4.5 billion refinanced outstanding GO bonds to produce debt service savings.

The market and price for the state's bonds are affected by factors specific to the state, as well as overall conditions in the capital markets. These factors include the economy, general market interest rates, national and state personal income tax rates, the supply of and demand for municipal bonds, investor perception of the state's credit and the performance of alternative investments, such as equities or other debt capital.

Since the last Debt Affordability Report was published in October 2017, short-term tax-exempt municipal bond interest rates rose significantly, while long-term tax-exempt interest rates fluctuated within a relatively narrow range.

The continued strength of the state's credit profile, coupled with the impact of the Tax Cuts and Jobs Act of 2017 on the supply of and demand for tax-exempt bonds, contributed to interest rates on the state's bonds outperforming those of other municipal issuers in 2017-18.

STATE-SPECIFIC FACTORS

The state's fiscal health continues to improve. Several factors have contributed to this ongoing positive trend that reflect both state actions and the state's improving economy.

- Beginning in 2012, the state enacted significant structural fiscal reforms including:
  - Voters approved an initiative which reinstated the majority vote for annual legislative approval of the state budget;
  - The Legislature eliminated redevelopment agencies, which ended the involuntary redirection of tax revenues from schools and local governments and reduced the burden on the state's General Fund to backfill the schools' loss of money; and
  - In November 2014, voters approved Proposition 2, a constitutional amendment that strengthens the state's Budget Stabilization Account (BSA), also called the "rainy day fund," and pays down state debts and liabilities. The BSA helps to reduce the General Fund's dependence on cyclical or volatile revenues derived from capital gains.
- Together, these and other statutory changes have resulted in significant positive institutionalized changes to the state's financial management and condition.
- Since 2012, the state's economy has improved significantly with the unemployment rate declining from 10.4 percent to 4.2 percent in April 2018, employment increasing from 16.6 million in 2012 to 18.4 million in 2017 and the state's total personal income rising by more than 25 percent.
- The 2018-19 state budget is the eighth consecutive budget adopted on time, before the June 30 constitutional deadline.

- In November 2016, voters approved Proposition 55 which extended the personal income tax rates approved in 2012 that were initially set to expire on December 31, 2018 to 2030.

- The governor and Legislature have taken steps to substantially pay down the state's past budgetary borrowings and deferrals.

- The 2018-19 budget projects that an additional $1.75 billion of Proposition 2 eligible debts and liabilities will be paid down this fiscal year and the state's Department of Finance projects that almost all of the remaining Proposition 2 budgetary obligations will be repaid by the end of 2021-22.

- The state's 2018-19 budget projects continued improvement in the state's fiscal condition, with structurally balanced budgets through 2021-22, and a projected $4.4 billion transfer to the state's rainy day fund in 2018-19. The projected transfer includes the constitutionally mandated $1.7 billion transfer plus a $2.6 billion supplemental transfer in excess of the legally required amount that will initially be held temporarily in the newly created Budget Deficit Savings Account. By the end of 2018-19, the BSA is projected to achieve a balance equal to ten percent of General Fund revenues and transfers for that fiscal year, the maximum balance under the Constitution for 2018-19, or $13.8 billion, better preparing the state to adapt to periods of revenue volatility.

- Prior to 2015-16 the state had issued revenue anticipation notes to manage intra-year cash needs in all but one fiscal year since the mid-1980s. As a result of the state's improved cash position, no cash flow borrowing has been required in the last three fiscal years and are not expected to be needed in 2018-19.

Because of these factors, and the state's improved fiscal health, the ratings on the state's GO bonds have been stable. Most recently, Moody's revised their outlook on the state's GO bonds to Aa3 (positive) in July 2018. A rating outlook is an opinion regarding the likely rating direction over the medium term. A positive outlook generally indicates a higher likelihood of a rating change over the medium term, while a stable outlook generally indicates a low likelihood of a rating change over the medium term. Both Fitch Ratings (Fitch) and S&P Global Ratings (S&P) have maintained their AA- (stable) ratings on the state's GO bonds since the last Debt Affordability Report in October 2017.

As a result of the state's continued stable and improving credit outlook as well as the impact of the Tax Cuts and Jobs Act of 2017, which made tax-exempt bonds in high-income states such as California more attractive and led to a reduced supply of California municipal bonds, the state's credit spreads narrowed significantly during 2017-18. Credit spreads represent the difference in yield between two bonds of similar maturity but different credit quality. Figure 1 depicts the state's interest rate spreads to the AAA GO Municipal Market Data (MMD) the municipal industry's benchmark of AAA-rated state GO bonds. The state's credit spread on its 30-year bonds to the MMD benchmark has tightened from a high of more than 150 basis points at the end of 2009 to four basis points as of September 2018.

FIGURE 1

30-YEAR CALIFORNIA MMD CREDIT SPREADS TO "AAA" MMD

Source: Thomson Municipal Market Monitor (TM3)

Despite the significant financial improvements over the last several years and improved credit spreads on the state's GO bonds, the state's financial condition could still be adversely affected by a number of economic and budget risks. Risks with potentially significant General Fund impact include revenue volatility, the cost of public employee retirement benefits, changes to federal legislation and/or policies that help to fund the cost of providing health care, other changes to federal policies, and the threat of a recession.

OVERALL MARKET CONDITIONS

The discussion below reviews the factors that impacted the fixed-income market over the last fiscal year that may have also significantly affected the market for the state's bonds, both taxable and tax-exempt. Over the 2017-18 fiscal year, the U.S. fixed income markets experienced tightening monetary policy from the federal reserves, a strengthening economy, debt ceiling concerns, geopolitical tensions and U.S. tax reform. Overall these factors contributed to the increase in interest rates over the 2017-18 fiscal year.

INTEREST RATES

SHAPE OF THE YIELD CURVE. As a result of tightening monetary policy, including three additional interest rate hikes in 2018 by the Federal Reserve and the strengthening of the U.S. economy, the slope of the yield curve flattened with short-term interest rates increasing significantly more than long-term interest rates in a year period. The yield curve reflects interest rates for fixed income assets at a set point in time for bonds having equal credit quality but differing maturity dates. The so-called term structure of interest rates is generally exhibited by a yield curve that is positively sloped – that is, long-term rates are visibly higher than short-term rates. This condition is referred to as a "normal" yield curve. When the differential between short-term and long-term rates becomes smaller, this phenomenon is called a "flattening" of that slope. In the broader fixed-income markets the yield curve is flattening. This sometimes portends a coming recession, though this measure is not infallible. Overall, as shown in Figure 2, rates increased by 45-65 basis points in years 1-10, 16-38 basis points in years 11-20 and only 14-16 basis points in years 20-30.

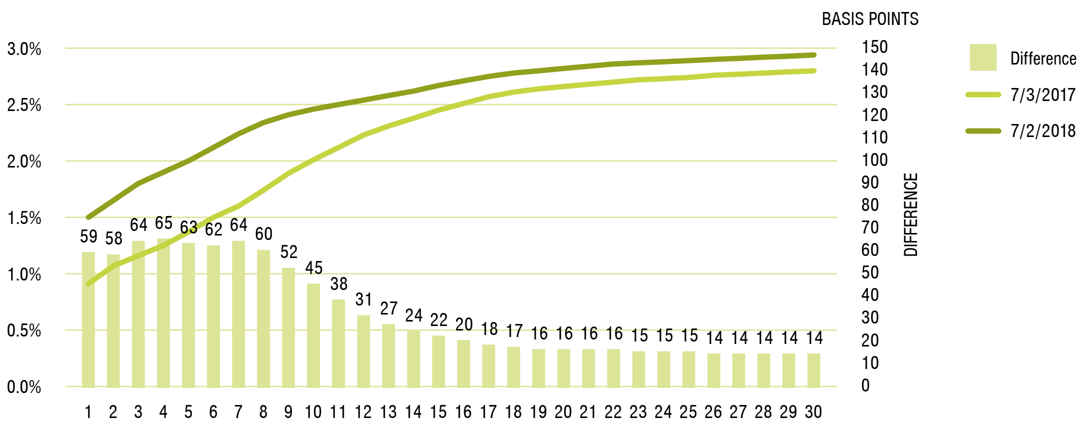
LONGER TERM INTEREST RATES. At various times across 2017-18, fixed-income yields fluctuated significantly as a result of geopolitical concerns resulting in "flight to quality" or increased investment in less risky investments and other economic activity. However, this fiscal year, the most significant factor affecting tax-exempt municipal bond yields in particular was tax reform.

Across all of 2017-18, long-term tax-exempt interest rates, as measured by 30-year MMD, rose only modestly with rates rising from 2.80 percent at the beginning of the fiscal year to 2.94 percent at the end of the fiscal year. In addition, as shown in Figure 3, rates ranged from a low of 2.46 percent on December 6, 2017 to a high of 3.16 percent on April 25, 2018 for 30-year MMD and a low of 1.81 percent on September 7, 2017 to a high of 2.55 percent in April and May for the 10-year MMD.

Congress passed the Tax Cuts and Jobs Act of 2017 (the "Act") on December 20, 2017. Prior to its passage various

FIGURE 2

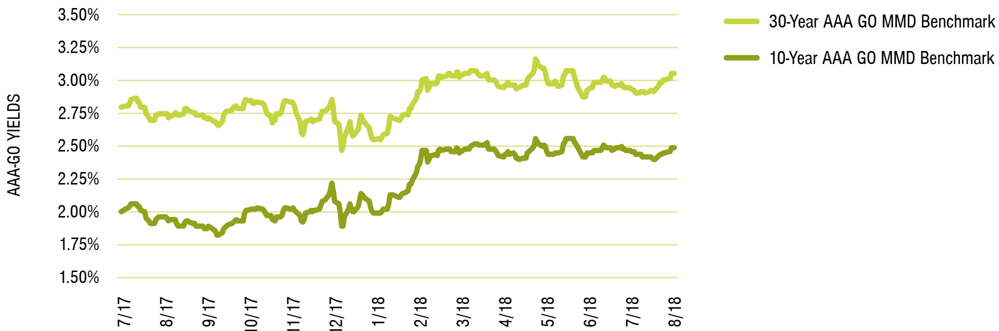
SLOPE OF THE YIELD CURVE



Source: Thomson Municipal Market Monitor (TM3)

FIGURE 3

TRENDS OF TAX-EXEMPT INTEREST RATES



Source: Thomson Municipal Market Monitor (TM3)

versions of the Act were under discussion for many months before its enactment, which included reducing the corporate and personal tax rates, eliminating the use of tax-exempt bonds for advance refundings, further limitations or elimination of private activity bonds, and eliminating or reducing the alternative minimum tax (AMT) for individuals and corporations. While the final version of the Act reduced tax rates, eliminated advance refundings and the corporate alternative AMT, and reduced the number of individuals expected to be subject to the AMT, tax exemption remained an option for private activity bonds and not-for-profit issuers. The Act also limited the amount of state and local income taxes, property taxes, mortgage interest and charitable contributions that were deductible from income for federal tax purpose, which had a meaningful impact on taxpayers in high tax and property-value states such as California.

While only a portion of the proposed changes were included in the adopted Act, in November and December 2017, there was a rush to sell the types of tax-exempt bonds that were proposed to be eliminated prior to the January 1, 2018 anticipated effective date of the Act.

This resulted in a surge in issuance between November and December 2017 nationally as depicted in Figure 4.

As a result, fourth quarter 2017 national issuance volume set a record high with calendar year 2017 volume being only 4.8 percent below 2016's record volume, after running well below 2016's issuance level through the first three calendar quarters of 2017. The California municipal market also experienced a similar but less pronounced effect as shown in Figure 5. In addition, the change in the slope of the yield curve (discussed above) helped to improve the economics of advance refundings, which would also be eliminated under the Act, by reducing the amount of negative arbitrage for issuers due to the flattening yield curve. Negative arbitrage is the spread between the long-term rate on the new refunding bonds and the short-term reinvestment rate earned during the period between the issuance of the new refunding bonds and the redemption of the bonds being refinanced.

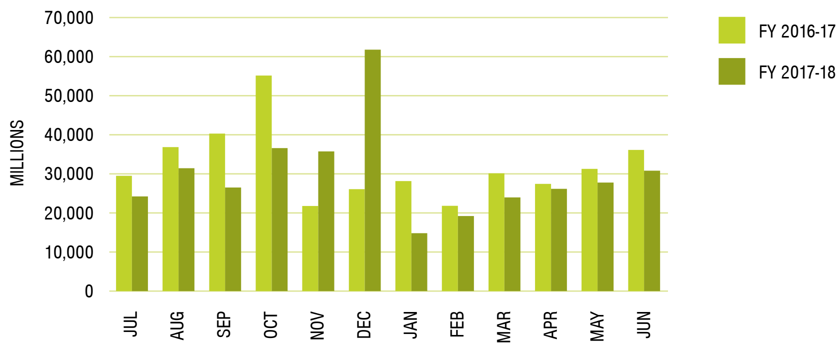
By the end of May, the fixed income markets reacted to increased geopolitical tensions involving the North Korea summit and political actions in Spain and Italy that created uncertainties. Interest rates declined with investors seeking a "flight to quality." Long-term interest rates remained relatively stable through the end of 2017-18. After declining in May to 2.87 percent, 30-year MMD only increased seven basis points to 2.94 percent by the end of June 2018, as shown above in Figure 3.

SHORT-TERM INTEREST RATES. While long-term tax-exempt interest rates rose only modestly over the fiscal year as noted above, short-term tax-exempt interest rates increased significantly between July 2017 and June 2018. After being targeted at zero percent for years, the Federal Reserve has now increased the targeted Fed Funds rate eight times — in December 2015, December 2016, March 2017, June 2017, December 2017, March 2018, June 2018 and September 2018. In addition, the reforms affecting money market mutual funds that became fully effective in October 2016 continued to impact short-term tax-exempt interest rates in 2017-18. As shown in Figure 6, the short-term tax-exempt SIFMA[1] swap index and the actual average interest rates on the state's tax-exempt variable rate demand obligations (VRDOs) rose

[1] SIFMA is the Securities Industry and Financial Markets Association, a trade organization.

FIGURE 4

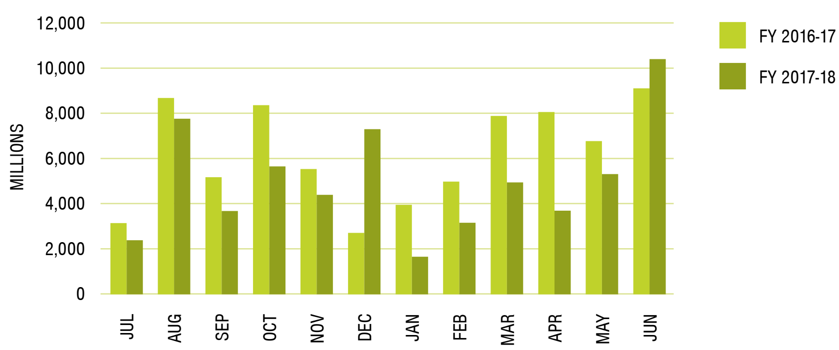
NATIONAL MONTHLY TAX-EXEMPT BOND ISSUANCE



Source: The Bond Buyer

FIGURE 5

CALIFORNIA MONTHLY TAX-EXEMPT BOND ISSUANCE



Source: CDIAC Database

FIGURE 6

SIFMA VERSUS CALIFORNIA VRDO (MONTHLY AVERAGE RATES)

Source: Thomson Municipal Market Monitor (TM3) and California State Treasurer's Office significantly in 2017-18. Notwithstanding these increases, at these levels, VRDOs continue to be a source of low-cost financing for the state and have helped to diversify the state's capital structure. While short-term tax-exempt interest rates began to increase in March 2016, the average interest rate on the state's VRDOs has been lower than SIFMA, the national short-term index, by 13 basis points. Over the first half of 2018, this positive differential increased to more than 37 basis points. Further, the one-year interest rates that local governments had to pay on short-term, cash flow borrowing in 2018 also increased significantly this year. For example, select large California short-term cash flow issuers saw the tax-exempt interest rate on their one-year annual cash flow borrowings for 2018-19 increase from 0.93 percent last year to 1.55 percent this year.

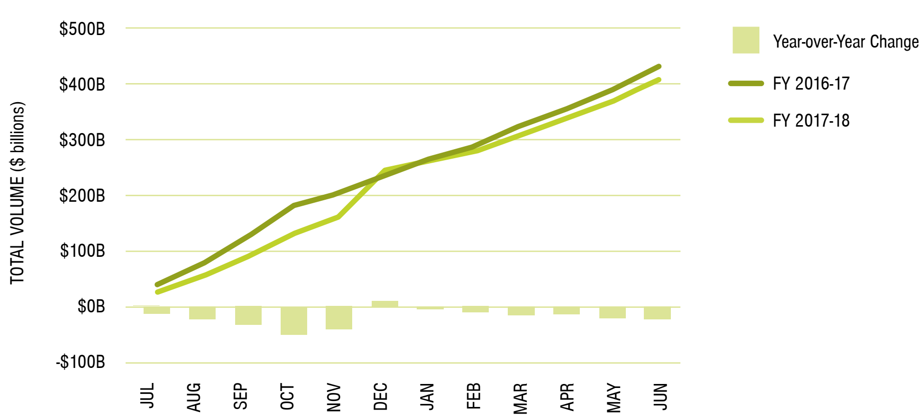
SUPPLY AND DEMAND

Technical factors such as supply and demand for municipal bonds also affect the pricing of municipal bonds.

SUPPLY. As noted above, in 2017-18, the timing of the supply and demand for tax-exempt municipal bonds was impacted significantly by the proposed federal tax reform in late 2017. Figures 7 and 8 present the cumulative volume of U.S. and California municipal bond issuance for 2016-17 and 2017-18. The surge in national supply in November and December 2017 resulted in only a slight decline nationally by the end of 2017-18. However, in California, while volume was higher in December 2017 than in December 2016 and helped to narrow the supply

FIGURE 7

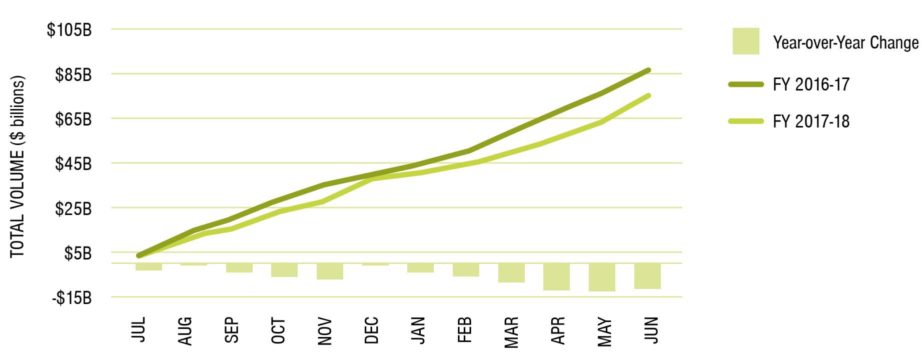
U.S. CUMULATIVE BOND VOLUME, FY 2016-17 AND FY 2017-18



Source: The Bond Buyer

FIGURE 8

CALIFORNIA CUMULATIVE BOND VOLUME, FY 2016-17 AND FY 2017-18



Source: CDIAC Database

gap, 2017-18 total volume was still significantly lower than 2016-17 volume. This reduced California tax-exempt supply along with the lower expected issuance following the passage of the Act and stronger investor demand (as discussed below) contributed to significant spread tightening.

Figures 9 and 10 show the aggregate volume of U.S. and California tax-exempt municipal bond issuance over six-month periods. As shown in Figure 9, the tax-exempt national market issuance in 2017-18 for the July through December period slightly exceeded the issuance during the same period last year, but the January through June issuance was lower by $35.5 billion, or 17.8 percent.

In California, as shown in Figure 10, issuance was 2.5 percent lower in the first half of 2017-18 and 22.2 percent lower in the second half of 2017-18 as compared to the same periods during the prior fiscal year.

DEMAND. Because of their tax-advantage, tax-exempt bonds have a more limited universe of investors than taxable bonds. In total, as noted above, the national supply of long-term tax-exempt municipal bonds in 2017-18 was very similar to the 2016-17 supply. However, the Act had a significant impact on the composition of investor demand for tax-exempt bonds. In the near term, the potential tax reform increased demand for tax-exempt bonds in November and December of 2017, but was expected over the longer term to decrease demand from certain investor segments, including banks and insurance companies. On the other hand, the limitations imposed on state and local income taxes, property taxes, mortgage interest and charitable contribution deductions in the Act increased the attractiveness of tax-exempt bonds to retail investors and municipal bond funds, particularly in bonds maturing in 10 years or less.

Municipal bond mutual funds represent a significant segment of the investor base for tax-exempt bonds, and asset inflows and outflows of cash for these funds can materially impact demand for municipal bonds. For 2017-18, as shown in Figure 11, monthly inflows were positive in nine of the 12 months of 2017-18 and were particularly high in January 2018, at more than $10 billion. Since then, there have been alternating months of similar inflows and outflows. On a net basis, inflows rose from $4.7 billion in 2016-17 to $21.6 billion in 2017-18, an increase of more than 350 percent.

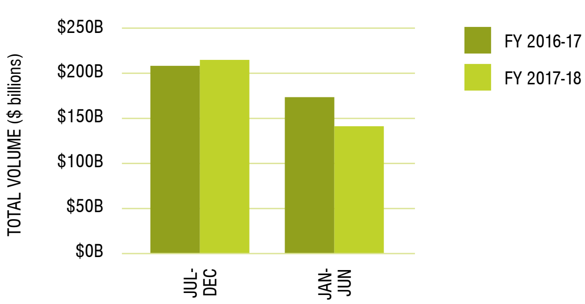
INTEREST RATES ON THE STATE'S BONDS

Interest rates on the state's bonds are the product of both state-specific factors and overall market conditions. As shown in Figure 12, the state's improving credit, along with the supply and demand relationship following tax reform this year, resulted in the interest rate relationship between the state's GO bonds and the MMD benchmark to improve dramatically. Figure 12 compares the AAA-rated national MMD benchmark to the AA-rated California specific GO MMD benchmark for the first business day of 2017-18 and the last business day of 2017-18. At the end of the fiscal year, California GO MMD was actually lower than the national MMD benchmark through year 13 and less than five basis points higher for the remainder of the 30-year benchmark. These spreads are 15 to 28 basis points better than they had been at the beginning of the 2017-18 fiscal year.

With beneficial interest rates available throughout much of the fiscal year, the state was able to refinance $4.9 billion of its outstanding GO bonds in 2017-18 to reduce debt service costs. These refinancings generated approximately $1.2 billion of total debt service savings over the remaining life of the bonds.

FIGURE 9

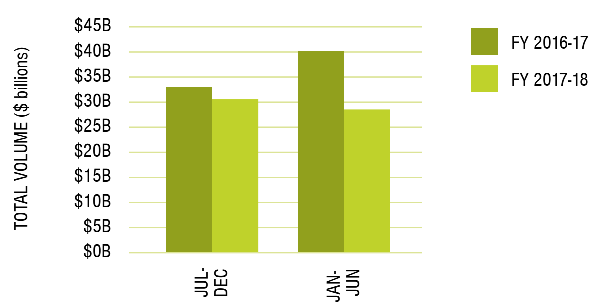
U.S. TAX-EXEMPT BOND VOLUME, FY 2016-17 AND FY 2017-18



Source: The Bond Buyer

FIGURE 10

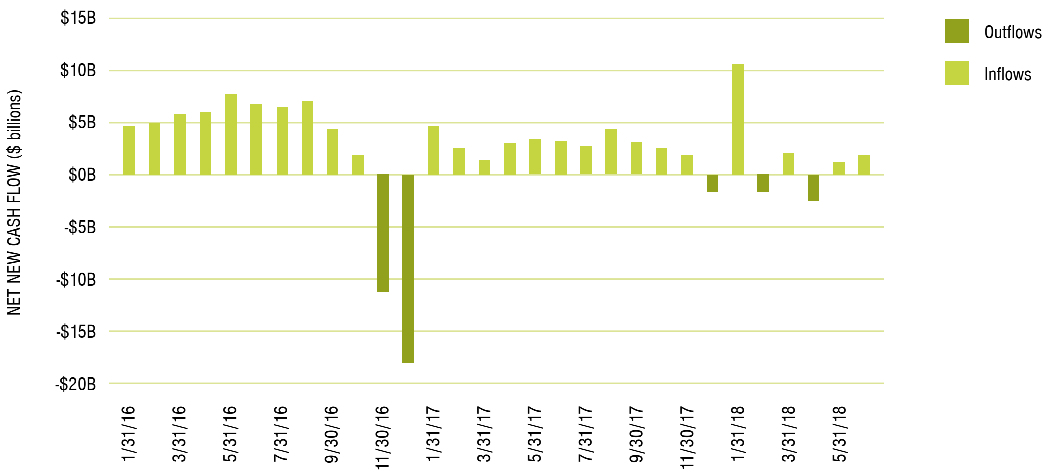
CALIFORNIA TAX-EXEMPT BOND VOLUME, FY 2016-17 AND FY 2017-18



Source: CDIAC Database

FIGURE 11

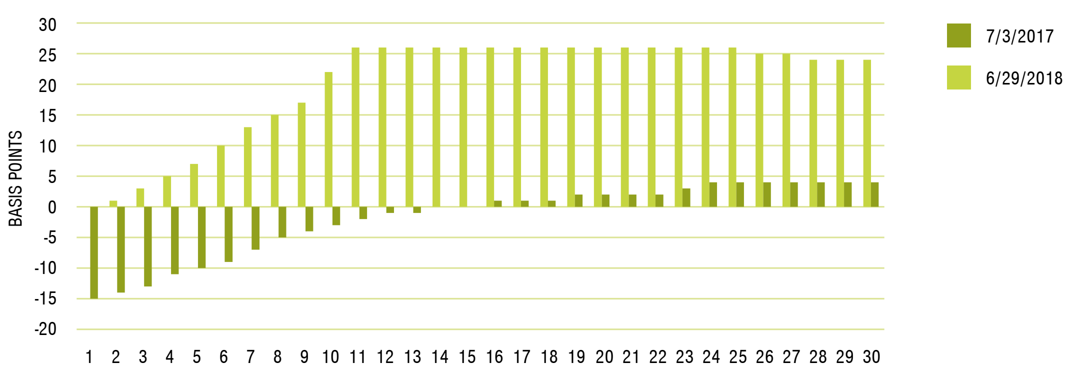
MUNICIPAL BOND MARKET, MONTHLY FUND INFLOWS / OUTFLOWS



Source: Investment Company Institute (ICI)

FIGURE 12

SPREADS BETWEEN NATIONAL MMD AND CA MMD



Source: Thomson Municipal Market Monitor (TM3)

SECTION 2 | SNAPSHOT OF THE STATE'S DEBT

OVERVIEW

Figure 13 summarizes the state's long-term debt as of June 30, 2018. This summary of state debt includes General Fund-supported GO bonds approved by voters and lease revenue bonds (LRBs) authorized by the Legislature, as well as self-liquidating GO bonds. Self-liquidating GO bonds receive revenues from specified sources so that money from the General Fund is not expected to pay debt service. However, the General Fund is obligated to pay debt service should the revenues to support repayment not be sufficient. The figures include bonds the state has sold (outstanding) and bonds authorized, but not yet sold. A detailed list of the state's outstanding bonds, and their debt service requirements, is presented in Appendices A and B to this report.

FIGURE 13

SUMMARY OF THE STATE'S DEBT (a)
AS OF JUNE 30, 2018 (dollars in billions)

	OUTSTANDING	AUTHORIZED BUT UNISSUED	TOTAL
GENERAL FUND-SUPPORTED ISSUES			
General Obligation Bonds	$74.16	$33.62	$107.78
Lease Revenue Bonds (b)	9.10	5.31	14.41
TOTAL GENERAL FUND SUPPORTED ISSUES	$83.26	$38.93	$122.19
SELF-LIQUIDATING GENERAL OBLIGATION BONDS			
Veterans General Obligation Bonds	$0.63	$0.09	$0.72
California Water Resources Development General Obligation Bonds	0.05	0.17	0.22
TOTAL SELF-LIQUIDATING GENERAL OBLIGATION BONDS	$0.69	$0.26	$0.95
TOTAL	$83.95	$39.19	$123.14

(a) Debt obligations not included in Figure 13: Any short-term obligations such as commercial paper or revenue anticipation notes; revenue bonds issued by state agencies which are repaid from specific revenues outside the General Fund; and "conduit" bonds, such as those issued by state financing authorities on behalf of other governmental or private entities whose obligations secure the bonds

(a) SB 1407 (2008) authorized an additional amount for construction of certain court projects. The authorized but unissued figure excludes the amount for those projects that has not been appropriated by the Legislature.

- Approximately 5.2 percent of the state's outstanding GO bonds carry variable interest rates, which is lower than the statutorily-authorized maximum of 20 percent. The State Treasurer has adopted a Debt Management Policy that further reduces this limitation on variable rate indebtedness to 10 percent of overall debt. The remaining 94.8 percent of the state's outstanding GO bonds have fixed interest rates.
- The state has no interest rate hedging contracts on any debt discussed in this report.

INTENDED ISSUANCE OF GENERAL FUND-SUPPORTED BONDS

The State Treasurer's Office (STO) estimates of intended issuance are based on Department of Finance (DOF) projections of state departments' funding needs. Projections for new-money debt issuance are based on a variety of factors and are periodically updated. Factors that could affect the amount of issuance include departments' actual spending patterns, revised funding needs, overall budget constraints, use or repayment of commercial paper, general market conditions and other considerations. Actual issuance amounts often vary significantly from initial estimates.

Figure 14 shows the STO's estimated issuance of new-money General Fund-supported bonds over the current and next fiscal years. Only currently authorized but unissued GO bonds are reflected in Figure 14. The estimated issuance may increase should new bond programs be approved. Presently, there are $14.377 billion of general obligation bonds that will be placed before the voters in November 2018 for approval. Those are not included in Figure 13.

As shown in Figure 14, the STO preliminarily estimates the state will issue a combined $8.6 billion of new money General Fund-supported bonds in 2018-19 and 2019-20. Using these assumptions for debt issuance, the STO estimates debt service payments from the General Fund will increase by $35.5 million in 2018-19 and $334.2 million in 2019-20.[2] A detailed list of the estimated debt service requirements can be found in Appendix B.

FIGURE 14

ESTIMATED ISSUANCE, GENERAL FUND-SUPPORTED BONDS (a) (dollars in millions)

	2018-19	2019-20	TOTAL
General Obligation Bonds (b)	$3,630	$4,000	$7,630
Lease Revenue Bonds	$680	$262	$942
TOTAL GENERAL FUND-SUPPORTED BONDS	$4,310	$4,262	$8,572

(a) Debt issuances not included in Figure 14: Any short-term obligations such as commercial paper, refunding bonds or revenue anticipation notes; revenue bonds issued by state agencies which are repaid from specific revenues outside the General Fund; and "conduit" bonds, such as those issued by state financing authorities on behalf of other governmental or private entities whose obligations secure the bonds.

(b) The initial issuance of GO bonds may be in the form of commercial paper notes.

[2] Figures reflect debt service from only a portion of the bond sales listed in Figure 14. For example, $1.5 billion of the $3.6 billion in GO bonds and $119 million of the $680 million in LRBs planned for 2018-19 will be sold during the first half of the fiscal year. These bonds will have interest payments in the second half of the fiscal year. The remaining GO bonds and LRBs to be sold in 2018-19 will not have a debt service payment during the fiscal year. The first interest payment for these bonds will be in 2019-20.

SECTION 3 | MEASURING DEBT BURDEN

DEBT RATIOS

Measuring California's debt level with various ratios – while not dispositive in assessing debt affordability – does provide a way to compare the state's burden to that of other governmental borrowers. The three most commonly-used ratios are: debt service as a percentage of General Fund revenues; debt as a percentage of personal income; and debt per capita. A fourth ratio – debt as a percentage of state gross domestic product (GDP) – also can be a useful comparison tool.

DEBT SERVICE AS PERCENTAGE OF GENERAL FUND REVENUES

Because debt service is considered a fixed part of a budget, credit analysts compare General Fund-supported debt service to General Fund revenues to measure a state's fiscal flexibility. California's ratio of General Fund-supported debt service to General Fund revenues was 6.14 percent[3] in 2017-18. That figure is based on $7.96 billion[4] of GO and LRB debt service payments versus $129.8 billion of General Fund revenues (less transfer to the Budget Stabilization Account/rainy day fund). The STO estimates this ratio will be 6.09 percent[5] in 2018-19. That estimate is based on an expected $8.1 billion of debt service payments versus $133.3 billion of General Fund revenues (less transfer to the Budget Stabilization Account).

DEBT AS PERCENTAGE OF PERSONAL INCOME

Comparing a state's level of debt to the total personal income of its residents is a way to measure a state's ability to generate revenues and repay its obligations. In its 2018 State Debt Medians report, Moody's lists the state's ratio of net tax-supported debt to personal income at 3.9 percent.[6]

DEBT PER CAPITA

Debt per capita measures residents' average share of a state's total outstanding debt. It does not account for the employment status, income or other financial resources of residents. As a result, debt per capita does not reflect a state's ability to repay its obligations as well as other ratios, such as debt service as a percentage of General Fund revenues or debt as a percentage of personal income. In its 2018 State Debt Medians report, Moody's lists the state's net tax-supported debt per capita at $2,188.[6]

DEBT AS PERCENTAGE OF STATE GDP

Debt as a percentage of GDP generally is used to measure the financial leverage provided by an issuer's economy. Specifically, this debt ratio compares what an issuer owes versus what it produces. California has the world's fifth largest economy[7]

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[3] Does not reflect offsets due to subsidy payments from the federal government for BABs (Build America Bonds) or transfers from special funds. When debt service is adjusted to account for approximately $1.8 billion of estimated offsets, the 2017-18 debt service decreases to $6.2 billion, and the ratio of debt service to General Fund revenues drops to 4.75 percent.

[4] Excludes special fund bonds, for which debt service each year is paid from dedicated funds.

[5] Does not reflect offsets due to subsidy payments from the federal government for BABs or transfers from special funds. When debt service is adjusted to account for approximately $1.9 billion of estimated offsets, the 2018-19 debt service decreases to $6.2 billion and the ratio of debt service to General Fund revenues drops to 4.65 percent.

[6] Moody's calculation of net tax-supported debt includes GO bonds (non self-liquidating), LRBs, Enterprise Revenue Bonds, GO commercial paper notes, federal Highway Grant Anticipation Bonds, tobacco securitization bonds with a General Fund backstop, various regional center bonds, and State Building Lease Purchase bonds.

[7] California GDP as reported by the U.S. Bureau of Economic Analysis for 2017. Sovereign country ranking and GDP for 2017 as reported by the International Monetary Fund.

FIGURE 15

DEBT TO PERSONAL INCOME OF 10 MOST POPULOUS STATES

STATE	MOODY'S/S&P/ FITCH (a)	DEBT TO PERSONAL INCOME (b)
Illinois	Baa3/BBB-/BBB	5.6%
New York	Aa1/AA+/AA+	5.2%
California	Aa3/AA-/AA-	3.9%
Pennsylvania	Aa3/A+/AA-	2.6%
Ohio	Aa1/AA+/AA+	2.5%
Georgia	Aaa/AAA/AAA	2.4%
Florida	Aaa/AAA/AAA	2.0%
Michigan	Aaa/AAA/AAA	1.5%
North Carolina	Aa1/AA/AA	1.5%
Texas	Aaa/AAA/AAA	0.9%
MOODY'S MEDIAN ALL STATES		2.3%
MEDIAN FOR THE 10 MOST POPULOUS STATES		2.45%

(a) Moody's, S&P and Fitch ratings as of August 2018.

(b) Figures as reported by Moody's in its 2018 State Debt Medians report released April 2018. As of end of calendar year 2017.

FIGURE 16

DEBT PER CAPITA OF 10 MOST POPULOUS STATES

STATE	MOODY'S/S&P/ FITCH (a)	DEBT PER CAPITA (b)
New York	Aa1/AA+/AA+	$3,082
Illinois	Baa3/BBB-/BBB	$2,919
California	Aa3/AA-/AA-	$2,188
Pennsylvania	Aa3/A+/AA-	$1,311
Ohio	Aa1/AA+/AA+	$1,118
Georgia	Aaa/AAA/AAA	$986
Florida	Aaa/AAA/AAA	$889
Michigan	Aa1/AA/AA	$673
North Carolina	Aaa/AAA/AAA	$611
Texas	Aaa/AAA/AAA	$410
MOODY'S MEDIAN ALL STATES		$987
MEDIAN FOR THE 10 MOST POPULOUS STATES		$1,052

(a) Moody's, S&P and Fitch ratings as of August 2018.

(b) Figures as reported by Moody's in its 2018 State Debt Medians report released April 2018. As of end of calendar year 2017.

and one of its most diverse. In its 2018 State Debt Medians report, Moody's lists the state's net tax-supported debt as percentage of state GDP at 3.30 percent.[6]

DEBT RATIOS OF THE 10 MOST POPULOUS STATES

In its State Debt Medians report, Moody's calculates for each state the ratios of debt to personal income, debt per capita and debt as a percentage of GDP and provides the median ratios across all states. It's useful to compare California's debt levels with those of its "peer group" of the 10 most populous states. As shown in the tables, the median debt to personal income (Figure 15), debt per capita (Figure 16) and debt as a percentage of GDP (Figure 17) of these 10 states are, on average, in line with Moody's median for all states combined. California's ratios, however, rank well above the medians for the 10 most populous states.

FIGURE 17

DEBT AS A PERCENTAGE OF STATE GDP OF 10 MOST POPULOUS STATES

STATE	MOODY'S/S&P/ FITCH (a)	DEBT AS % OF STATE GDP (b)(c)
Illinois	Baa3/BBB-/BBB	4.70%
New York	Aa1/AA+/AA+	4.08%
California	Aa3/AA-/AA-	3.30%
Pennsylvania	Aa3/A+/AA-	2.33%
Ohio	Aa1/AA+/AA+	2.08%
Florida	Aaa/AAA/AAA	2.02%
Georgia	Aaa/AAA/AAA	1.94%
Michigan	Aa1/AA/AA	1.37%
North Carolina	Aaa/AAA/AAA	1.20%
Texas	Aaa/AAA/AAA	0.73%
MOODY'S MEDIAN ALL STATES		2.05%
MEDIAN FOR THE 10 MOST POPULOUS STATES		2.05%

(a) Moody's, S&P and Fitch ratings as of August 2018.

(b) Figures as reported by Moody's in its 2018 State Debt Medians report released April 2018. As of end of calendar year 2017.

(c) State GDP numbers have a one-year lag.

SECTION 4 | ANALYSIS OF THE STATE'S CREDIT RATINGS

The state's current GO bond ratings are "AA-" from Fitch, "Aa3" from Moody's and "AA-" from S&P. A summary of the latest rating agencies' actions on the state's GO bonds is presented in Figure 18.

Since the last DAR, a year ago, Moody's revised the state's GO rating outlook from "stable" to "positive." Such a revision should not be interpreted as a sign of imminent ratings changes, though such changes could occur, depending on numerous factors. Fitch and S&P have maintained their "AA-" and "AA-" ratings respectively. A summary of the rating agencies' opinion of the state's credit strengths and challenges is presented in Figure 19.

FIGURE 18

LATEST RATING ACTIONS

RATING AGENCY	ACTION	DATE
Fitch	Affirmed "AA- stable" rating	August 2018
Moody's	Revised ratings outlook from "Aa3 stable" to "Aa3 positive"	July 2018
	Affirmed "Aa3 positive" rating	August 2018
S&P	Affirmed "AA- stable" rating	August 2018

FIGURE 19

STATE OF CALIFORNIA GENERAL OBLIGATION RATING AGENCY COMMENTARY

	FITCH	MOODY'S	S&P
RATING STRENGTHS	• Large, and diverse economy • Solid ability to manage expenses through the economic cycle • Strong budget management reducing budgetary borrowing and reserving a portion of revenues in its rainy day fund	• Massive economic base • Strong levels of rainy day fund and borrowable resources • Lower fixed costs than other heavily burdened states	• Diverse and expanding economy • Commitment to aligning recurring revenues and expenses while paying down budgetary debts • Good budgetary reserve levels • Strong overall liquidity
RATING CHALLENGES	• Maintaining fiscal discipline within the legislative and executive branches of state government throughout economic cycles	• Highly volatile revenue structure • Vulnerability to changes in federal policy and funding • Governance restrictions that make it difficult for the state to raise new revenue • GAAP-basis general fund balance remains narrow	• Persistently high cost of housing • Difficult to forecast revenues due to volatile revenue base and reliance on personal income taxes • Minimal prefunding of retiree health care benefits

APPENDIX A | THE STATE'S DEBT

AUTHORIZED AND OUTSTANDING NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS AS OF JUNE 30, 2018 (DOLLARS IN THOUSANDS)

	GENERAL FUND BONDS	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
	1988 School Facilities Bond Act (b)	11/08/88	$797,745	$30,955	$ -	$ -
	1990 School Facilities Bond Act (b)	06/05/90	797,875	63,120	-	-
	1992 School Facilities Bond Act (b)	11/03/92	898,211	167,440	-	-
	California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002 (f)	03/05/02	2,596,643	1,955,675	20,160	188,743
	California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018 (g)	06/05/18	4,100,000	0	-	4,100,000
	California Library Construction and Renovation Bond Act of 1988 (b)	11/08/88	72,405	8,990	-	-
*	California Park and Recreational Facilities Act of 1984 (b)	06/05/84	368,900	8,525	-	-
*	California Parklands Act of 1980	11/04/80	285,000	1,720	-	-
	California Reading and Literacy Improvement and Public Library Construction and Renovation Bond Act of 2000	03/07/00	350,000	219,950	-	5,040
*	California Safe Drinking Water Bond Law of 1976 (b)	06/08/76	172,500	2,160	-	-
*	California Safe Drinking Water Bond Law of 1984	11/06/84	75,000	1,330	-	-
*	California Safe Drinking Water Bond Law of 1986	11/04/86	100,000	15,670	-	-
	California Safe Drinking Water Bond Law of 1988	11/08/88	75,000	21,800	-	-
*	California Wildlife, Coastal, and Park Land Conservation Act (b)	06/07/88	768,670	81,610	-	-
	Children's Hospital Bond Act of 2004	11/02/04	750,000	547,580	160	46,545
	Children's Hospital Bond Act of 2008	11/04/08	980,000	732,855	29,785	198,545
	Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998 (Hi-Ed)	11/03/98	2,500,000	1,456,450	-	-
	Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998 (K-12)	11/03/98	6,700,000	3,154,500	-	11,400
*	Clean Air and Transportation Improvement Bond Act of 1990	06/05/90	1,990,000	560,110	-	4,985
*	Clean Water Bond Law of 1984	11/06/84	325,000	6,415	-	-

AUTHORIZED AND OUTSTANDING
NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS
AS OF JUNE 30, 2018 (DOLLARS IN THOUSANDS) CONTINUED

	GENERAL FUND BONDS	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
*	Clean Water and Water Conservation Bond Law of 1978	06/06/78	375,000	3,150	-	-
	Clean Water and Water Reclamation Bond Law of 1988	11/08/88	65,000	14,605	-	-
*	Community Parklands Act of 1986	06/03/86	100,000	1,775	-	-
*	County Correctional Facility Capital Expenditure Bond Act of 1986	06/03/86	495,000	9,655	-	-
	County Correctional Facility Capital Expenditure and Youth Facility Bond Act of 1988	11/08/88	500,000	45,105	-	-
	Disaster Preparedness and Flood Prevention Bond Act of 2006 (e)	11/07/06	3,990,000	2,591,070	63,730	1,249,022
	Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990	06/05/90	300,000	39,025	635	7,490
*	Fish and Wildlife Habitat Enhancement Act of 1984	06/05/84	85,000	4,120	-	-
	Higher Education Facilities Bond Act of 1988	11/08/88	600,000	16,925	-	-
	Higher Education Facilities Bond Act of June 1990	06/05/90	450,000	34,795	-	540
	Higher Education Facilities Bond Act of June 1992	06/02/92	900,000	214,620	-	-
	Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006	11/07/06	19,925,000	16,653,215	95,705	1,070,350
	Housing and Emergency Shelter Trust Fund Act of 2002	11/05/02	2,100,000	357,150	3,725	71,395
	Housing and Emergency Shelter Trust Fund Act of 2006	11/07/06	2,850,000	1,203,455	125,005	393,135
	Housing and Homeless Bond Act of 1990	06/05/90	150,000	1,025	-	-
	Kindergarten Through Community College Public Education Facilities Bond Act of 2016 (CCC)	11/08/16	2,000,000	16,880	7,355	1,975,765
	Kindergarten Through Community College Public Education Facilities Bond Act of 2016 (K-12)	11/08/16	7,000,000	572,965	6,235	6,420,800
	Kindergarten-University Public Education Facilities Bond Act of 2002 (Hi-Ed)	11/05/02	1,650,000	1,161,475	-	-
	Kindergarten-University Public Education Facilities Bond Act of 2002 (K-12)	11/05/02	11,400,000	8,164,260	6,495	18,020
	Kindergarten-University Public Education Facilities Bond Act of 2004 (Hi-Ed)	03/02/04	2,300,000	1,846,910	-	58,019
	Kindergarten-University Public Education Facilities Bond Act of 2004 (K-12)	03/02/04	10,000,000	7,464,710	11,845	38,030
	Kindergarten-University Public Education Facilities Bond Act of 2006 (Hi-Ed)	11/07/06	3,087,000	2,843,260	840	38,775
	Kindergarten-University Public Education Facilities Bond Act of 2006 (K-12)	11/07/06	7,329,000	6,388,515	7,115	211,620
*	New Prison Construction Bond Act of 1986	11/04/86	500,000	935	-	-
	New Prison Construction Bond Act of 1988	11/08/88	817,000	6,930	275	1,245
	New Prison Construction Bond Act of 1990	06/05/90	450,000	7,720	-	605
	Passenger Rail and Clean Air Bond Act of 1990	06/05/90	1,000,000	13,600	-	-
	Public Education Facilities Bond Act of 1996 (Higher Education)	03/26/96	975,000	407,135	530	4,650
	Public Education Facilities Bond Act of 1996 (K-12) (c)	03/26/96	2,012,035	673,370	-	-
	Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act (e)	03/07/00	1,884,000	1,221,070	-	43,346

AUTHORIZED AND OUTSTANDING
NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS
AS OF JUNE 30, 2018 (DOLLARS IN THOUSANDS) CONTINUED

	GENERAL FUND BONDS	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
	Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006 (e)(f)	11/07/06	5,266,357	3,129,355	228,800	1,457,637
	Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000	03/07/00	2,100,000	1,259,015	9,665	59,765
	Safe, Clean, Reliable Water Supply Act (e)	11/05/96	969,500	437,710	-	62,915
	Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century	11/04/08	9,950,000	2,684,455	60,080	6,643,190
*	School Building and Earthquake Bond Act of 1974	11/05/74	150,000	10,640	-	-
	School Facilities Bond Act of 1990	11/06/90	800,000	97,570	-	-
	School Facilities Bond Act of 1992	06/02/92	1,900,000	351,485	-	10,280
	Seismic Retrofit Bond Act of 1996	03/26/96	2,000,000	927,010	-	-
*	State, Urban, and Coastal Park Bond Act of 1976	11/02/76	280,000	2,795	-	-
	Stem Cell Research and Cures Bond Act of 2004	11/02/04	3,000,000	1,262,700	41,365	559,150
	Veterans Homes Bond Act of 2000	03/07/00	50,000	32,725	-	975
	Veterans Housing and Homeless Prevention Bond Act of 2014	06/03/14	600,000	7,240	1,305	590,570
	Voting Modernization Bond Act of 2002	03/05/02	200,000	60	-	64,495
	Water Conservation Bond Law of 1988	11/08/88	60,000	15,435	-	5,235
*	Water Conservation and Water Quality Bond Law of 1986 (e)	06/03/86	136,500	20,535	-	230
	Water Quality, Supply, and Infrastructure Improvement Act of 2014 (f)	11/04/14	7,465,000	445,345	137,830	6,841,305
	Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002 (e)	11/05/02	3,345,000	2,460,135	1,055	301,864
	TOTAL GENERAL FUND BONDS		$148,264,341	$74,160,490	$859,695	$32,755,676

(a) A total of not more than $2.225 billion of commercial paper principal plus accrued interest may be owing at one time. Bond acts marked with an asterisk (*) are not legally permitted to utilize commercial paper.

(b) SB 1018 (06/27/2012) reduced the voter authorized amount.

(c) SB 1018 (06/27/2012) and SB 71 (06/27/2013) reduced the voter authorized amount.

(d) AB 639 (10/10/2013) reduced the voter authorized amount.

(e) AB 1471 (11/04/2014) reduced the voter authorized amount.

(f) SB 5 (6/5/2018) reduced the voter authorized amount. The election results have not been certified by the Secretary of State as of this date.

(g) SB 5 (6/5/2018) The election results have not been certified by the Secretary of State as of this date.

AUTHORIZED AND OUTSTANDING
SELF-LIQUIDATING GENERAL OBLIGATION BONDS
AS OF JUNE 30, 2018 (DOLLARS IN THOUSANDS)

ENTERPRISE FUND BONDS (SELF-LIQUIDATING)	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
* California Water Resources Development Bond Act	11/08/60	$ 1,750,000	$ 54,065	$ -	$ 167,600
Veterans Bond Act of 1986	06/03/86	850,000	8,060	-	-
Veterans Bond Act of 1988	06/07/88	510,000	26,095	-	-
Veterans Bond Act of 1990	11/06/90	400,000	28,600	-	-
Veterans Bond Act of 1996	11/05/96	400,000	70,240	-	-
Veterans Bond Act of 2000	11/07/00	500,000	302,430	-	-
Veterans Bond Act of 2008 (b)	11/04/08	300,000	199,160	-	93,455
TOTAL ENTERPRISE FUND BONDS		$ 4,710,000	$ 688,650	$ -	$ 261,055

(a) A total of not more than $2.225 billion of commercial paper principal plus accrued interest may be owing at one time. Bond acts marked with an asterisk (*) are not legally permitted to utilize commercial paper.

(b) AB 639 (10/10/2013) reduced the voter authorized amount.

AUTHORIZED AND OUTSTANDING LEASE REVENUE BONDS AS OF JUNE 30, 2018 (DOLLARS IN THOUSANDS)

GENERAL FUND-SUPPORTED ISSUES	OUTSTANDING	AUTHORIZED BUT UNISSUED
STATE PUBLIC WORKS BOARD		
California Community Colleges	$146,710	$ -
California Department of Corrections and Rehabilitation	4,159,740	2,422,609
Trustees of the California State University	154,685	-
Various State Facilities (a)	4,448,255	2,885,879
TOTAL STATE PUBLIC WORKS BOARD ISSUES	$8,909,390	$5,308,488
TOTAL OTHER STATE FACILITIES LEASE-REVENUE ISSUES (b)	$194,585	$ -
TOTAL GENERAL FUND-SUPPORTED ISSUES	$9,103,975	$5,308,488

(a) Includes projects that are supported by multiple funding sources in addition to the General Fund.

(b) Includes $53,180,000 Sacramento City Financing Authority Lease-Revenue Refunding Bonds State of California - Cal/EPA Building, 2013 Series A, which are supported by lease rentals from the California Environmental Protection Agency; these rental payments are subject to annual appropriation by the State Legislature.

APPENDIX B | THE STATE'S DEBT SERVICE

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR GENERAL FUND NON SELF-LIQUIDATING BONDS FIXED RATE, AS OF JUNE 30, 2018

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT		
	INTEREST (a)	PRINCIPAL	TOTAL (b)
2019 (c)	$3,705,437,095.09	$3,195,645,000.00	$6,901,082,095.09
2020	3,548,315,498.81	3,118,615,000.00	6,666,930,498.81
2021	3,410,900,012.84	3,224,590,000.00	6,635,490,012.84
2022	3,258,776,849.06	3,190,285,000.00	6,449,061,849.06
2023	3,107,748,228.03	2,737,680,000.00	5,845,428,228.03
2024	2,982,414,946.68	2,467,755,000.00	5,450,169,946.68
2025	2,867,362,586.90	2,666,310,000.00	5,533,672,586.90
2026	2,737,857,787.85	2,445,915,000.00	5,183,772,787.85
2027	2,607,493,977.06	2,548,420,000.00	5,155,913,977.06
2028	2,485,437,752.11	2,619,015,000.00	5,104,452,752.11
2029	2,359,615,982.60	2,490,850,000.00	4,850,465,982.60
2030	2,238,218,491.35	2,559,025,000.00	4,797,243,491.35
2031	2,097,375,501.55	2,616,690,000.00	4,714,065,501.55
2032	1,968,052,864.40	2,647,560,000.00	4,615,612,864.40
2033	1,831,967,225.01	2,781,055,000.00	4,613,022,225.01
2034	1,711,234,923.96	3,283,155,000.00	4,994,389,923.96
2035	1,485,990,349.09	3,070,980,000.00	4,556,970,349.09
2036	1,301,807,276.25	2,913,765,000.00	4,215,572,276.25
2037	1,132,562,985.62	3,057,380,000.00	4,189,942,985.62
2038	955,582,792.55	3,211,405,000.00	4,166,987,792.55
2039	814,980,060.20	3,413,375,000.00	4,228,355,060.20
2040	527,247,406.25	2,067,885,000.00	2,595,132,406.25
2041	358,029,287.50	2,190,000,000.00	2,548,029,287.50
2042	255,749,287.50	1,319,000,000.00	1,574,749,287.50
2043	200,291,912.50	1,326,325,000.00	1,526,616,912.50
2044	126,722,892.50	875,000,000.00	1,001,722,892.50
2045	95,844,918.75	550,000,000.00	645,844,918.75
2046	65,071,493.75	500,000,000.00	565,071,493.75
2047	41,346,493.75	525,000,000.00	566,346,493.75
2048	14,810,847.13	650,000,000.00	664,810,847.13
TOTAL	$50,294,247,726.64	$70,262,680,000.00	$120,556,927,726.64

(a) The amounts do not reflect any interest subsidy under the Build America Bonds program. Subsidy not pledged to the repayment of debt service.

(b) Includes scheduled mandatory sinking fund payments. Does not include outstanding commercial paper.

(c) Represents the debt service requirements from July 1, 2018 through June 30, 2019.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR GENERAL FUND NON SELF-LIQUIDATING BONDS VARIABLE RATE, AS OF JUNE 30, 2018

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT		
	INTEREST (a)	PRINCIPAL	TOTAL (b)
2019 (c)	$71,474,735.46	$113,420,000.00	$184,894,735.46
2020	69,487,855.28	105,500,000.00	174,987,855.28
2021	68,056,276.78	154,400,000.00	222,456,276.78
2022	65,867,618.89	39,200,000.00	105,067,618.89
2023	65,368,267.74	121,100,000.00	186,468,267.74
2024	63,482,876.51	233,600,000.00	297,082,876.51
2025	59,627,546.40	176,400,000.00	236,027,546.40
2026	56,865,941.75	263,300,000.00	320,165,941.75
2027	52,207,166.84	274,600,000.00	326,807,166.84
2028	44,171,884.51	559,000,000.00	603,171,884.51
2029	34,205,918.97	467,700,000.00	501,905,918.97
2030	25,577,296.33	364,390,000.00	389,967,296.33
2031	18,085,479.29	323,600,000.00	341,685,479.29
2032	10,835,451.13	425,600,000.00	436,435,451.13
2033	3,417,177.31	271,400,000.00	274,817,177.31
2034	79,530.18	1,600,000.00	1,679,530.18
2035	61,787.00	-	61,787.00
2036	61,959.75	-	61,959.75
2037	61,614.25	-	61,614.25
2038	61,787.00	-	61,787.00
2039	61,787.00	-	61,787.00
2040	60,830.22	1,000,000.00	1,060,830.22
2041	49,844.82	-	49,844.82
2042	49,660.82	-	49,660.82
2043	49,660.82	-	49,660.82
2044	49,781.54	-	49,781.54
2045	49,692.46	-	49,692.46
2046	49,737.00	-	49,737.00
2047	45,089.80	2,000,000.00	2,045,089.80
TOTAL	$709,524,255.85	$3,897,810,000.00	$4,607,334,255.85

(a) The estimate of future interest payments is based on rates in effect as of June 30, 2018. The interest rates for the daily, weekly and monthly rate bonds range from 1.00 - 2.78%. The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, Series 2014A currently bears interest at a fixed rate of 3.00%, and 2016A currently bears interest at a fixed rate of 4.00% (the "Prop 1B Put Bonds"); the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, Series 2017B (the "Prop 1A Put Bonds") currently bears interest at a fixed rate of 2.193%; until each series respective reset dates, both the Prop 1B Put Bonds and the Prop 1A Put Bonds, and are assumed to bear the respective rates for each such series from reset until maturity.

(b) Includes scheduled mandatory sinking fund payments. Does not include outstanding commercial paper.

(c) Represents the estimated debt service requirements from July 1, 2018 through June 30, 2019.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR ENTERPRISE FUND SELF-LIQUIDATING BONDS FIXED RATE, AS OF JUNE 30, 2018

	CURRENT DEBT		
FISCAL YEAR ENDING JUNE 30	INTEREST	PRINCIPAL	TOTAL (a)
2019 (b)	$23,144,671.25	$25,975,000.00	$49,119,671.25
2020	21,964,270.00	41,265,000.00	63,229,270.00
2021	20,762,338.75	31,445,000.00	52,207,338.75
2022	20,011,981.25	15,685,000.00	35,696,981.25
2023	19,636,606.25	12,015,000.00	31,651,606.25
2024	19,438,141.25	4,365,000.00	23,803,141.25
2025	19,289,348.75	7,070,000.00	26,359,348.75
2026	19,201,611.25	-	19,201,611.25
2027	18,914,793.75	19,300,000.00	38,214,793.75
2028	18,386,562.26	16,275,000.00	34,661,562.26
2029	17,720,856.90	29,360,000.00	47,080,856.90
2030	16,565,705.00	44,485,000.00	61,050,705.00
2031	15,124,620.00	44,025,000.00	59,149,620.00
2032	13,705,408.35	39,760,000.00	53,465,408.35
2033	12,549,680.00	25,065,000.00	37,614,680.00
2034	11,381,057.68	39,270,000.00	50,651,057.68
2035	10,015,061.25	35,770,000.00	45,785,061.25
2036	8,830,690.00	30,195,000.00	39,025,690.00
2037	7,880,588.75	22,280,000.00	30,160,588.75
2038	7,040,704.49	23,285,000.00	30,325,704.49
2039	6,247,425.00	18,735,000.00	24,982,425.00
2040	5,504,106.25	19,605,000.00	25,109,106.25
2041	4,610,145.00	27,310,000.00	31,920,145.00
2042	3,797,107.50	17,105,000.00	20,902,107.50
2043	3,184,763.75	17,780,000.00	20,964,763.75
2044	2,546,645.00	18,455,000.00	21,001,645.00
2045	1,884,138.75	19,165,000.00	21,049,138.75
2046	1,196,170.00	19,900,000.00	21,096,170.00
2047	594,375.00	14,025,000.00	14,619,375.00
2048	171,515.00	9,680,000.00	9,851,515.00
TOTAL	$351,301,088.43	$688,650,000.00	$1,039,951,088.43

(a) Includes scheduled mandatory sinking fund payments.

(b) Represents the debt service requirements from July 1, 2018 through June 30, 2019.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR LEASE-REVENUE DEBT FIXED RATE, AS OF JUNE 30, 2018

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT INTEREST (a)	CURRENT DEBT PRINCIPAL	CURRENT DEBT TOTAL (b)
2019 (c)	$447,829,787.04	$556,185,000.00	$1,004,014,787.04
2020	420,418,477.85	545,060,000.00	965,478,477.85
2021	394,463,786.45	517,715,000.00	912,178,786.45
2022	369,039,416.48	504,915,000.00	873,954,416.48
2023	345,722,639.04	462,005,000.00	807,727,639.04
2024	323,188,930.97	458,940,000.00	782,128,930.97
2025	300,272,574.93	477,380,000.00	777,652,574.93
2026	276,210,632.51	491,335,000.00	767,545,632.51
2027	251,229,366.07	516,225,000.00	767,454,366.07
2028	225,396,484.56	528,800,000.00	754,196,484.56
2029	198,969,398.07	494,795,000.00	693,764,398.07
2030	174,077,498.38	486,585,000.00	660,662,498.38
2031	150,144,216.25	479,215,000.00	629,359,216.25
2032	125,237,342.49	490,640,000.00	615,877,342.49
2033	101,316,794.49	421,460,000.00	522,776,794.49
2034	79,280,186.24	404,830,000.00	484,110,186.24
2035	57,325,451.05	377,670,000.00	434,995,451.05
2036	39,795,362.50	254,245,000.00	294,040,362.50
2037	27,779,150.00	249,975,000.00	277,754,150.00
2038	15,522,100.00	179,825,000.00	195,347,100.00
2039	7,217,712.50	124,310,000.00	131,527,712.50
2040	2,078,800.00	81,865,000.00	83,943,800.00
TOTAL	$4,332,516,107.87	$9,103,975,000.00	$13,436,491,107.87

(a) The amounts do not reflect any interest subsidy under the Build America Bonds program. Subsidy not pledged to the repayment of debt service.

(b) Includes scheduled mandatory sinking fund payments.

(c) Represents the debt service requirements from July 1, 2018 through June 30, 2019.

ESTIMATED DEBT SERVICE REQUIREMENTS ON INTENDED SALES OF AUTHORIZED BUT UNISSUED BONDS DURING FISCAL YEARS 2018-19 AND 2019-20

FISCAL YEAR ENDING JUNE 30	FY 2018-19 GO SALES DEBT SERVICE	FY 2019-20 GO SALES DEBT SERVICE	FY 2018-19 LRB SALES DEBT SERVICE	FY 2019-20 LRB SALES DEBT SERVICE	TOTAL DEBT SERVICE ALL SALES
2019	$32,895,000.00	$ -	$2,647,305.00	$ -	$35,542,305.00
2020	221,216,105.00	50,000,000.00	56,188,936.25	6,755,255.00	334,160,296.25
2021	221,217,257.50	128,708,875.00	56,178,515.00	20,632,277.50	426,736,925.00
2022	221,217,537.50	128,708,875.00	56,189,501.25	20,640,641.25	426,756,555.00
2023	221,211,452.50	128,711,375.00	56,183,615.00	20,638,405.00	426,744,847.50
2024	221,218,417.50	128,712,375.00	56,194,097.50	20,649,410.00	426,774,300.00
2025	221,212,157.50	128,712,750.00	56,182,067.50	20,637,755.00	426,744,730.00
2026	221,211,857.50	128,708,250.00	56,185,796.25	20,637,538.75	426,743,442.50
2027	221,215,690.00	128,709,250.00	56,186,417.50	20,632,345.00	426,743,702.50
2028	221,216,827.50	128,710,750.00	56,191,126.25	20,640,628.75	426,759,332.50
2029	221,218,105.00	128,707,750.00	56,186,390.00	20,635,973.75	426,748,218.75
2030	221,217,250.00	128,709,875.00	56,183,817.50	20,641,963.75	426,752,906.25
2031	221,216,422.50	128,711,375.00	56,184,906.25	20,637,053.75	426,749,757.50
2032	221,212,567.50	128,711,375.00	56,190,552.50	20,639,698.75	426,754,193.75
2033	221,212,292.50	128,708,750.00	56,191,541.25	20,638,096.25	426,750,680.00
2034	221,216,530.00	128,711,875.00	56,174,117.50	20,645,315.00	426,747,837.50
2035	221,210,982.50	128,708,875.00	21,296,612.50	20,629,810.00	391,846,280.00
2036	221,216,137.50	128,712,500.00	21,295,587.50	12,923,461.25	384,147,686.25
2037	221,216,470.00	128,710,125.00	21,294,400.00	12,924,508.75	384,145,503.75
2038	221,216,685.00	128,708,875.00	21,291,625.00	12,928,282.50	384,145,467.50
2039	221,215,690.00	128,710,250.00	21,300,837.50	12,923,752.50	384,150,530.00
2040	221,211,840.00	128,710,375.00	21,294,900.00	12,929,631.25	384,146,746.25
2041	221,218,167.50	128,710,000.00	21,297,862.50	12,914,888.75	384,140,918.75
2042	221,211,785.00	128,709,375.00	21,292,587.50	12,923,108.75	384,136,856.25
2043	221,214,820.00	128,708,250.00	21,302,650.00	12,922,488.75	384,148,208.75
2044	221,218,050.00	128,710,750.00	21,290,437.50	12,921,741.25	384,140,978.75
2045	221,212,252.50	128,710,500.00	-	12,919,321.25	362,842,073.75
2046	221,212,422.50	128,710,625.00	-	-	349,923,047.50
2047	221,212,772.50	128,708,625.00	-	-	349,921,397.50
2048	221,211,610.00	128,711,250.00	-	-	349,922,860.00
2049	221,211,920.00	128,709,625.00	-	-	349,921,545.00
2050		128,709,250.00	-	-	128,709,250.00
TOTAL	$6,669,337,075.00	$3,911,302,750.00	$1,058,396,202.50	$445,563,352.50	$12,084,599,380.00

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