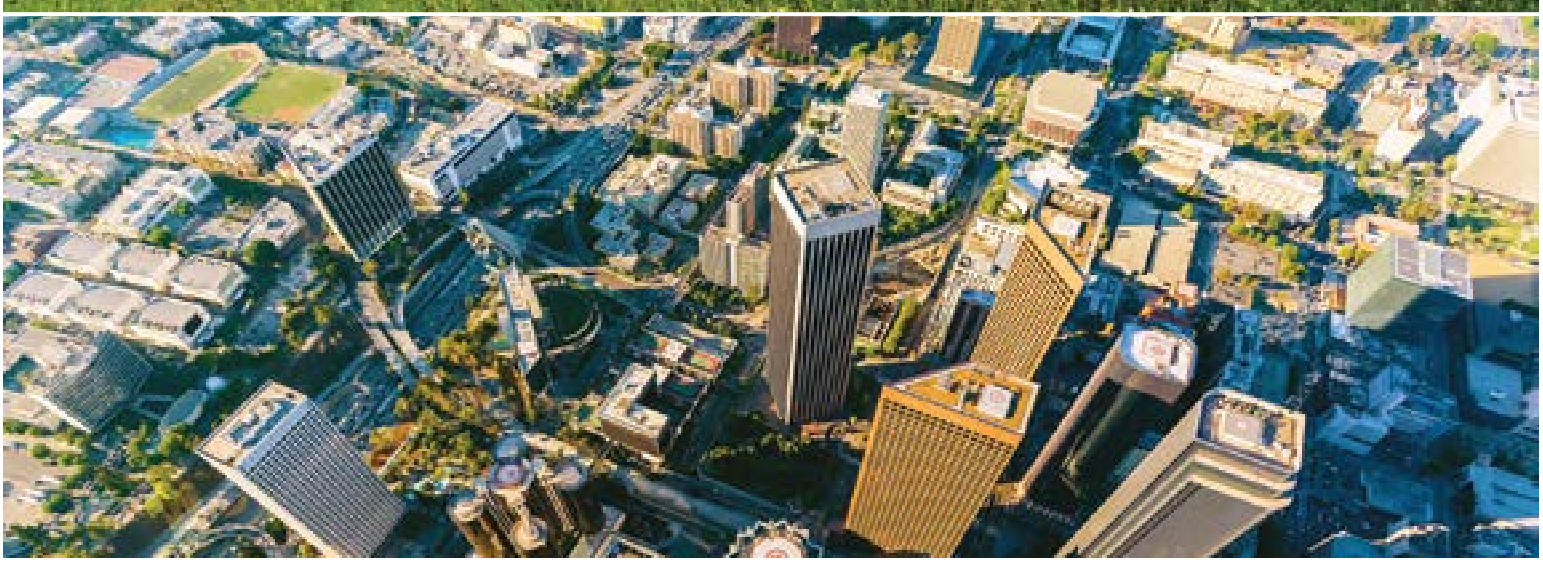
STRENGTH OF CALIFORNIA'S ECONOMY BOOSTS DEMAND FOR TAX-EXEMPT BONDS



STATE OF CALIFORNIA | DEBT AFFORDABILITY REPORT | OCTOBER 2017

JOHN CHIANG | CALIFORNIA STATE TREASURER

OFFICE OF THE STATE TREASURER. CALIFORNIA. EUREKA

JOHN CHIANG
TREASURER
STATE OF CALIFORNIA

October 1, 2017

Fellow Californians:

We have been busy at the California State Treasurer's Office since we issued our last Debt Affordability Report a year ago. We sold just over $9 billion in general obligation bonds in six offerings in the fiscal year that ended June 30.

We sponsored successful legislation to inform taxpayers about the full borrowing cost of local government bond issues.

And, 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.

These efforts are part of my continuing drive to modernize the State Treasurer's Office to lower costs and maximize efficiency. We want to make the most of every dollar we borrow for essential public works.

Here is a rundown on what my staff and I have been doing:

BOND SALES: During the fiscal year ending June 30, 2017, we sold $9.05 billion in general obligation bonds. Proceeds from about $2.73 billion worth will be spent on transportation, clean water, clean air, parks, housing, educational facilities, stem cell research, children's hospitals, and other infrastructure.

The balance of about $6.32 billion was used to refinance existing debt. As a result, California taxpayers will get gross savings of approximately $1.49 billion over the remaining lives of the bonds.

This is a great deal for our state. Every dollar we save in interest charges is available for education, health services, environmental protection and other programs that Californians value.

These significant savings are a benefit to the state's bottom line. Since I became Treasurer in January 2015, approximately $6 billion in debt service gross savings has been achieved, over the lives of bonds. The borrowing included general obligation sales and issuances from the Department of Water Resources, the University of California and other major state agencies.

The market reception for our bond sales remains positive, thanks to our stable, strong and growing economy, our responsible, on-time budgeting and a commitment by lawmakers and the governor to build a resilient financial framework to prepare for an eventual recession.

We enjoy high-grade ratings: Aa3 from Moody's, AA- from Fitch and AA- from S&P. In August, Moody's cited California for having a "large, diverse economy and high wealth…healthy liquidity…and on-time budgets."

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. A big part of that exploration will occur early next year when I convene a high-level green bonds seminar at the Milken Institute in Santa Monica.

The green bond market has grown rapidly in Europe and Asia. But it lags in the United States, the world's second-largest emitter of greenhouse gases. Issuances are sporadic, especially in the corporate sector. And there is less pressure on issuers here than on their European and Asian counterparts to go green.

TRANSPARENCY: In the just-completed session, lawmakers supported a bill we sponsored. Senate Bill 450 by Sen. Robert Hertzberg mandates that local governments obtain a "truth in borrowing" statement from their underwriter, financial intermediary or private lender before taking on long-term debt obligations.

The process is similar to what takes place with home mortgage loans as required by federal law. Such statements would include the true interest cost, finance charge, total amount financed and a good-faith estimate of the total cost of the bond. Having all this information on hand ahead of closing on bond sales helps local officials make better financial decisions.

Also, on the transparency front, we have been making progress over the last year implementing a program that requires Wall Street firms, such as underwriters, lawyers and municipal advisors, to certify that they have policies that ensure their firms will not engage in municipal finance business with issuers to which the firms have made bond campaign contributions.

Those who fail to do so will be removed from my official list of acceptable vendors and barred from being appointed to work on state bond issues. The initiative is supported by the California Association of County Treasurers and Tax Collectors.

Backers also included California Forward and Common Cause, two nonpartisan groups that work for government efficiency and ethics.

Local treasurers throughout the state and I are united in refusing to do business with any firm that promotes these quid-pro-quo schemes that do nothing but inflate taxpayer bills and reduce resources for students.

At the same time, we are making progress on an effort to better train local government officials about the intricacies of bond financing. An agency I chair, the California Debt & Investment Advisory Commission, is developing a series of educational videos to give elected officials the knowledge they need to make prudent borrowing decisions.

These reasonable accountability reforms, combined with a strong and growing economy, have helped make the Golden State's municipal bond market healthy and attractive to investors across the country. They recognize that we prudently and professionally manage our debt so that needed public works gets built while our taxpayers save money.

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 (2017-18) and the following year (2018-19), 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, 2017-18 means the 2017-18 fiscal year ending June 30, 2018.

STRENGTH OF CALIFORNIA'S ECONOMY BOOSTS DEMAND FOR TAX-EXEMPT BONDS

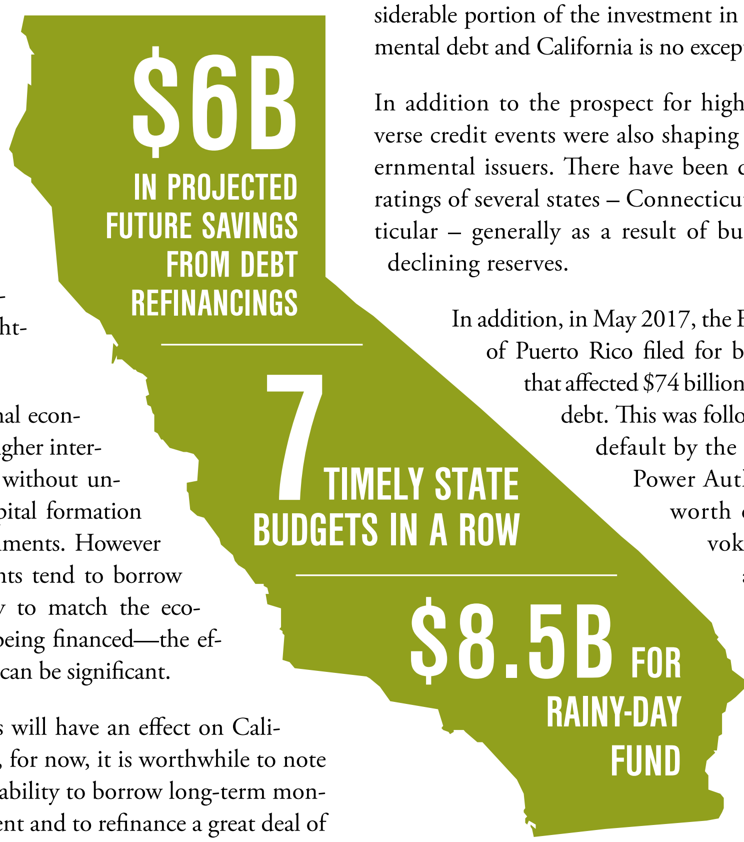
This year's Debt Affordability Report reflects some eventful changes for governmental debt issuers, both in California and across the nation. It also reflects continued improvements in the state's credit profile, strong access to the capital markets and the state's ongoing investment in meeting critical infrastructure needs.

In fiscal 2017, the Federal Reserve Board continued to slowly increase interest rates to tighten monetary policy.

The strength of the national economy would suggest that higher interest rates can be tolerated without undue adverse effects on capital formation by states and local governments. However state and local governments tend to borrow for longer terms—usually to match the economic lives of the assets being financed—the effect of rising interest rates can be significant.

While slowly rising yields will have an effect on California over the long-term, for now, it is worthwhile to note that the state still has the ability to borrow long-term money at rates under 3.5 percent and to refinance a great deal of its outstanding debt to attain savings in interest costs.

At the end of June 2017, calendar year-to-date issuance in the United States municipal market totaled $195 billion, generally in line with the ten-year average of $196 billion; and, investor demand remains strong. According to the Investment Company Institute, early 2017 flows into the mutual fund sector were positive, with $16 billion of net inflows through the end of June. The mutual fund sector accounts for a considerable portion of the investment in new issues of governmental debt and California is no exception to that.



In addition to the prospect for higher interest rates, adverse credit events were also shaping the markets for governmental issuers. There have been downgrades of credit ratings of several states – Connecticut and Illinois, in particular – generally as a result of budgetary gaps and or declining reserves.

In addition, in May 2017, the Fiscal Oversight Board of Puerto Rico filed for bankruptcy protection that affected $74 billion in the island's bonded debt. This was followed in early July by a default by the Puerto Rico Electric Power Authority on $9 billion worth of debt, which provoked the Authority to also file for bankruptcy in early July. Even though the financial strife in Puerto Rico was widely anticipated, the effect of the bankruptcy filing is still being assessed.

These types of events can make the municipal market more difficult for issuers and can lead to market price volatility and higher taxpayers' cost of financing infrastructure.

I have been especially interested for the past several years in the development of green bonds to finance California's infrastructure. According to data available from the Securities Industry and Financial Markets Association (SIFMA), issuers from 10 states sold green bonds in the quarter ending June 30, 2017. I am sponsoring a Green Bonds Symposium in early 2018 to explore ways that we can boost the growth of green bonds in the United States and California.

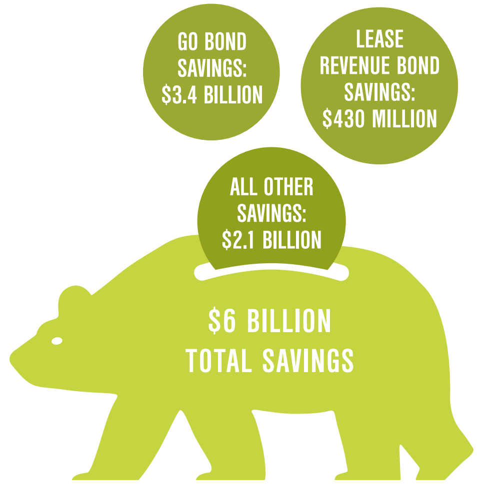
With respect to outstanding governmental debt, California issuers represent $591.6 billion of the estimated $3.8 trillion of outstanding governmental debt. The California number represents an increase of about 0.8% in the most recent quarter versus an overall increase of 0.3% for the national figure.

California, like most other states and local governments, uses broker-dealer firms to underwrite and distribute its securities to investors. At the end of 2012, there were more than 1,600 broker-dealer firms registered in the United States. By the end of 2016 there were only approximately 1,200 broker-dealer firms. In the municipal market, approximately 20 broker-dealers had exited the municipal securities business in 2016 with 12 broker-dealers entering the business, for a net reduction of eight broker-dealer firms by the end of the year.

The implications of this for all governmental issuers are not necessarily good. The system of broker-dealers marketing and distributing governmental bonds is important to the overall health of the municipal securities market in the United States. To reach the largest number of investors, spur competition, and save taxpayers money, the state strives to involve many qualified broker-dealer firms in negotiated bond offerings. This consolidation and concentration among firms will make attainment of those goals more difficult in the future.

Despite the headwinds described above, the market for California's bonds remains healthy with strong investor demand. The state's improved financial management, conservative budgeting and strong financial results undoubtedly contribute to these phenomena. We remain guardedly optimistic about the coming year.

SAVINGS DUE TO DEBT REFININCINGS*



*As of August 31, 2017

CALIFORNIA'S CURRENT GO BOND RATINGS

MOODY'S	S&P	FITCH
Aa3	AA-	AA-

SECTION 1 | MARKET FOR STATE BONDS

The state continues to be 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 $7.3 billion of General Obligation (GO) bonds annually. In 2016-17, the state issued $9.1 billion of GO bonds. Of that total, $6.4 billion refunded already 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 stocks or other debt capital. Since the last Debt Affordability Report was published in October 2016, municipal bond interest rates initially spiked following the presidential election in November 2016 and subsequently declined. With the strength of the state's credit profile, interest rates on the state's bonds relative to those of other municipal issuers continued to tighten in the beginning of 2016-17 and widened modestly as rates rose. It is typical when rates rise, for credit spreads to widen. The state's standing in the capital markets continues to be markedly stronger than it was several years ago.

STATE-SPECIFIC FACTORS

The state's credit profile has improved significantly since 2012-13. 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 and 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;
    - 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, requires repayment of debt/unfunded liabilities and reduces the General Fund's reliance on capital gains revenues; and
    - Together, these and other statutory changes have resulted in significant positive institutionalized changes to the state's financial management.
- Since 2012, the state's economy has improved significantly with the unemployment rate declining from 10.4 percent to 5.4 percent in 2016, employment increasing from 16.6 million to 18.1 million and the state's personal income rising by more than 18 percent.
- The 2017-18 state budget is the seventh consecutive budget adopted on-time, before the June 30 constitutional deadline.
- In November 2016, voters approved Proposition 55, which extended the personal income tax increase until 2030 that was initially set to expire on December 31, 2018.

- The governor and Legislature have taken steps to substantially pay down the state's past budgetary borrowings. The 2017 state budget projects that an additional $1.8 billion of Proposition 2 eligible debts and liabilities will be paid down this fiscal year and the Department of Finance (DOF) projects that almost all of the remaining Proposition 2 budgetary obligations will be repaid by the end of 2020-21.

- The state has continued to build up its reserves, providing protection for future economic slowdowns. At the end of 2016-17, the state had $6.7 billion in the BSA and $0.6 million in the Special Fund for Economic Uncertainties (SFEU) for total reserves of over $7.3 billion.

- The state's 2017-18 budget projects continued improvement in the state's fiscal condition, with structurally balanced budgets through 2019-20, and a projected $1.8 billion transfer to the state's Rainy-Day Fund in 2017-18. This transfer would bring the BSA to $8.5 billion and total reserves to $9.9 billion by June 30, 2018.

- Prior to 2015-16 the state had issued Revenue Anticipation Notes (RANs) in all but one fiscal year since the mid-1980s. As a result of the state's improved cash position, no RANs have been issued in the last two fiscal years and are not expected to be issued in 2017-18.

Because of these developments, as well as other improvements to the state's fiscal management, the state's GO bonds were upgraded by Fitch Ratings (Fitch) in August 2016 from A+ to AA-. Moody's Investors Service (Moody's) and S & P Global Ratings (S&P) had upgraded the state's GO bonds previously in June 2014 and July 2015, respectively. The rating outlook from each of these three rating agencies are noted as stable. Investors have responded positively to the significant improvements in the state's financial management and performance, and its strong credit ratings. Figure 1 depicts the state's interest rate spreads to the AAA GO Municipal Market Data (MMD) index, the municipal industry's benchmark of AAA-rated state GO bonds. The state's credit spread on its 30-year bonds to the MMD index has tightened from a high of more than 150 basis points at the end of 2009 to 25 basis points at the end of March 2017. This pricing improvement reflects investors' increased confidence in the state's credit relative to the most highly-rated state-level GO bonds and the reduced supply of the state's bonds offered in the market.

Despite the significant budgetary improvements over the last several years, the state still faces a number of fiscal challenges and risks. These include paying off its remaining deferred obligations, revenue volatility, the cost of public employee retirement benefits, changes to federal legislation and/or policies on helping to fund the cost of providing health care, other changes to federal policies, and the threat of a recession.

FIGURE 1

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

Source: Thomson Municipal Market Monitor (TM3)

OVERALL MARKET CONDITIONS

The discussion below reviews factors in the larger municipal and taxable bond markets that also have significantly affected the market for the state's bonds.

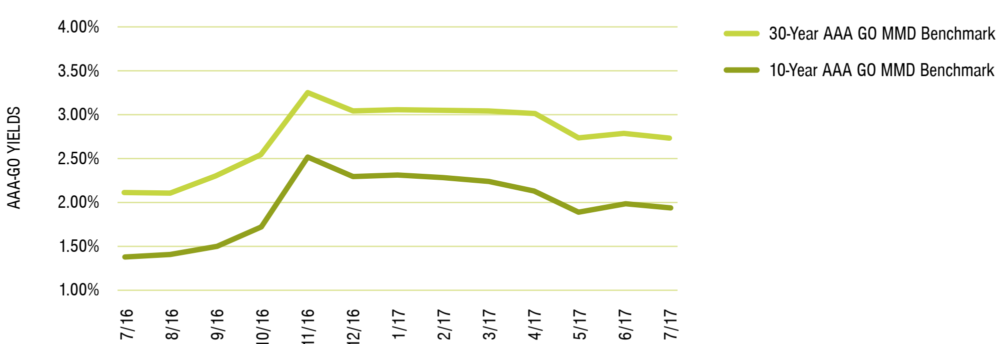
INTEREST RATES

LONG-TERM INTEREST RATES. In early July 2016, long-term municipal interest rates reached an all-time low since the inception of the MMD index in 1985. Thereafter, long-term rates generally increased through December 2016. The increase began due to multiple factors, including the growing realization that the process by Britain to exit the European Union (Brexit) would be slow, the gradual tightening of monetary policy by the Federal Reserve Bank, and an increased supply of municipal bonds following a slow start for calendar 2016. But, by far, the strongest driver of the increase in long-term municipal interest rates was the result of the U.S. presidential election, which caught many market participants by surprise. The prospects of significant policy changes under the new federal administration in the areas of tax reform, infrastructure spending and regulatory reform all prompted a dramatic sell-off in the municipal bond market. In all, from early July 2016 to early December 2016, the 10 and 30 year tax-exempt MMD index increased by 129 and 142 basis points, respectively. Since then, the municipal market has recovered some of those losses, due in part to the lack of legislative action by the federal government. Interest rates have declined with the 10-year and 30-year MMD falling by 59 and 56 basis points respectively, from their highs in early December 2016 to the end of June 2017. Since then, municipal interest rates have remained steady through late August.

SHORT-TERM INTEREST RATES. While long-term tax-exempt interest rates have been volatile from July 2016 through June 2017, short-term tax-exempt interest rates have steadily increased. The increases are attributable primarily to Federal Reserve rate hikes and the full implementation of reforms in October 2016 to tax-exempt money market funds, which represent the largest segment of investors of short-term tax-exempt obligations. The reforms required most money market funds including tax-exempt money market funds (i) to be valued at a fluctuating net asset value (NAV) rather than par, (ii) to impose withdrawal limitations and charges on investors to prevent large withdrawals during difficult market conditions, and (iii) to reduce the weighted average maturity of their holdings. In response to these changes, tax-exempt money market funds shortened the duration of their holdings or in some cases, closed, decreasing the demand for short-term tax-exempt obligations.

FIGURE 2

TRENDS OF TAX-EXEMPT INTEREST RATES



Source: Thomson Municipal Market Monitor (TM3)

After being set at zero percent (0%) for years, the Federal Reserve increased the targeted Fed Funds rate four times—in December 2015, December 2016, March 2017 and June 2017. As you can see below in Figure 3, in response, both the short-term tax-exempt SIFMA Swap index and the actual average interest rates on the state's tax-exempt variable rate demand obligations (VRDOs) rose dramatically and as of June 30, 2017, the SIFMA index and the state's average rate were 81 and 66 basis points respectively. Notwithstanding these increases, at these levels, VRDOs have continued to be a source of very low-cost financing for the state and have helped to diversify the state's capital structure. The money market reforms also impacted the interest rates that local governments had to pay on their tax and revenue anticipation notes (TRANs) in 2017. For example, select large California TRANs issuers saw their one-year tax-exempt interest rates increase as high as 93 basis points on their annual cash flow borrowings for 2017-18. While the state did not issue any Revenue Anticipation Notes (RANs) for the last two fiscal years and does not anticipate issuing RANs during this fiscal year, its interest rates on a RAN issuance would also have been impacted by these reforms and is expected to be impacted on any future RANs issuances.

On a separate note, as you can see on the chart below, since short-term tax-exempt rates began to increase in March 2016, the state's VRDOs have generally had lower interest rates than SIFMA, the national index, by an average of approximately seven basis points.

SUPPLY AND DEMAND

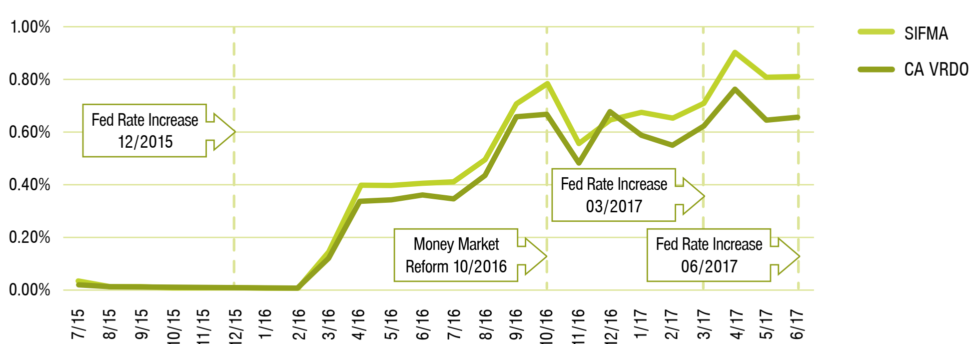
Technical factors such as supply and demand for municipal bonds also affect the pricing of municipal bonds.

SUPPLY. Year over year from 2015-16 to 2016-17 U.S. primary market issuance volume has increased after experiencing a significant decline in earlier years. Over the same period, issuance volume in California was higher by $17 billion (or 25 percent). Figures 4 and 5 present the cumulative volume of U.S. and California municipal bond issuance for 2015-16 and 2016-17.

DEMAND. While the supply of new issuances has been higher for fiscal year 2016-17 than the previous year, demand has also played an important role in affecting the bond market. Based on their tax-advantaged status, tax-exempt bonds have a more limited universe of investors than taxable bonds. 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. As shown

FIGURE 3

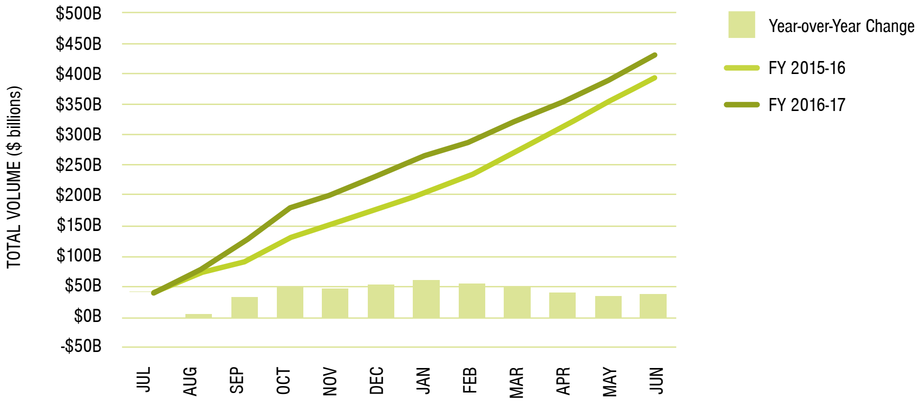
SIFMA VERSUS CALIFORNIA VRDO (MONTHLY AVERAGE RATES)



Source: Thomson Municipal Market Monitor (TM3) and California State Treasurer's Office

FIGURE 4

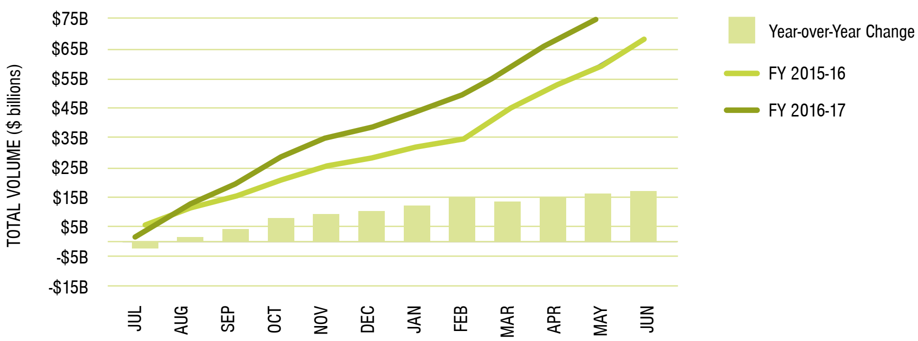
U.S. CUMULATIVE BOND VOLUME, FY 2015-16 AND FY 2016-17



Source: The Bond Buyer

FIGURE 5

CALIFORNIA CUMULATIVE BOND VOLUME, FY 2015-16 AND FY 2016-17



Source: California Debt and Investment Advisory Commission in Figure 6, after several months of modest outflows in mid-2015, municipal bond mutual funds experienced a period of sustained asset inflows until November 2016, helping to drive tax-exempt interest rates lower. In November and December 2016, the market experienced significant outflows ($11.1 and $16.3 billion, respectively), that contributed to the rapid increase in long-term municipal bond rates. Since then, there has been a steady increase in assets and institutional investor demand has had a positive impact on the municipal market.

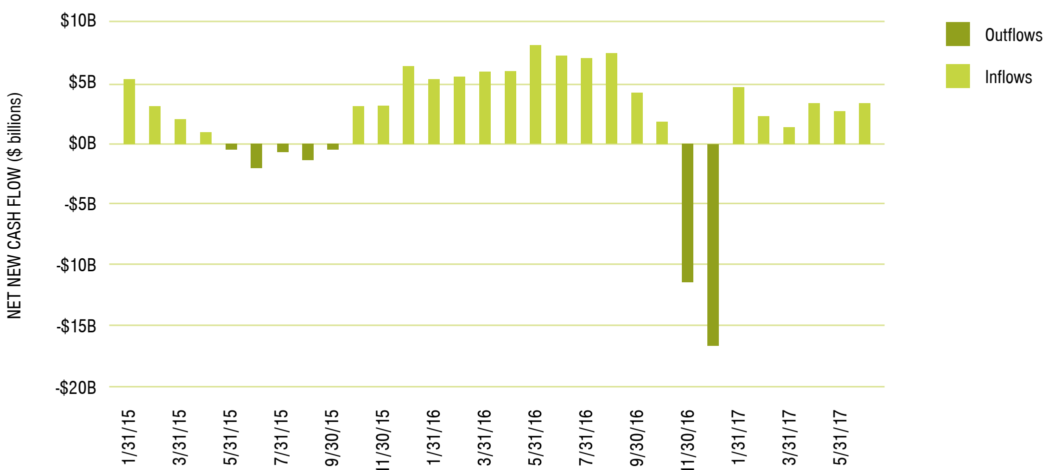
INTEREST RATES ON THE STATE'S BONDS

As discussed above, interest rates on the state's bonds are the product of both state-specific factors and overall market conditions. In general, credit spreads tend to follow the movement of interest rates. When interest rates fall credit spreads narrow, and when interest rates rise credit spreads widen. On a state-specific basis, as shown earlier in Figure 1, the improvement in the state's credit profile has caused the interest rate spread between the state's GO bonds and the MMD index to narrow dramatically. However, the sudden sharp rise in interest rates following the November 2016 election prompted the state's GO bond credit spreads to widen, although they have partially recovered as the general market has recovered. Over the last year, the interest rates on the state's bonds have generally followed a similar pattern to the national market (see Figure 7).

With attractive interest rates throughout much of the last fiscal year, the state was able to refund $7.1 billion of its outstanding GO bonds in 2016-17 to reduce interest costs. These refundings generated approximately $1.5 billion of total debt service savings over the remaining life of the bonds.

FIGURE 6

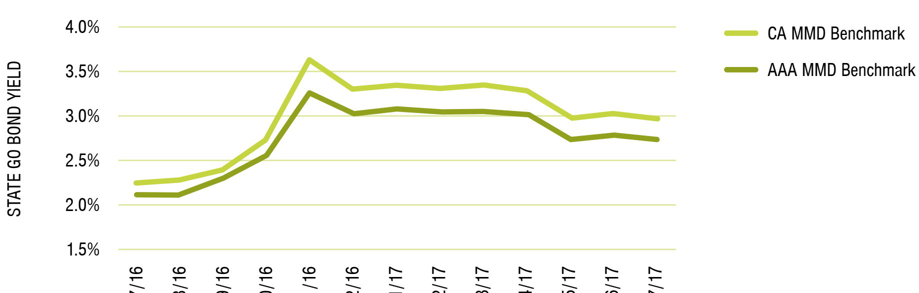
MUNICIPAL BOND MARKET, MONTHLY FUND INFLOWS / OUTFLOWS



Source: Investment Company Institute (ICI)

FIGURE 7

TRENDS OF CALIFORNIA GO BOND YIELDS, 30-YEAR GO BONDS



Source: Thomson Municipal Market Monitor (TM3)

SECTION 2 | SNAPSHOT OF THE STATE'S DEBT

OVERVIEW

Figure 8 summarizes the state's long-term debt as of June 30, 2017. 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 are secured primarily by specific revenues, and 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, can be found in Appendices A and B.

FIGURE 8

SUMMARY OF THE STATE'S DEBT (a)
AS OF JUNE 30, 2017 (dollars in billions)

	OUTSTANDING	AUTHORIZED BUT UNISSUED	TOTAL
GENERAL FUND-SUPPORTED ISSUES			
General Obligation Bonds	$73.84	$33.75	$107.59
Lease Revenue Bonds (b)	9.40	4.86	14.26
TOTAL GENERAL FUND SUPPORTED ISSUES	$83.24	$38.61	$121.85
SELF-LIQUIDATING GENERAL OBLIGATION BONDS			
Veterans General Obligation Bonds	$0.61	$0.20	$0.81
California Water Resources Development General Obligation Bonds	0.09	0.17	0.26
TOTAL SELF-LIQUIDATING GENERAL OBLIGATION BONDS	$0.70	$0.37	$1.07
TOTAL	$83.94	$38.98	$122.92

(a) Debt obligations not included in Figure 8: 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 5.6 percent of the state's outstanding GO bonds carry variable interest rates, which is lower than the statutorily-authorized maximum of 20 percent. The remaining 94.4 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 9 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 9. The estimated issuance may increase should new bond programs be approved.

As shown in Figure 9, STO preliminarily estimates the state will issue a combined $10.5 billion of new money General Fund-supported bonds in 2017-18 and 2018-19. Using these assumptions for debt issuance, the STO estimates debt service payments from the General Fund will increase by $56.7 million in 2017-18 and $458.0 million in 2018-19[1]. A detailed list of the estimated debt service requirements can be found in Appendix B.

FIGURE 9

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

	2017-18	2018-19	TOTAL
General Obligation Bonds (b)	$5,822	$4,000	$9,822
Lease Revenue Bonds	$564	$157	$721
TOTAL GENERAL FUND-SUPPORTED BONDS	$6,386	$4,157	$10,543

(a) Debt issuances not included in Figure 9: 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.

[1] Figures reflect debt service from only a portion of the bond sales listed in Figure 9. For example, $2.5 billion of the $5.8 billion in GO bonds and $240.6 million of the $564 million in LRBs planned for 2017-18 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 2017-18 will not have a debt service payment during the fiscal year. The first interest payment for these bonds will be in 2018-19.

SECTION 3 MEASURING DEBT BURDEN

DEBT RATIOS

Measuring California's debt level with various ratios – while not particularly helpful in assessing debt affordability – does provide a way to compare the state's burden to that of other 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 6.57 percent[2] in 2016-17. That figure is based on $7.8 billion[3] of GO and LRB debt service payments versus $118.5 billion of General Fund revenues (less transfer to the Budget Stabilization Account/Rainy-Day Fund). The STO estimates this ratio will be 6.40 percent[4] in 2017-18. That estimate is based on an expected $8.1 billion of debt service payments versus $125.9 billion of General Fund revenues (less transfer to the Budget Stabilization Account/Rainy-Day Fund).

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 2017 State Debt Medians report, Moody's lists the state's ratio of net tax-supported debt to personal income at 4.2 percent.[5]

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 2017 State Debt Medians report, Moody's lists the state's debt per capita at $2,217.[5]

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 sixth largest economy[6] and one of its most diverse. In its 2017 State Debt Medians report, Moody's lists the state's debt as a percentage of GDP at 3.51 percent.[5]

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2 Does not reflect offsets due to subsidy payments from the federal government for Build America Bonds (BABs) or transfers from special funds. When debt service is adjusted to account for approximately $1.6 billion of estimated offsets, the 2016-17 debt service decreases to $6.2 billion, and the ratio of debt service to General Fund revenues drops to 5.25 percent.

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

4 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 2017-18 debt service decreases to $6.2 billion and the ratio of debt service to General Fund revenues drops to 4.90 percent.

5 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.

6 California GDP as reported by the U.S. Bureau of Economic Analysis for 2016. Sovereign country ranking and GDP for 2016 as reported by the International Money Fund.

FIGURE 10

DEBT TO PERSONAL INCOME OF 10 MOST POPULOUS STATES

STATE	MOODY'S/S&P/ FITCH (a)	DEBT TO PERSONAL INCOME (b)
Texas	Aaa/AAA/AAA	0.80%
North Carolina	Aaa/AAA/AAA	1.60%
Michigan	Aa1/AA-/AA	1.60%
Florida	Aa1/AAA/AAA	2.20%
Ohio	Aa1/AA+/AA+	2.50%
Georgia	Aaa/AAA/AAA	2.50%
Pennsylvania	Aa3/AA-/AA-	2.70%
California	Aa3/AA-/AA-	4.20%
Illinois	Baa3/BBB-/BBB	5.10%
New York	Aa1/AA+/AA+	5.30%
MOODY'S MEDIAN ALL STATES		2.50%
MEDIAN FOR THE 10 MOST POPULOUS STATES		2.50%

(a) Moody's, S&P and Fitch ratings as of August 2017.

(b) Figures as reported by Moody's in its 2017 State Debt Medians report released May 2017. As of end of calendar year 2016.

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 10), debt per capita (Figure 11) and debt as a percentage of GDP (Figure 12) 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 11

DEBT PER CAPITA OF 10 MOST POPULOUS STATES

STATE	MOODY'S/S&P/ FITCH (a)	DEBT PER CAPITA (b)
Texas	Aaa/AAA/AAA	$383
North Carolina	Aaa/AAA/AAA	$659
Michigan	Aa1/AA-/AA	$689
Florida	Aa1/AAA/AAA	$961
Georgia	Aaa/AAA/AAA	$992
Ohio	Aa1/AA+/AA+	$1,087
Pennsylvania	Aa3/AA-/AA-	$1,337
California	Aa3/AA-/AA-	$2,217
Illinois	Baa3/BBB-/BBB	$2,511
New York	Aa1/AA+/AA+	$3,070
MOODY'S MEDIAN ALL STATES		$1,006
MEDIAN FOR THE 10 MOST POPULOUS STATES		$1,040

(a) Moody's, S&P and Fitch ratings as of August 2017.

(b) Figures as reported by Moody's in its 2017 State Debt Medians report released May 2017. As of end of calendar year 2016.

FIGURE 12

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)
Texas	Aaa/AAA/AAA	0.66%
North Carolina	Aaa/AAA/AAA	1.35%
Michigan	Aa1/AA-/AA	1.46%
Georgia	Aaa/AAA/AAA	2.05%
Ohio	Aa1/AA+/AA+	2.07%
Florida	Aa1/AAA/AAA	2.23%
Pennsylvania	Aa3/AA-/AA-	2.41%
California	Aa3/AA-/AA-	3.51%
Illinois	Baa3/BBB-/BBB	4.14%
New York	Aa1/AA+/AA+	4.23%
MOODY'S MEDIAN ALL STATES		2.23%
MEDIAN FOR THE 10 MOST POPULOUS STATES		2.15%

(a) Moody's, S&P and Fitch ratings as of August 2017.

(b) Figures as reported by Moody's in its 2017 State Debt Medians report released May 2017. As of end of calendar year 2016.

(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 rating agencies' actions on the State's GO bonds since the last DAR is presented in Figure 13.

Since the last DAR, a year ago, Fitch, Moody's and S&P have maintained their "AA-", "Aa3" and "AA-" ratings respectively. A summary of the rating agencies' opinion of the state's credit strengths and challenges is presented in Figure 14.

FIGURE 13

LATEST RATING ACTIONS

RATING AGENCY	ACTION	DATE
Fitch	Affirmed "AA-" GO rating	August 2017
Moody's	Affirmed "Aa3" GO rating	August 2017
S&P	Affirmed "AA-" GO rating	August 2017

FIGURE 14

STATE OF CALIFORNIA GENERAL OBLIGATION RATING AGENCY COMMENTARY

	FITCH	MOODY'S	S&P
RATING STRENGTHS	• Large and diverse economy • Strong budget management during economic recovery and expansion • Institutionalized changes to fiscal operations have improved its financial position • Moderate debt burden • Budgetary borrowing has been virtually eliminated allowing shift of revenues to other long-term liabilities such as pensions and Other Postemployment Benefits (OPEB)	• Large, wealthy and diverse economy • Healthy liquidity • Significant improvement in budget deficits and conservative measures to rein in spending • Governance improvements leading to on-time budgets	• Diverse economy currently expanding faster than nation • Demonstrated commitment in seven consecutive budgets to aligning recurring revenues and expenses while paying down budgetary debts • Good and increasing budgetary reserve levels • Strong overall liquidity for the third consecutive year • Moderately high, but declining debt ratios
RATING CHALLENGES	• Flexibility to reduce spending somewhat restricted due to constitutional requirements • Tax revenues are economically sensitive particularly those related to capital gains • Rating is sensitive to ability and willingness to maintain fiscal discipline throughout the economic cycle	• Highly volatile revenue structure • Governance restrictions that make it difficult for state to respond to revenue volatility • Lack of significant reserves built up to cushion finances from downturns • Negative but improving audited fund balances	• Difficult-to-forecast revenues due to volatile financial markets and reliance on highly progressive personal income tax structure • High cost of housing that contributes to weaker business climate • Low interest rate environment that affects the investment outlook for pension funds • Minimal prefunding of retiree health care benefits • Large backlog of deferred maintenance and infrastructure needs

APPENDIX A | THE STATE'S DEBT

AUTHORIZED AND OUTSTANDING NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS AS OF JUNE 30, 2017 (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	11/08/88	$797,745	$34,640	$ -	$ -
+	1990 School Facilities Bond Act	06/05/90	797,875	72,385	-	-
+	1992 School Facilities Bond Act	11/03/92	898,211	198,090	-	-
	California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002	03/05/02	2,600,000	1,978,855	21,985	202,875
+	California Library Construction and Renovation Bond Act of 1988	11/08/88	72,405	10,545	-	-
*+	California Park and Recreational Facilities Act of 1984	06/05/84	368,900	9,825	-	-
*	California Parklands Act of 1980	11/04/80	285,000	2,030	-	-
	California Reading and Literacy Improvement and Public Library Construction and Renovation Bond Act of 2000	03/07/00	350,000	225,090	-	5,040
*+	California Safe Drinking Water Bond Law of 1976	06/08/76	172,500	2,410	-	-
*	California Safe Drinking Water Bond Law of 1984	11/06/84	75,000	1,505	-	-
*	California Safe Drinking Water Bond Law of 1986	11/04/86	100,000	17,805	-	-
	California Safe Drinking Water Bond Law of 1988	11/08/88	75,000	24,245	-	-
*+	California Wildlife, Coastal, and Park Land Conservation Act	06/07/88	768,670	93,015	-	-
	Children's Hospital Bond Act of 2004	11/02/04	750,000	552,850	340	46,705
	Children's Hospital Bond Act of 2008	11/04/08	980,000	657,910	13,865	290,855
	Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998 (Hi-Ed)	11/03/98	2,500,000	1,512,170	-	-
	Class Size Reduction Kindergarten-University Public Education Facilities Bond Act of 1998 (K-12)	11/03/98	6,700,000	3,331,495	-	11,400
*	Clean Air and Transportation Improvement Bond Act of 1990	06/05/90	1,990,000	619,040	-	4,985
*	Clean Water Bond Law of 1984	11/06/84	325,000	7,625	-	-
*	Clean Water and Water Conservation Bond Law of 1978	06/06/78	375,000	3,570	-	-
	Clean Water and Water Reclamation Bond Law of 1988	11/08/88	65,000	16,625	-	-

AUTHORIZED AND OUTSTANDING
NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS
AS OF JUNE 30, 2017 (DOLLARS IN THOUSANDS) CONTINUED

	GENERAL FUND BONDS	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
*	Community Parklands Act of 1986	06/03/86	100,000	2,115	-	-
*	County Correctional Facility Capital Expenditure Bond Act of 1986	06/03/86	495,000	11,625	-	-
	County Correctional Facility Capital Expenditure and Youth Facility Bond Act of 1988	11/08/88	500,000	55,165	-	-
++++	Disaster Preparedness and Flood Prevention Bond Act of 2006	11/07/06	3,990,000	2,240,240	93,480	1,598,422
	Earthquake Safety and Public Buildings Rehabilitation Bond Act of 1990	06/05/90	300,000	51,945	635	7,490
*	Fish and Wildlife Habitat Enhancement Act of 1984	06/05/84	85,000	4,485	-	-
	Higher Education Facilities Bond Act of 1988	11/08/88	600,000	20,215	-	-
	Higher Education Facilities Bond Act of June 1990	06/05/90	450,000	39,955	-	540
	Higher Education Facilities Bond Act of June 1992	06/02/92	900,000	246,115	-	-
	Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006	11/07/06	19,925,000	16,550,025	145,180	1,715,360
	Housing and Emergency Shelter Trust Fund Act of 2002	11/05/02	2,100,000	377,325	12,520	71,395
	Housing and Emergency Shelter Trust Fund Act of 2006	11/07/06	2,850,000	1,185,730	206,720	584,135
	Housing and Homeless Bond Act of 1990	06/05/90	150,000	1,170	-	-
	Kindergarten-Community College Public Education Facilities Bond Act of 2016 (K-12)	11/8/2016	7,000,000	-	-	7,000,000
	Kindergarten-Community College Public Education Facilities Bond Act of 2016 (CCC)	11/8/2016	2,000,000	-	-	2,000,000
	Kindergarten-University Public Education Facilities Bond Act of 2002 (Hi-Ed)	11/05/02	1,650,000	1,192,905	-	-
	Kindergarten-University Public Education Facilities Bond Act of 2002 (K-12)	11/05/02	11,400,000	8,545,675	3,375	33,040
	Kindergarten-University Public Education Facilities Bond Act of 2004 (Hi-Ed)	03/02/04	2,300,000	1,906,870	100	58,019
	Kindergarten-University Public Education Facilities Bond Act of 2004 (K-12)	03/02/04	10,000,000	7,982,905	4,460	51,690
	Kindergarten-University Public Education Facilities Bond Act of 2006 (Hi-Ed)	11/07/06	3,087,000	2,878,805	1,810	38,775
	Kindergarten-University Public Education Facilities Bond Act of 2006 (K-12)	11/07/06	7,329,000	6,600,890	32,250	293,800
*	Lake Tahoe Acquisitions Bond Act	08/02/82	85,000	50	-	-
*	New Prison Construction Bond Act of 1986	11/04/86	500,000	1,020	-	-
	New Prison Construction Bond Act of 1988	11/08/88	817,000	9,505	340	1,630
	New Prison Construction Bond Act of 1990	06/05/90	450,000	11,385	-	605
	Passenger Rail and Clean Air Bond Act of 1990	06/05/90	1,000,000	25,775	-	-
	Public Education Facilities Bond Act of 1996 (Higher Education)	03/26/96	975,000	432,560	1,330	4,650
++	Public Education Facilities Bond Act of 1996 (K-12)	03/26/96	2,012,035	709,565	-	-
++++	Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act	03/07/00	1,884,000	1,275,430	-	43,346
++++	Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006	11/07/06	5,283,000	2,959,265	268,860	1,763,575

AUTHORIZED AND OUTSTANDING
NON SELF-LIQUIDATING GENERAL OBLIGATION BONDS
AS OF JUNE 30, 2017 (DOLLARS IN THOUSANDS) CONTINUED

	GENERAL FUND BONDS	VOTER AUTHORIZATION DATE	AUTHORIZATION AMOUNT	LONG-TERM BONDS OUTSTANDING	COMMERCIAL PAPER OUTSTANDING (a)	UNISSUED
	Safe Neighborhood Parks, Clean Water, Clean Air, and Coastal Protection Bond Act of 2000	03/07/00	2,100,000	1,299,355	5,125	68,695
++++	Safe, Clean, Reliable Water Supply Act	11/05/96	969,500	477,725	-	62,915
	Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century	11/04/08	9,950,000	2,024,145	40,470	7,503,190
*	School Building and Earthquake Bond Act of 1974	11/05/74	150,000	11,970	-	-
	School Facilities Bond Act of 1990	11/06/90	800,000	113,615	-	-
	School Facilities Bond Act of 1992	06/02/92	1,900,000	409,660	-	10,280
	Seismic Retrofit Bond Act of 1996	03/26/96	2,000,000	999,040	-	-
*	State, Urban, and Coastal Park Bond Act of 1976	11/02/76	280,000	3,175	-	-
	Stem Cell Research and Cures Bond Act of 2004	11/02/04	3,000,000	1,110,470	174,445	857,150
	Veterans Homes Bond Act of 2000	03/07/00	50,000	33,685	-	975
	Veterans Housing and Homeless Prevention Bond Act of 2014	06/03/14	600,000	2,650	3,655	593,120
	Voting Modernization Bond Act of 2002	03/05/02	200,000	165	-	64,495
	Water Conservation Bond Law of 1988	11/08/88	60,000	17,970	-	5,235
*++++	Water Conservation and Water Quality Bond Law of 1986	06/03/86	136,500	22,595	-	230
	Water Quality, Supply, and Infrastructure Improvement Act of 2014	11/04/14	7,545,000	119,015	118,000	7,291,740
++++	Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2002	11/05/02	3,345,000	2,502,165	9,135	301,864
	TOTAL GENERAL FUND BONDS		$144,349,341	$73,837,840	$1,158,080	$32,588,221

(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.

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

++ SB 71 (06/27/2013) reduced the voter authorized amount.

++++AB 1471 (11/04/2014) reallocated the voter authorized amount.

AUTHORIZED AND OUTSTANDING SELF-LIQUIDATING GENERAL OBLIGATION BONDS AS OF JUNE 30, 2017 (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	$88,300	$ -	$167,600
	Veterans Bond Act of 1986	06/03/86	850,000	8,160	-	-
	Veterans Bond Act of 1988	06/07/88	510,000	26,095	-	-
	Veterans Bond Act of 1990	11/06/90	400,000	45,015	-	-
	Veterans Bond Act of 1996	11/05/96	400,000	98,020	-	-
	Veterans Bond Act of 2000	11/07/00	500,000	337,035	-	-
+++	Veterans Bond Act of 2008	11/04/08	300,000	99,115	-	200,260
	TOTAL ENTERPRISE FUND BONDS		$4,710,000	$701,740	$ -	$367,860

(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.

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

AUTHORIZED AND OUTSTANDING
LEASE REVENUE BONDS
AS OF JUNE 30, 2017 (DOLLARS IN THOUSANDS)

GENERAL FUND-SUPPORTED ISSUES	OUTSTANDING	AUTHORIZED BUT UNISSUED
STATE PUBLIC WORKS BOARD		
California Community Colleges	$182,140	$ -
California Department of Corrections and Rehabilitation	4,128,655	2,595,585
Trustees of the California State University	180,865	49,909
Various State Facilities (a)	4,675,830	2,217,187
TOTAL STATE PUBLIC WORKS BOARD ISSUES	$9,167,490	$4,862,681
TOTAL OTHER STATE FACILITIES LEASE-REVENUE ISSUES (b)	$232,585	$ -
TOTAL GENERAL FUND-SUPPORTED ISSUES	$9,400,075	$4,862,681

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

(b) Includes $62,435,000 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, 2017

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT		
	INTEREST (a)	PRINCIPAL	TOTAL (b)
2018 (c)	$3,707,372,316.67	$2,952,345,000.00	$6,659,717,316.67
2019	3,602,953,898.12	3,057,185,000.00	6,660,138,898.12
2020	3,450,694,056.31	2,861,485,000.00	6,312,179,056.31
2021	3,320,408,470.23	2,721,180,000.00	6,041,588,470.23
2022	3,182,005,841.56	3,076,645,000.00	6,258,650,841.56
2023	3,040,073,108.03	2,445,395,000.00	5,485,468,108.03
2024	2,925,803,364.18	2,163,780,000.00	5,089,583,364.18
2025	2,815,197,645.65	2,363,275,000.00	5,178,472,645.65
2026	2,696,150,450.35	2,444,825,000.00	5,140,975,450.35
2027	2,567,082,952.06	2,477,510,000.00	5,044,592,952.06
2028	2,448,445,833.36	2,246,060,000.00	4,694,505,833.36
2029	2,335,425,438.85	2,472,105,000.00	4,807,530,438.85
2030	2,213,366,441.35	2,581,015,000.00	4,794,381,441.35
2031	2,070,507,995.30	2,650,385,000.00	4,720,892,995.30
2032	1,941,085,420.65	2,567,125,000.00	4,508,210,420.65
2033	1,803,564,306.26	2,648,345,000.00	4,451,909,306.26
2034	1,678,737,373.96	3,299,485,000.00	4,978,222,373.96
2035	1,452,176,574.09	3,086,165,000.00	4,538,341,574.09
2036	1,267,221,980.76	2,797,710,000.00	4,064,931,980.76
2037	1,100,037,329.37	3,075,570,000.00	4,175,607,329.37
2038	918,285,711.30	3,242,550,000.00	4,160,835,711.30
2039	770,546,066.45	3,413,375,000.00	4,183,921,066.45
2040	490,219,662.50	1,767,885,000.00	2,258,104,662.50
2041	328,407,793.75	2,190,000,000.00	2,518,407,793.75
2042	226,127,793.75	1,319,000,000.00	1,545,127,793.75
2043	170,670,418.75	1,326,325,000.00	1,496,995,418.75
2044	97,101,398.75	875,000,000.00	972,101,398.75
2045	66,223,425.00	550,000,000.00	616,223,425.00
2046	35,450,000.00	500,000,000.00	535,450,000.00
2047	11,725,000.00	525,000,000.00	536,725,000.00
TOTAL	$52,733,068,067.36	$69,696,725,000.00	$122,429,793,067.36

(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 remaining debt service requirements from July 1, 2017 through June 30, 2018.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR GENERAL FUND NON SELF-LIQUIDATING BONDS VARIABLE RATE, AS OF JUNE 30, 2017

	CURRENT DEBT		
FISCAL YEAR ENDING JUNE 30	INTEREST (a)	PRINCIPAL	TOTAL (b)
2018 (c)	$62,643,299.11	$243,305,000.00	$305,948,299.11
2019	60,983,045.96	113,420,000.00	174,403,045.96
2020	59,627,644.57	105,500,000.00	165,127,644.57
2021	58,606,360.27	154,400,000.00	213,006,360.27
2022	57,027,196.93	39,200,000.00	96,227,196.93
2023	56,726,728.00	121,100,000.00	177,826,728.00
2024	55,064,046.75	233,600,000.00	288,664,046.75
2025	52,286,964.79	176,400,000.00	228,686,964.79
2026	50,131,478.55	263,300,000.00	313,431,478.55
2027	46,452,031.04	274,600,000.00	321,052,031.04
2028	36,760,683.17	559,000,000.00	595,760,683.17
2029	26,396,912.54	467,700,000.00	494,096,912.54
2030	20,080,818.58	364,390,000.00	384,470,818.58
2031	14,585,301.56	323,600,000.00	338,185,301.56
2032	8,876,200.30	425,600,000.00	434,476,200.30
2033	2,835,953.05	271,400,000.00	274,235,953.05
2034	59,216.95	1,600,000.00	1,659,216.95
2035	48,593.00	-	48,593.00
2036	48,708.56	-	48,708.56
2037	48,477.44	-	48,477.44
2038	48,593.00	-	48,593.00
2039	48,593.00	-	48,593.00
2040	47,936.09	1,000,000.00	1,047,936.09
2041	40,404.36	-	40,404.36
2042	40,282.58	-	40,282.58
2043	40,282.58	-	40,282.58
2044	40,362.48	-	40,362.48
2045	40,303.52	-	40,303.52
2046	40,333.00	-	40,333.00
2047	37,257.43	2,000,000.00	2,037,257.43
TOTAL	$669,714,009.16	$4,141,115,000.00	$4,810,829,009.16

(a) The estimate of future interest payments is based on rates in effect as of June 30, 2017. The interest rates for the daily, weekly and monthly rate bonds range from 0.56 - 2.06%. The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, Series 2013B & 2016A currently bear interest at a fixed rate of 4.00%, and Series 2014A bears interest at a fixed rate of 3.00% (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 remaining estimated debt service requirements from July 1, 2017 through June 30, 2018.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR ENTERPRISE FUND SELF-LIQUIDATING BONDS FIXED RATE, AS OF JUNE 30, 2017

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT INTEREST	CURRENT DEBT PRINCIPAL	CURRENT DEBT TOTAL (a)
2018 (b)	$23,321,510.00	$36,755,000.00	$60,076,510.00
2019	21,820,718.75	49,000,000.00	70,820,718.75
2020	20,523,533.85	41,365,000.00	61,888,533.85
2021	19,319,040.00	31,445,000.00	50,764,040.00
2022	18,566,007.50	15,785,000.00	34,351,007.50
2023	18,187,957.50	12,015,000.00	30,202,957.50
2024	17,989,492.50	4,365,000.00	22,354,492.50
2025	17,840,700.00	7,070,000.00	24,910,700.00
2026	17,752,962.50	-	17,752,962.50
2027	17,466,145.00	19,300,000.00	36,766,145.00
2028	16,937,913.51	16,275,000.00	33,212,913.51
2029	16,246,789.40	31,435,000.00	47,681,789.40
2030	14,964,516.39	50,525,000.00	65,489,516.39
2031	13,317,020.26	50,240,000.00	63,557,020.26
2032	11,602,677.10	49,905,000.00	61,507,677.10
2033	9,864,126.25	44,685,000.00	54,549,126.25
2034	8,276,835.18	39,750,000.00	48,026,835.18
2035	6,956,345.00	30,985,000.00	37,941,345.00
2036	5,919,617.50	25,220,000.00	31,139,617.50
2037	4,950,676.54	25,525,000.00	30,475,676.54
2038	4,099,301.99	17,915,000.00	22,014,301.99
2039	3,389,257.50	18,735,000.00	22,124,257.50
2040	2,645,938.75	19,605,000.00	22,250,938.75
2041	1,867,122.50	20,520,000.00	22,387,122.50
2042	1,338,865.00	7,665,000.00	9,003,865.00
2043	1,073,856.25	7,965,000.00	9,038,856.25
2044	798,256.25	8,245,000.00	9,043,256.25
2045	512,731.25	8,550,000.00	9,062,731.25
2046	216,675.00	8,865,000.00	9,081,675.00
2047	32,987.50	2,030,000.00	2,062,987.50
TOTAL	$317,799,576.72	$701,740,000.00	$1,019,539,576.72

(a) Includes scheduled mandatory sinking fund payments.

(b) Represents the remaining debt service requirements from July 1, 2017 through June 30, 2018.

SCHEDULE OF DEBT SERVICE REQUIREMENTS FOR LEASE-REVENUE DEBT FIXED RATE, AS OF JUNE 30, 2017

FISCAL YEAR ENDING JUNE 30	CURRENT DEBT		
	INTEREST (a)	PRINCIPAL	TOTAL (b)
2018 (c)	$461,947,610.07	$569,935,000.00	$1,031,882,610.07
2019	437,310,934.21	543,840,000.00	981,150,934.21
2020	410,754,632.87	531,875,000.00	942,629,632.87
2021	385,449,838.38	503,880,000.00	889,329,838.38
2022	360,718,886.48	489,690,000.00	850,408,886.48
2023	338,132,526.54	446,050,000.00	784,182,526.54
2024	316,356,552.22	442,220,000.00	758,576,552.22
2025	294,221,021.15	459,870,000.00	754,091,021.15
2026	270,978,120.01	472,990,000.00	743,968,120.01
2027	246,853,634.82	497,050,000.00	743,903,634.82
2028	221,915,008.13	508,730,000.00	730,645,008.13
2029	196,428,954.32	473,800,000.00	670,228,954.32
2030	172,484,667.13	464,615,000.00	637,099,667.13
2031	149,113,222.50	456,690,000.00	605,803,222.50
2032	124,658,186.24	467,645,000.00	592,303,186.24
2033	101,187,713.24	397,175,000.00	498,362,713.24
2034	79,468,336.24	406,130,000.00	485,598,336.24
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	$4,717,698,420.60	$9,400,075,000.00	$14,117,773,420.60

(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 remaining debt service requirements from July 1, 2017 through June 30, 2018.

ESTIMATED DEBT SERVICE REQUIREMENTS ON INTENDED SALES OF AUTHORIZED BUT UNISSUED BONDS DURING FISCAL YEARS 2017-18 AND 2018-19

FISCAL YEAR ENDING JUNE 30	FY 2017-18 GO SALES DEBT SERVICE	FY 2018-19 GO SALES DEBT SERVICE	FY 2017-18 LRB SALES DEBT SERVICE	FY 2018-19 LRB SALES DEBT SERVICE	TOTAL DEBT SERVICE ALL SALES
2018	$51,450,000	$ -	$5,292,870	$ -	$56,742,870
2019	355,545,190	51,000,000	46,882,085	4,148,178	$457,575,453
2020	355,544,110	130,177,668	46,884,910	15,125,458	$547,732,145
2021	355,543,515	130,179,370	46,901,280	15,128,460	$547,752,625
2022	355,544,510	130,176,895	46,879,445	15,125,660	$547,726,510
2023	355,542,755	130,181,035	46,882,790	15,121,130	$547,727,710
2024	355,548,700	130,177,455	46,888,745	15,128,413	$547,743,313
2025	355,542,090	130,181,565	46,884,090	15,126,183	$547,733,928
2026	355,547,695	130,178,520	46,886,880	15,123,380	$547,736,475
2027	355,549,135	130,178,348	46,878,945	15,123,548	$547,729,975
2028	355,545,030	130,180,565	46,878,205	15,125,095	$547,728,895
2029	355,543,450	130,179,563	46,886,000	15,126,433	$547,735,445
2030	355,546,680	130,179,475	46,878,940	15,125,970	$547,731,065
2031	355,541,535	130,179,055	46,884,590	15,126,985	$547,732,165
2032	355,544,385	130,181,673	46,883,690	15,127,623	$547,737,370
2033	355,545,475	130,180,443	46,882,985	15,126,028	$547,734,930
2034	355,545,050	130,178,225	16,329,090	15,120,345	$517,172,710
2035	355,547,100	130,177,370	16,331,400	-	$502,055,870
2036	355,545,300	130,179,718	16,339,860	-	$502,064,878
2037	355,542,515	130,176,853	16,328,270	-	$502,047,638
2038	355,545,720	130,179,850	16,326,165	-	$502,051,735
2039	355,545,975	130,179,275	16,326,990	-	$502,052,240
2040	355,543,660	130,180,310	16,329,300	-	$502,053,270
2041	355,543,370	130,177,628	16,326,540	-	$502,047,538
2042	355,543,340	130,180,263	16,332,535	-	$502,056,138
2043	355,546,255	130,176,740	16,330,485	-	$502,053,480
2044	355,543,415	130,179,948	-	-	$485,723,363
2045	355,545,360	130,177,135	-	-	$485,722,495
2046	355,546,375	130,179,915	-	-	$485,726,290
2047	355,544,490	130,179,135	-	-	$485,723,625
2048	355,541,845	130,180,005	-	-	$485,721,850
2049		130,176,970	-	-	$130,176,970
TOTAL	$10,717,794,025	$3,956,370,965	$871,857,085	$231,028,886	$15,777,050,960

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