COMMONWEALTH OF KENTUCKY

KENTUCKY ASSET/LIABILITY COMMISSION

SEMI-ANNUAL REPORT

For the period ending December 31, 2019

46th Edition

Andy Beshear, Governor of the Commonwealth of Kentucky

Holly M. Johnson, Secretary of the Finance and Administration Cabinet

Ryan Barrow, Executive Director, Office of Financial Management

An electronic copy of this report

may be viewed at:

http://finance.ky.gov/services/ofm/Pages/semi-annualreports.aspx

The Commonwealth's Comprehensive Annual Financial Report (CAFR)

may be viewed at:

http://finance.ky.gov/services/statewideacct/Pages/ReportsandPublications.aspx

The Municipal Securities Rulemaking Board (MSRB)

Electronic Municipal Market Access (EMMA)

may be viewed at:

http://emma.msrb.org/

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INTRODUCTION

The Kentucky Asset/Liability Commission (ALCo or the Commission) presents its 46th semi-annual report to the Capital Projects and Bond Oversight Committee and the Interim Joint Committee on Appropriations and Revenue pursuant to KRS 56.863 (11) for the period beginning July 1, 2019 through December 31, 2019.

Provided in the report is the current structure of the Commonwealth's investment and debt portfolios and the strategy used to reduce both the impact of variable revenue receipts on the budget of the Commonwealth and fluctuating interest rates on the interest-sensitive assets and interest-sensitive liabilities of the Commonwealth. Additionally, an analysis of the Commonwealth's outstanding debt is provided as well as a description of all financial agreements entered into during the reporting period. And finally, the report makes available a summary of gains and losses associated with outstanding financial agreements.

Several factors on both the state and national level had an impact on activity during the reporting period. The most significant factors were:

On the national level

- The Federal Reserve Board of Governors voted in three of the four remaining meetings in 2019 to reduce the federal funds rate 0.25%, ending the year with a target range of 1.50% – 1.75%.
- The unemployment rate continued the trend lower ending December 2019 at 3.5% from 3.7% in June 2019.
- The annual rate of economic growth as measured by GDP remained consistent over the last two quarters of 2019. The seasonally adjusted rate for both the third and fourth quarter was 2.1%.
- Inflation finished the second half of 2019 muted with the core rate (ex-energy and food) ending at 1.6% as of December 2019.

On the international level

- Partly as a result of the trade war with the United States, economies in China and other Asian countries are weakening.
- China's first reported case of Covid-19 was identified in early December.

On the state level

- General Fund receipts totaled $5.749 billion for the first six months of Fiscal Year (FY) 2020, representing a 2.7% increase over the same period in 2019. The revised official General Fund revenue estimate for FY20 calls for revenue to grow 1.6% compared to FY19 actual receipts. Based on the first half results, General Fund revenues must increase 0.6% for the remainder of the FY to meet the official estimate of $11.576 billion.

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- Road Fund receipts totaled $779.7 million for the first six months of FY20, representing a 1.1% increase over the same period in 2019. The official Road Fund revenue estimate for FY20 calls for revenue to increase 0.4% compared to FY19 actual receipts. Based on the first half results, Road Fund revenues can decrease 0.2% for the remainder of the FY and meet the official estimate of $1.573 billion.
- Kentucky non-farm employment grew by 1.4% in the second quarter of FY20, continuing the pattern of growth from the last 10 quarters.
- Kentucky personal income grew by 4.9% in the second quarter of FY20. Personal Income has grown an average of 1.0% per quarter on an adjacent-quarter basis.
- Construction employment was the fastest growing sector in the second quarter of FY20, gaining 3.4%, and it represented 4.1% of total Kentucky non-farm employment in the second quarter of FY20.
- Large unfunded pension liabilities continue to put stress on the Commonwealth.
- Implementation of bond authorizations from prior-year sessions of the General Assembly continued. Bond issues for the period are discussed later in the report.

*The information reported is accurate as of December 31, 2019. Estimates made as that time may be revised due to events caused by the spread of Covid-19.

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Market Overview

The U.S. economy continued to grow moderately last year and the labor market strengthened further. With these gains, the current expansion entered its 11th year, becoming the longest on record. However, inflation was below the Federal Open Market Committee's (FOMC) longer-run objective of 2%. In light of the implications of global developments for the economic outlook as well as muted inflation pressures, the FOMC lowered the target range for the federal funds rate at its July, September, and October meetings, bringing it to the current range of 1.50% to 1.75%. In the Committee's subsequent meetings, it judged that the prevailing stance of monetary policy was appropriate to support sustained expansion of economic activity, strong labor market conditions, and inflation returning to the Committee's 2% objective.

Employment

The labor market continued to strengthen. Payroll employment growth remained solid in the second half of 2019, and while the pace of job gains during the year as a whole was somewhat slower than in 2018, it was faster than what is needed to provide jobs for new entrants to the labor force. The unemployment rate moved down from 3.9% at the end of 2018 to 3.5% in December, and the labor force participation rate increased.

Inflation

After having been close to the FOMC's objective of 2% in 2018, consumer price inflation, as measured by the price index for personal consumption expenditures, moved back below 2% last year, where it has been during most of the current expansion. The 12-month change was 1.6% in December 2019, as was the 12-month measure that excludes consumer food and energy prices (core inflation), which historically has been a better indicator of where inflation will be in the future than the overall figure. The downshift relative to 2018 partly results from particularly low readings in the monthly price data in the early part of last year that appear to reflect transitory influences. Survey-based measures of longer-run inflation expectations have been broadly stable since the middle of last year, and market based measures of inflation compensation are little changed on net basis.

Economic Growth

Real gross domestic product (GDP) increased at a moderate rate in the second half of 2019, although growth was somewhat slower than in the first half of the year and in 2018. Consumer spending rose at a moderate pace, and residential investment turned up after having declined in 2018 and the first half of 2019. In contrast, business fixed investment declined in the second half of 2019, reflecting a number of factors that likely include trade policy uncertainty and weak

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global growth. Downside risks to the U.S. outlook seem to have receded in the latter part of the year, as the conflicts over trade policy diminished somewhat, economic growth abroad showed signs of stabilizing, and financial conditions eased.

Interest Rates

After moving significantly lower over the first half of 2019, nominal Treasury yields also fell sharply in August, largely in response to investors' concerns regarding trade tensions between the United States and China and the global economic outlook. Later in the year, as these concerns abated, Treasury yields rose, the yield curve steepened, and uncertainty about near-term Treasury yields declined. Since the middle of 2019, Treasury yields ended lower on net. Consistent with changes in the yields on nominal Treasury securities, yields on 30-year agency mortgage-backed securities (MBS) an important determinant of mortgage interest rates decreased, since the middle of 2019 and remained low by historical standards. Meanwhile, yields on both investment and speculative grade corporate bonds continued to decline and also stayed low by historical standards. Spreads on corporate bond yields over comparable maturity Treasury yields narrowed moderately over the second half of 2019 and remained in the lower end of their historical distribution.

Decreases in the FOMC's target range for the federal funds rate in July, September, and October transmitted effectively through money markets, with yields of money market instruments moving lower in response to the FOMC's policy actions.

The effective federal funds rate moved nearly in parity with the interest rate paid on reserves and was closely tracked by the overnight Eurodollar rate. Other short-term interest rates, including those on commercial paper and negotiable certificates of deposit, also moved down in line with decreases in the policy rate. Domestic short-term funding markets were volatile in mid-September amid large flows related to corporate tax payments and settlement of Treasury securities and experienced significant tightening.

Equities

Equity prices fluctuated in August and September along with investors' concerns about trade developments and the economic outlook. Later in 2019, equity prices rose substantially and were reportedly boosted by greater certainty among investors that monetary policy would remain accommodative in the near term. Gains were spread across most major economic sectors, with the exception of the energy sector, for which stock prices declined markedly.

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Outlook

The FOMC has continued to emphasize that the actual path of monetary policy will depend on the evolution of the economic outlook and risks to the outlook as informed by incoming data. Specifically, in deciding on the timing and size of future adjustments to the target range for the federal funds rate, the Committee is expected to assess economic conditions relative to its objectives of maximum employment and 2% inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

A substantial majority of participants projected a federal funds rate of 1.63% for the end of 2020. Four participants assessed that the most likely appropriate rate at year-end for 2020 would be 1.88%. For subsequent years, the medians of the projections were 1.88% at the end of 2021 and 2.13% at the end of 2022. The distribution of participants' estimates of the longer-run level of the federal funds rate was little changed, and the median estimate was unchanged from September at 2.50%.

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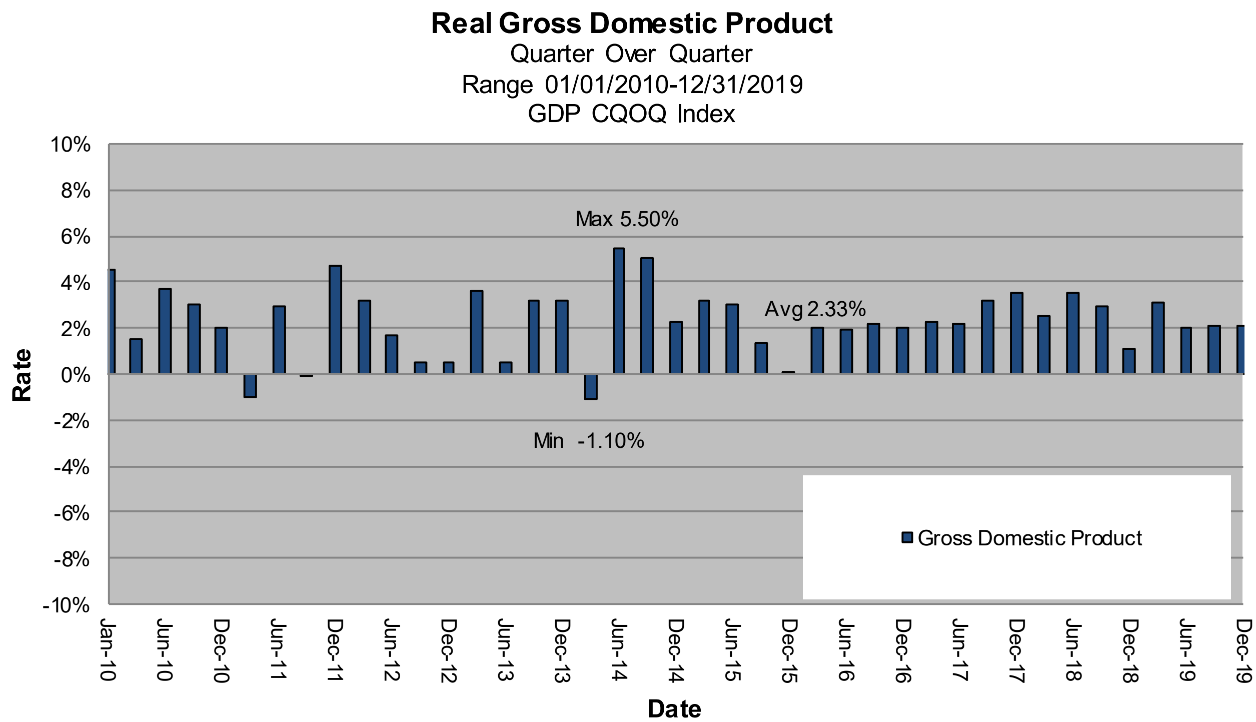
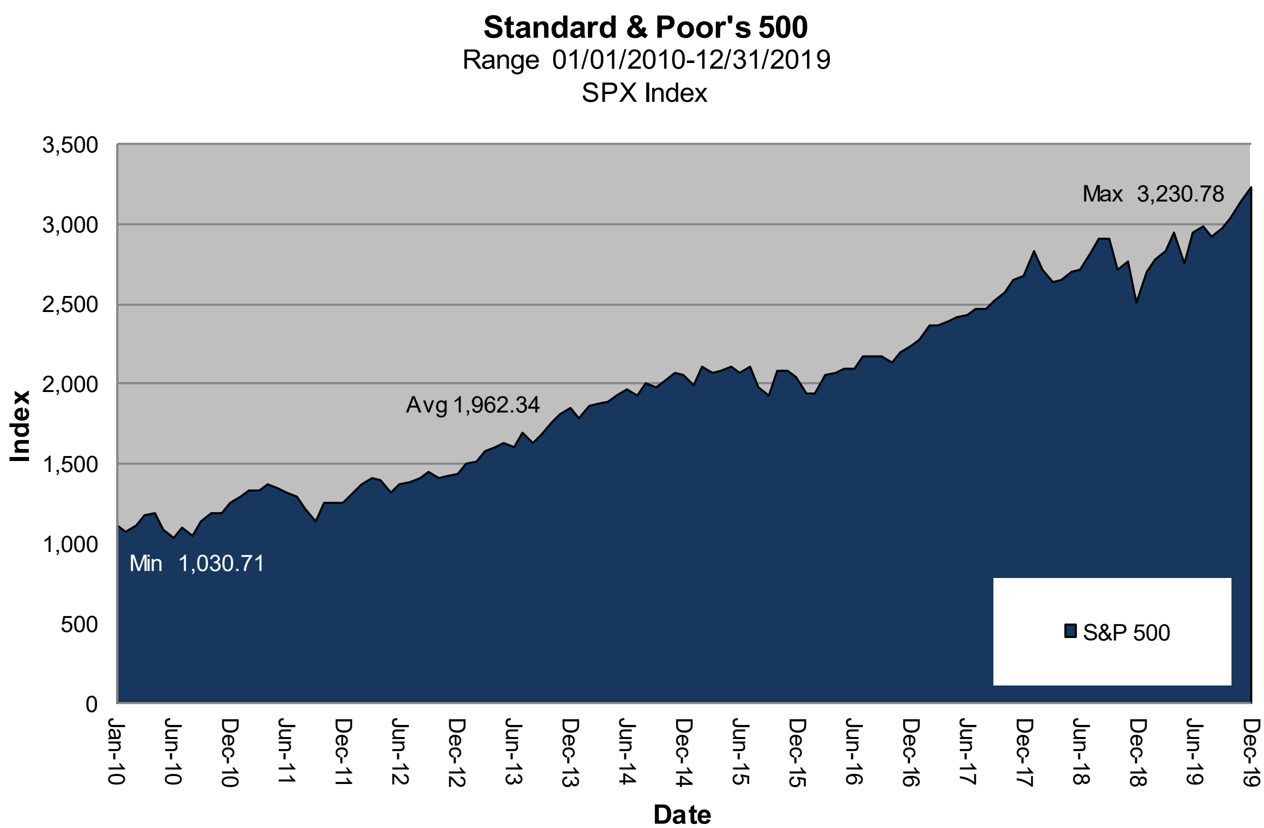
Real Gross Domestic Product & Standard & Poor's 500





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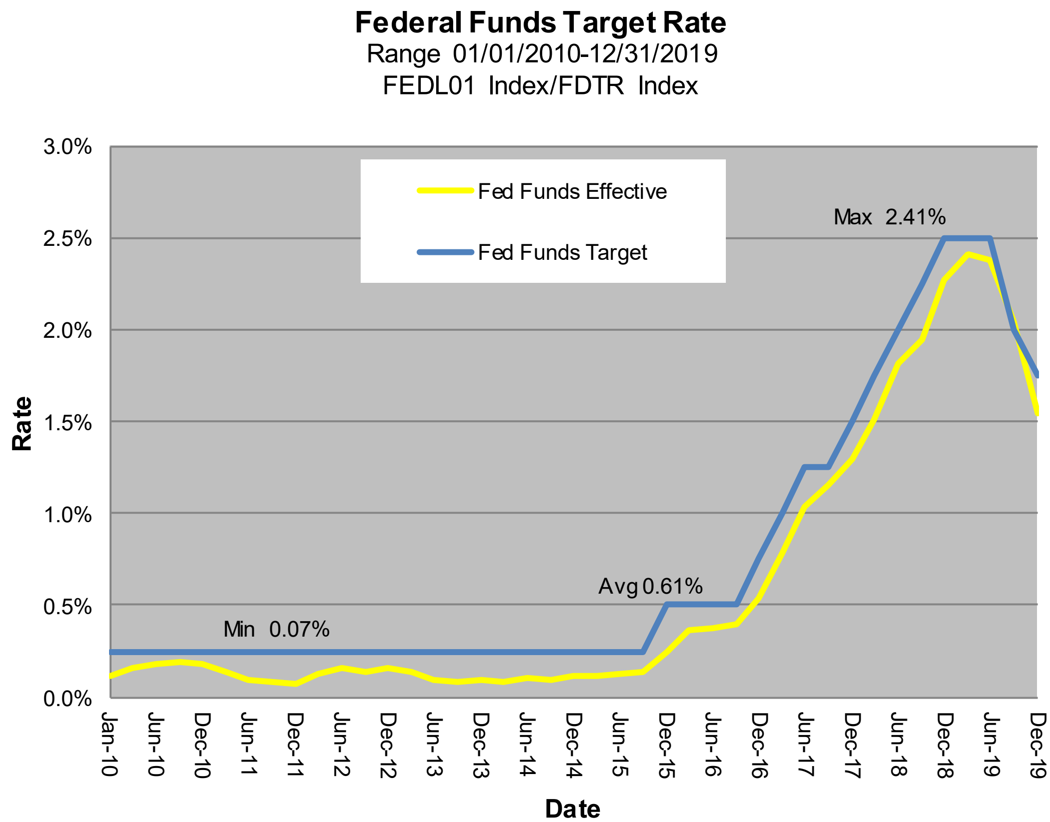
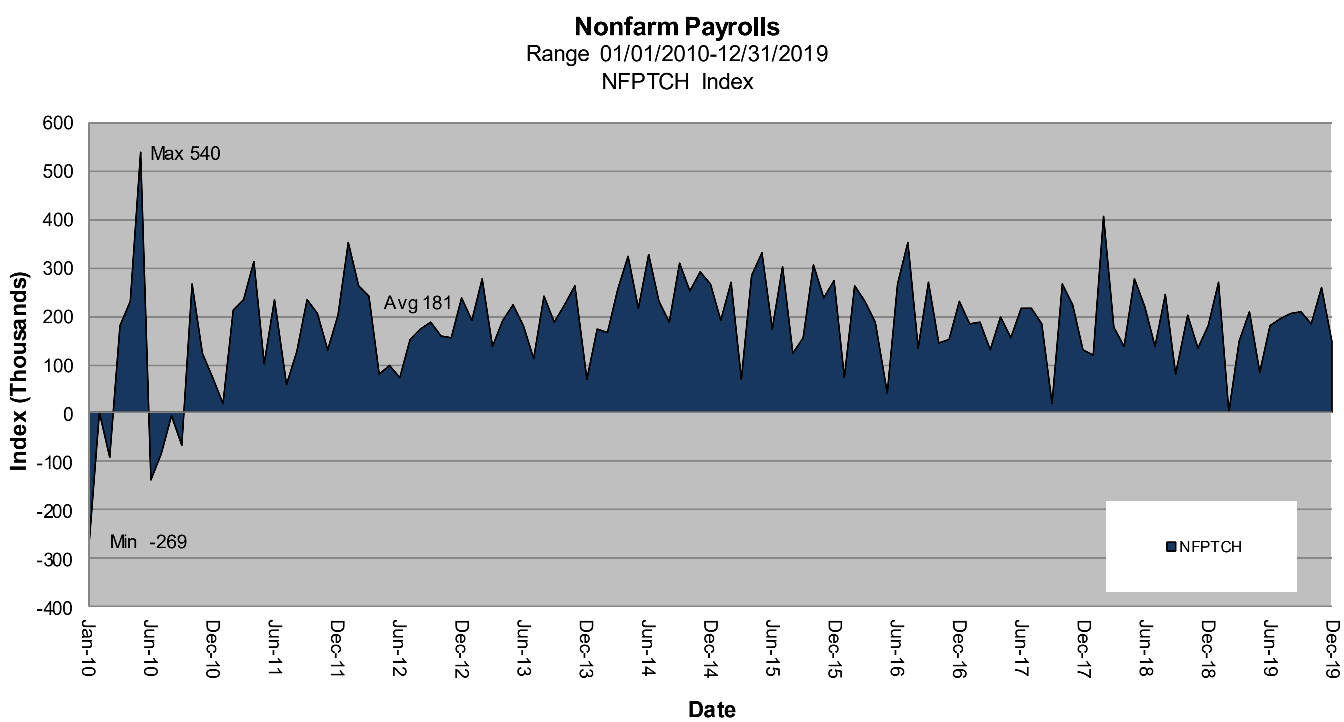
Federal Funds Target Rate & NonFarm Payrolls





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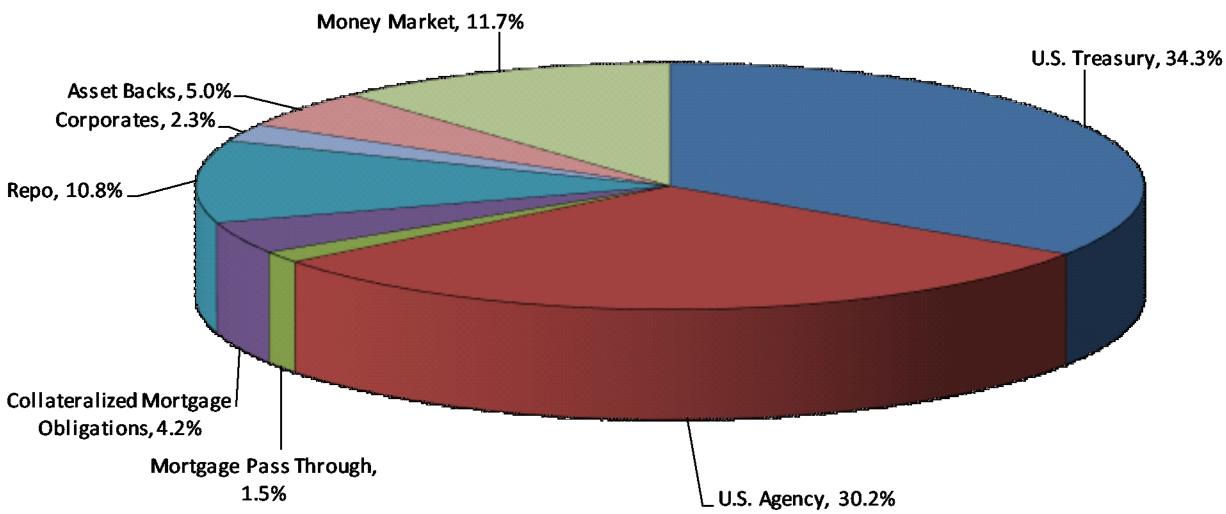
Portfolio Management

For six months ended December 31, 2019, the Commonwealth's investment portfolio was approximately $4.1 billion. The portfolio was invested in U.S. Treasury Securities (34.3%), U.S. Agency Securities (30.2%), Mortgage-Backed Securities (5.7%), Repurchase Agreements (10.8%), Corporate Securities (2.3%), Asset-Backed Securities (5.0%), and Money Market Securities (11.7%). The portfolio had a market yield of 1.51% and an effective duration of 0.52 of a year.

The total portfolio is broken down into four investment pools. The pool balances as of December 31, 2019 were negative $104.8 million (Short Term Pool), $1.4 billion (Limited Term Pool), $2.3 billion (Intermediate Term Pool) and $409.6 million (TRAN Pool).

Distribution of Investments as of December 31, 2019



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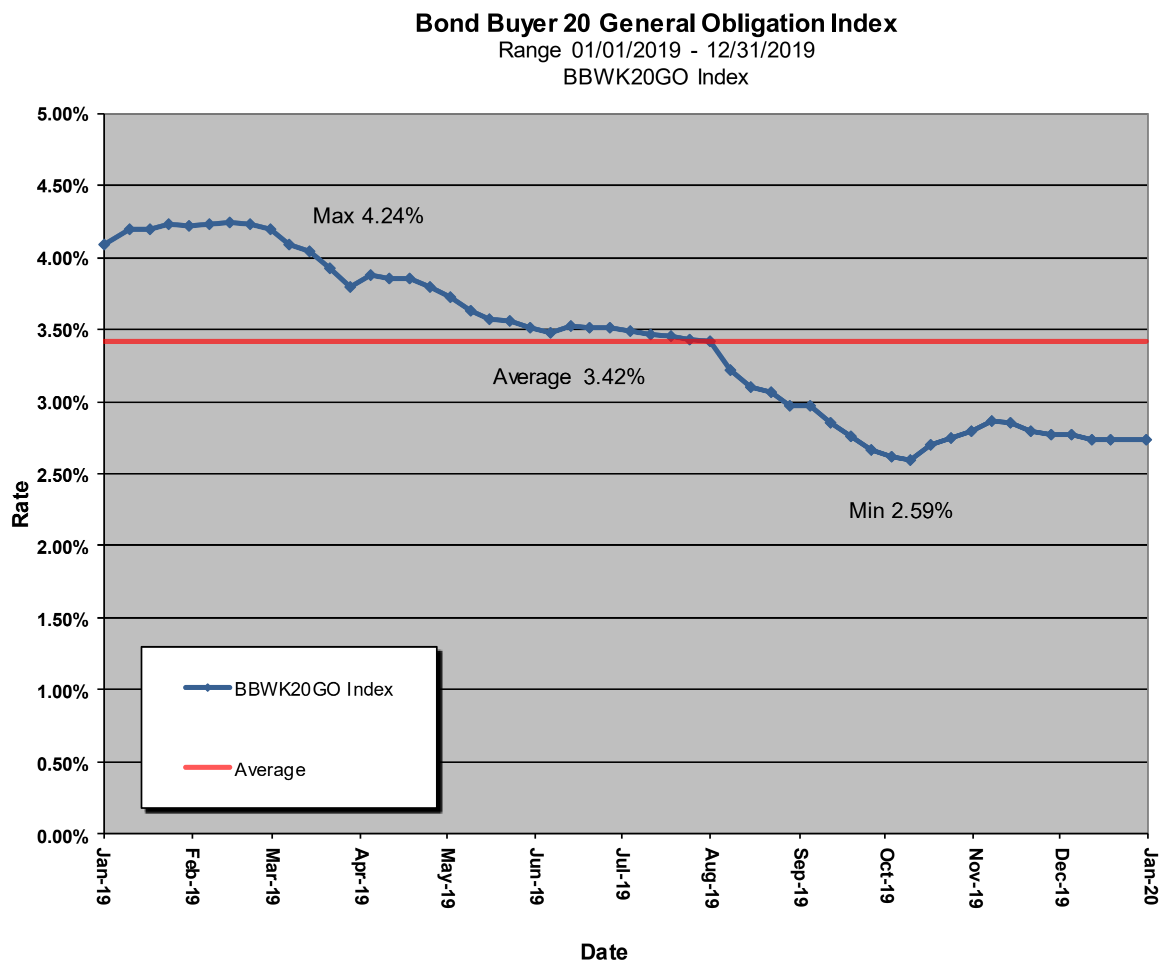
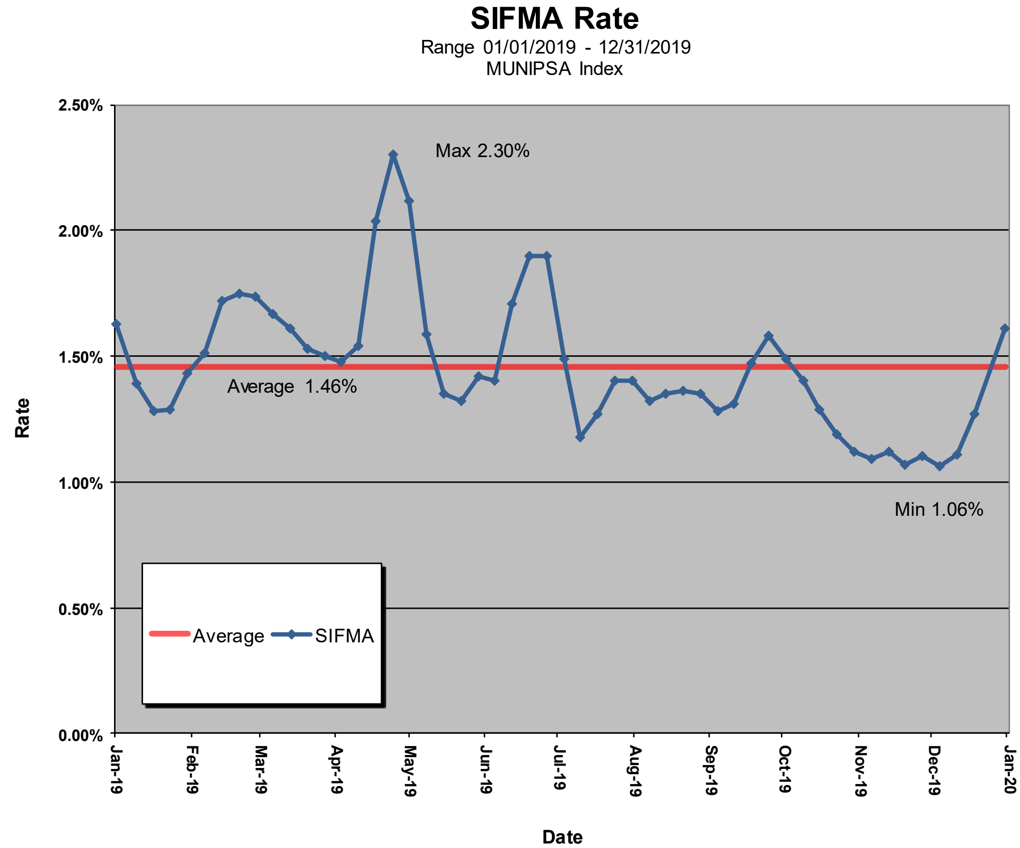
Tax-Exempt Interest Rates and Relationships

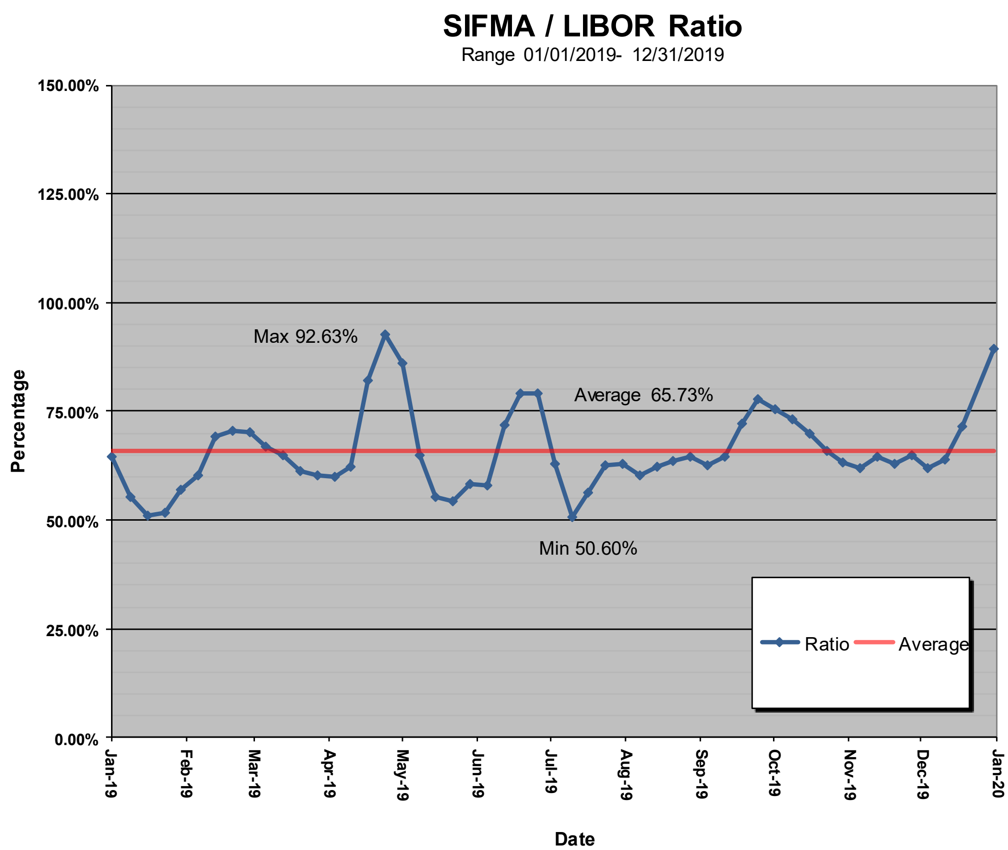
The Bond Buyer 20-year General Obligation Index averaged 3.42% for Calendar Year 2019. The high was 4.24% in February 2019 and the low was 2.59% in October 2019.

The Securities Industry and Financial Markets Association (SIFMA) Municipal Swap Index averaged 1.46% for Calendar Year 2019. The high was 2.30% in April 2019 and the low was 1.06% in December 2019. The 30-day London Interbank Offered Rate (LIBOR) averaged 2.22% for Calendar Year 2019. The high was 2.52% in January 2019 and the low was 1.70% toward the end of November 2019. During the year, SIFMA traded at a high of 92.63% of the 30-day LIBOR in late April 2019, at a low of 50.60% in early July 2019, and at an average of 65.73% for the Calendar Year.



SIFMA & SIFMA/LIBOR Ratio





CREDIT MANAGEMENT

Year-End Reflection

Consumer spending dipped in the second half of 2019 despite an accommodative policy from the Federal Reserve that lowered interest rates three times. While personal income growth slowed, household debt continued to advance to a record $14 trillion with the fastest annual growth since 2007. After a sharp decline in the first half of the year, mortgage rates stabilized but remained near a multiyear low, providing a jolt to both new and existing home sales. Auto loan delinquencies have risen to an eight-year high despite a strong labor market. Growth in the total amount of outstanding student loans leveled off and delinquency rates were flat.

Corporate debt continued to rise to record levels while also degrading in overall quality as BBB rated bonds reached a record 50% of all outstanding U.S. corporate bonds. A wave of downgrades following a recession could cause financial stability concerns if a significant amount of corporate debt loses investment grade status. Respondents to the Senior Loan Officer Opinion Survey on Bank Lending Practices, reported that lending standards for commercial and industrial loans remained largely unchanged. For those lenders that tightened standards, an uncertain economic outlook was often cited as the cause. Lending standards for commercial real estate loans also remained mostly unchanged. On the consumer side, demand for most mortgage loans categories strengthened in response to lower mortgage rates while demand in home equity lines of credit shrank.

The second half of 2019 saw several downgrades to companies on the State Investment Commission Corporate Credit Approved list. HSBC, Nestle, Pfizer, Oracle, and IBM all saw their credit rating revised downward. The biggest change was Boeing, who saw multiple downgrades and in December was removed entirely from the Corporate Credit Approved list.

Credit Process

Our credit strategy invests in creditworthy corporate issuers having a long-term rating of A3/A-/A- or better as rated by Moody's, S&P, or Fitch. The strategy focuses on adding value through a disciplined approach in the credit selection process. With independent research and prudent diversification with respect to industries and issuers, the goal is to deliver consistent longer-term investment performance over U.S. Treasuries.

Default Monitoring

The Bloomberg credit risk model is the main tool for default monitoring. The default likelihood model is based on the Merton distance-to-default (DD) measure, along with additional economically and statistically relevant factors. Firms are assigned a default risk measure as a high-level summary of their credit health using an explicit mapping from default likelihood to default risk.

A daily report is generated using the approved list and their peers enabling us to track market activity in selected names including Credit Default Swaps (CDS).

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Industry/Company Analysis

We use a combination top-down and bottom-up approach for investing. The top-down approach refers to understanding the current (and future) business cycle or the "big picture" of the economy and financial world in order to identify attractive industries. Once industries are identified, a bottom-up approach is utilized where we focus on specific company fundamentals, picking the strongest companies within a sector.

Fundamental analysis is then performed looking at competitive position, market share, operating history/trends, management strategy/execution, and financial statement ratio analysis.

Approved List

Once analysis has been completed, the State Investment Commission approves the list on a quarterly basis. During the second half of 2019, Boeing was removed from the Corporate Credits Approved list. The Corporate Credits Approved list as of December 2019 is found in Appendix A.

State Investment Commission

The State Investment Commission is responsible for investment oversight with members of the Commission being Governor (Chair), State Treasurer (Vice Chair), Finance and Administration Cabinet Secretary and two Gubernatorial Appointees. The investment objectives are threefold: preservation of principal, maintain liquidity to meet cash needs and maximization of returns. The Office of Financial Management is staff to the SIC and follows KRS 42.500, 200 KAR 14.011, 14.081, and 14.091 when making investment decisions.

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Authorized But Unissued Debt

As of December 31, 2019, the Commonwealth's 2018-2020 budget includes authorized debt service for over $1.01 billion of projects supported by the General Fund, Agency Funds, and the Road Fund, which were approved during prior sessions of the General Assembly. This pipeline of projects is anticipated to be bond financed over a number of future biennia. The speed at which this financing takes place is dependent upon factors managed by and between the project sponsors, the Office of the State Budget Director and the Office of Financial Management.

2010 Extraordinary (Special) Session

The 2010 Extraordinary (Special) Session of the General Assembly delivered House Bill 1 (Executive Branch Budget other than Transportation Cabinet) and House Bill 3 (Kentucky Transportation Cabinet Budget) to the Governor on May 29, 2010, establishing an Executive Branch Budget for the biennium ending June 30, 2012. The Governor took final action on the bills on June 4, 2010. Together, the bills authorized bond financing for projects totaling $1,980.2 million to support various capital initiatives of the Commonwealth. Of the total authorization, $507.4 million is General Fund supported, $515.3 million is Agency Restricted Fund supported, $522.5 million is supported by Road Fund appropriations and $435 million is Federal Highway Trust Fund supported through Grant Anticipation Revenue Vehicle Bonds designated for the US-68/KY-80 Lake Barkley and Kentucky Lake Bridges Project and the Louisville-Southern Indiana Ohio River Bridges Project. A portion of the General Fund, Agency Restricted Fund, Road Fund and Federal Highway Trust Fund authorizations have been permanently financed.

2012 Regular Session

The 2012 Regular Session of the General Assembly delivered House Bill 265 (Executive Branch Budget other than Transportation Cabinet) to the Governor on March 30, 2012 and House Bill 2 (Kentucky Transportation Cabinet Budget) to the Governor on April 20, 2012, establishing an Executive Branch Budget for the biennium ending June 30, 2014. The Governor took final action on House Bill 265 on April 13, 2012 and took final action on House Bill 2 on May 2, 2012. Together, the bills authorized bond financing for projects totaling $238.86 million to support various capital initiatives of the Commonwealth. Of the total authorization, $182.86 million is General Fund supported, $12.5 million is supported by Road Fund appropriations, and $43.5 million is Agency Restricted Fund supported. A portion of the General Fund authorization and the total Agency Restricted Fund authorizations listed above have been permanently financed.

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2014 Regular Session

The 2014 Regular Session of the General Assembly delivered House Bill 235 (Executive Branch Budget other than Transportation Cabinet) to the Governor on March 31, 2014 and House Bill 236 (Kentucky Transportation Cabinet Budget) to the Governor on April 15, 2014, establishing an Executive Branch Budget for the biennium ending June 30, 2016. The Governor took final action on House Bill 235 on April 11, 2014 and took final action on House Bill 236 on April 25, 2014. Together, the bills authorize bond financing for projects totaling a net amount of $1,364.05 million to support various capital initiatives of the Commonwealth due to $105 million in previously authorized debt that was de-authorized in House Bill 235. Of the total authorization, $742.77 million is General Fund supported, $721.28 million is supported by Agency Restricted Fund appropriations, and $5.0 million is Road Fund supported. A portion of the General Fund and Agency Restricted Fund, and all of the Road Fund authorizations listed above have been permanently financed.

2016 Regular Session

The 2016 Regular Session of the General Assembly delivered House Bill 303 (Executive Branch Budget other than the Transportation Cabinet) and House Bill 304 (Kentucky Transportation Cabinet Budget) to the Governor on April 15, 2016, establishing an Executive Branch Budget for the biennium ending June 30, 2018. The Governor took final action on House Bill 303 and House Bill 304 on April 27, 2016. Together, the bills authorize bond financing for projects totaling a net amount of $1,251.24 million to support various capital initiatives of the Commonwealth with $9.0 million of previously authorized debt de-authorized in House Bill 303. Of the total authorization, $582.99 million is General Fund supported and $677.25 million is supported by Agency Restricted Fund appropriations. No additional Road Fund supported authorizations were appropriated. A portion of the General Fund and Agency Restricted Fund authorizations listed have been permanently financed.

2017 Regular Session

The 2017 Regular Session of the General Assembly delivered House Bill 13 and House Bill 482 to the Governor on March 30, 2017. House Bill 13 authorized a general fund bond supported project for the Kentucky Department of Veterans' Affairs for the financing of the Bowling Green Veterans Center totaling $10.5 million. House Bill 482 authorized a general fund bond supported project for the Kentucky Economic Development Finance Authority Loan Pool to support programs administered by the Kentucky Economic Development Finance Authority for the sole purpose of facilitating a private sector investment of not less than

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$1 billion in one or more locations in the Commonwealth. The Governor took final action on House Bill 13 and House Bill 482 on April 11, 2017. The total authorization under House Bill 482 has been permanently financed.

2018 Regular Session

The 2018 Regular Session of the General Assembly delivered House Bill 200 (Executive Branch Budget other than Transportation Cabinet) to the Governor on April 2, 2018 and House Bill 201 (Kentucky Transportation Cabinet Budget) to the Governor on April 14, 2018, establishing an Executive Branch Budget for the biennium ending June 30, 2020. The Governor vetoed House Bill 200 on April 9, 2018 and on April 13, 2018 the General Assembly enacted House Bill 200 over the Governor's veto. On April 14, 2018, the General Assembly delivered House Bill 265 (amending the 2018-2020 Executive Branch Budget Bill) to the Governor. The Governor took final action on House Bill 201 on April 26, 2018. House Bill 265 became law without the Governor's signature on April 27, 2018. Together, the bills authorize bond financing for projects totaling a net amount of $972.7 million to support various capital initiatives of the Commonwealth whereas $26.62 million in previously authorized debt was de-authorized in House Bill 200 and House Bill 201. Of the total authorization, $377.69 million is General Fund supported, $602.89 million is supported by Agency Fund appropriations, and $18.75 million is Road Fund supported.

2019 Regular Session

The 2019 Regular Session of the General Assembly delivered House Bill 268 to the Governor on March 14, 2019. House Bill 268 authorized general fund bond supported projects totaling $75 million to support various capital initiatives of the Commonwealth. The Governor took final veto action on House Bill 268 on March 26, 2019. The Legislature partially overrode the Governor's vetoes on March 28, 2019. The authorization of $75 million in General Fund supported authorization under House Bill 268 was appropriated for Fiscal Year 2020.

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Authorized but Unissued Debt Summary

The balance of prior bond authorizations of the General Assembly dating from 2010 through 2019 totals $1,101.40 million. Of these prior authorizations, $413.18 million is General Fund supported, $625.72 million is Agency Restricted Fund supported, $62.50 million is supported by Road Fund appropriations. HB 201 from the 2018 Regular Session de-authorized the remaining $59.50 million which was authorized for the Federal Highway Trust Fund.

The following table summarizes, in aggregate, the information in connection with authorized but unissued debt of the Commission as described in this section.

Summary of Authorized but Unissued Debt by Fund Type As of December 31, 2019:

Legislative Session (Year)	General Fund (millions)	Agency Fund (millions)	Road Fund (millions)	TOTAL (millions)
2010	27.03	17.50	50.00	94.53
2012	9.46	-	12.50	21.96
2014	44.07	9.00	-	53.07
2016	106.17	64.84	-	171.01
2017	10.50	0.00	-	10.50
2018	315.95	534.38	-	850.33
2019	75.00			75.00
Bond Pool Proceeds	(175.00)	-	-	(175.00)
TOTAL	413.18	625.72	62.50	1,101.40

The balance of prior bond authorizations of the General Assembly dating from FY 2010 through FY 2019 totals $1,101.40 million. Of these prior authorizations, $413.18 million is General Fund supported, $625.72 million is Agency Restricted Fund supported, and $62.5 million is supported by Road Fund appropriations.

Looking Forward

The Commission continues to monitor the municipal bond interest rate market and uses this information together with other relevant market data to evaluate whether or not the interim financing program would provide and economic advantage in conjunction with the fixed rate bonds.

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Ratings Update

The rating agencies continually monitor the Commonwealth's budgetary policies and actual performance in areas such as revenue, the economy, pensions, and debt management. Pension unfunded liabilities have continued to put downward pressure on the Commonwealth's credit ratings.

With the issuance of State Property and Buildings Commission project No. 122 in October of 2019 (discussed in greater detail later) the determination was made to add Kroll Bond Rating Agency's evaluation of that issuance. The Kroll ratings were General Obligation Issuer Implied Rating of AA-, and General Fund Appropriation Rating of A+.

During the reporting period, the remaining ratings below were either affirmed or remained unchanged from the previous reporting period.

The Ratings Picture at December 31, 2019:

	Moody's	S & P	Fitch	Kroll
General Obligation Issuer Rating (GO)	Aa3	A	AA-	AA-
General Fund Appropriation Rating (GF)[i]	A1	A-	A+	A+
Road Fund Appropriation Rating (RF)[i]	Aa3	A-	A+	—
Federal Highway Trust Fund Appropriation Rating[i]	A2	AA	A+	—

[i]All outstanding bonds do not necessarily receive a rating

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Cash Management Strategies

All cash management strategies are market and interest rate dependent. Alternatives are listed below:

Tax and Revenue Anticipation Notes (TRAN)

On June 25, 2019 ALCo issued $400 million of Tax and Revenue Anticipation Notes (TRAN) to provide additional liquidity to the General Fund. The transaction closed on July 10, 2019, and OFM staff certified that as of August 1, 2019 state statutory and Internal Revenue Service safe harbor requirements for the TRAN had been met. Due to the added liquidity for the General Fund and market opportunities at that time, a portion of state investment portfolios were restructured for a longer duration. The cumulative net benefit was estimated at approximately $1.2 million. As of December 31, 2019 the accrued net benefit to the General Fund for the six month period was calculated at $650,090. The total net benefit to the Commonwealth will be calculated June 30, 2020, but is in line with original estimates.

Inter-Fund Borrowing

Cash in one fund is loaned to another fund which is experiencing a short-term cash flow shortfall. Historically, funds are loaned to the short-term fund (General Fund).

As of December 31, 2019 the total available liquid resources available to the General Fund were $4.055 billion.

Bond Anticipation Notes (BAN)

A short-term interest-bearing security issued in advance of a larger, future bond issue. Bond anticipation notes are smaller short-term bonds that are issued to generate funds for upcoming projects.

No BANs were issued during the reporting period

Notes (Direct Loans)

""Funding notes" means notes issued under the provisions of KRS 56.860 to 56.869 by the commission for the purpose of funding:

(a) Judgments, with a final maturity of not more than ten (10) years; and

(b) The finance or refinance of obligations owed under KRS 161.550(2) or 161.553(2)

"Project notes" means notes issued under the provisions of KRS 56.860 to 56.869 by the commission with a final maturity of not more than twenty (20) years for the purpose of funding authorized projects, which may include bond anticipation notes.

No Notes were issued during the reporting period

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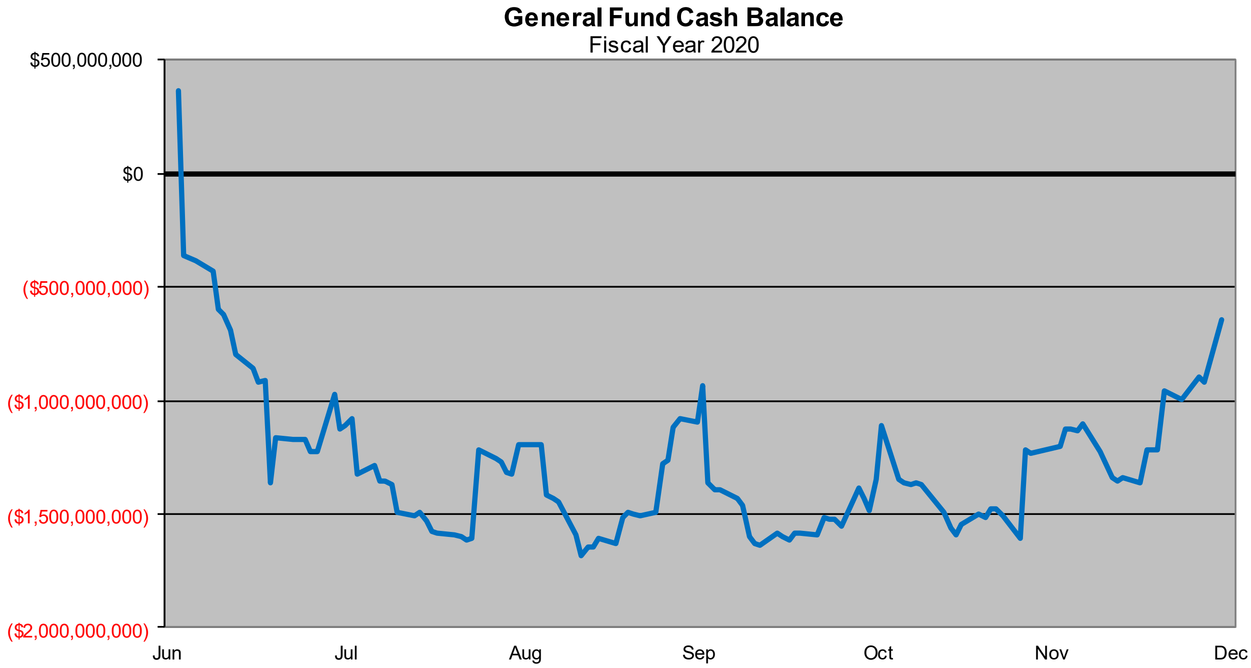

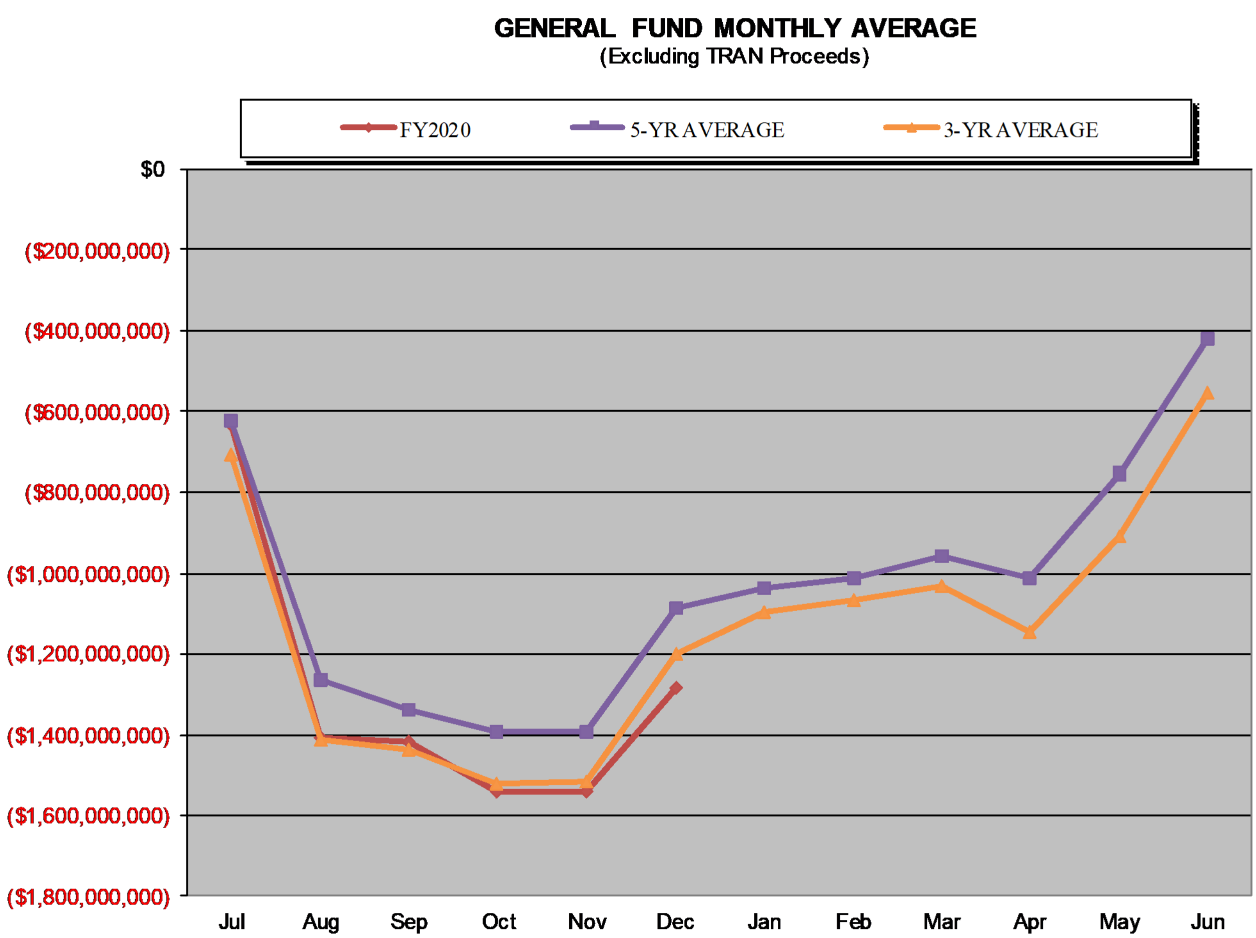

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ALCo Financial Agreements

As of December 31, 2019, ALCo had three financial agreements outstanding, with a net notional exposure amount of $134,850,000. These financial agreements are described in the section below and the terms of these transactions are detailed in Appendix B. No additional financial agreements were executed during the reporting period.

General Fund – Floating Rate Note Hedges

In May, 2007, ALCo issued $243.08 million of Floating Rate Notes (FRNs) to permanently finance $100 million of General Fund bond supported projects and to advance refund certain outstanding State Property and Buildings Commission (SPBC) bonds for present value savings. The transaction entailed ALCo issuing four FRNs, each paying a rate of interest indexed to 3-Month LIBOR plus a fixed spread. Integrated into the transaction were four separate interest rate swaps which perfectly hedged the floating rates on the FRNs and locked in a fixed rate payable by ALCo on the transaction. The terms of the four interest rate swaps exactly match the notional amount, interest rate, and amortization schedule of the four FRNs and allowed ALCo to elect "super-integrated" tax status on the transaction, whereby it receives similar tax treatment as a fixed rate bond issue under IRS rules.

Under the FRN transaction, the Notes and interest rate swaps were each insured under separate policies by FGIC, which maintained an Aaa/AAA credit rating at the time from Moody's and S&P. Under the terms of the original interest rate swaps, the counterparty (Citibank) could optionally terminate the agreements if the insurer's claims paying rating fell below an A3/A- level. Subsequent to the transaction, FGIC was downgraded multiple times by the credit rating agencies and currently are no longer rated. In December 2008, MBIA (rated A2 by Moody's at the time) reinsured FGIC's municipal insurance portfolio providing additional coverage on the transaction. However, MBIA Insurance Corporation's credit rating was also subsequently downgraded on multiple occasions and is currently rated Caa1 by Moody's and is no longer rated by S&P. In February of 2009, MBIA established a new U.S. public finance financial guaranty insurance company known as National Guaranty Public Finance Corporation (National). National, at no additional charge, provided reinsurance on the FRNs and related swaps. However, on December 22, 2010, S&P downgraded National from A to BBB leaving both of National's claims paying ratings below the required A3/A- level.

In early 2011, ALCo spent considerable time working with Citibank and other parties analyzing a variety of remedies that would prevent the potential early termination of the interest rate swaps. After much consideration, ALCo determined the preferred remedy was

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one offered by Citibank whereby the remaining notional amount of each interest rate swap would be assigned to a new counterparty under the existing financial terms and at no cost to ALCo or the Commonwealth. On February 14, 2011, ALCo, Citibank and the new counterparty, Deutsche Bank AG, executed the assignment of the remaining notional balances of each swap to Deutsche Bank. The terms of the new interest rate swaps with Deutsche Bank were identical to the original swaps, with two exceptions; 1) the new swaps were not insured and there were no insurer provisions contained in the new agreements, and 2) the credit rating triggers under the automatic termination provisions were now symmetrical for both counterparties (ALCo and Deutsche Bank) at A3/A-. Under the original swaps, ALCo's credit rating triggers were Baa2/BBB, but rating recalibrations by the rating agencies caused municipal issuers to be rated on the same scale as corporations and other debt issuing entities, which facilitated the need for equal credit rating triggers for both parties. On July 10, 2014, the credit rating triggers were lowered to Baa3/BBB- for both counterparties. On January 25 2016, Moody's downgraded Deutsche Bank from A3 to Baa1 reflecting changes in Germany's insolvency legislation which took effect in January 2017. The changes resulted in protection from the subordination of certain senior unsecured debt obligations relative to other senior liabilities, including deposits. Moody's downgraded Deutsche Bank once again on May 23, 2016 from Baa1 to Baa2 reflecting "the increased execution challenges Deutsche Bank faces in achieving its strategic plan." Even with two downgrades, Deutsche Bank continues to be in compliance with the swap agreement credit rating threshold of not falling below Baa3. ALCo continues to monitor the credit of our counterparty for compliance with terms of the agreement. Fitch downgraded Deutsche Bank on June 7, 2019 from BBB+ to BBB, but the ratings termination triggers are only related to Moody's and S&P.

Details related to the interest rate swaps as of December 31, 2019 are presented in Appendix B.

Asset/Liability Model

General Fund

The total SPBC debt portfolio as of December 31, 2019 had $3.308 billion of bonds outstanding with a weighted average coupon of 4.94% and a weighted average life of 6.62 years. The average coupon reflects an amount of taxable bonds issued under the Build America Bond Program during 2009 and 2010 as well as continued investor preference for tax-exempt callable premium bonds in the current market at a yield lower than par or discount coupon bonds. The $540.469 million callable portion had a weighted average coupon of 4.63%.

The SPBC debt structure has 45% of principal maturing in 5 years and 72% of principal maturing in 10 years. The ratios are above the rating agencies' proposed target of 27-30% due in 5 years and 55-60% maturing within 10 years,

DEBT MANAGEMENT

primarily influenced by debt restructuring and the minimal amount of long-term new money permanent financings within the last several years.

For the first six months of Fiscal Year 2020 the General Fund had a maximum balance of $631.899 million on July 1, 2019, and a low of negative $1.682 billion on September 9, 2019.

The average and median balances were a negative $1.300 billion and a negative $1.361 billion, respectively. Since the General Fund continued to have a negative available cash balance for the fiscal year, there is little, if anything, that can be done from an asset management point of view beyond current actions.

From a liability management perspective, total Commonwealth General Fund debt service, net of credits is expected to be $1.115 billion for Fiscal Year 2020. This number is significantly higher than the prior year because of the TRAN debt service repayment that will be paid in Fiscal Year 2020. In addition to the Commonwealth General Fund debt service, General Fund debt service of $11.256 million will be provided for the Eastern State Hospital financing that was issued through the Lexington-Fayette Urban County Government in 2011. Also, General Fund debt service of $3.938 million will be provided for the 2015 and 2018 Certificates of Participation (related to the two Commonwealth State office Building projects). These projects are separately identified because they are public private partnerships but they are General Fund supported. Net interest margin will continue to be negative due to low cash balances versus outstanding fixed rate debt, low level of interest rates, and the callability of the debt portfolio.

SPBC 122

On October 30, 2019, SPBC closed $252,090,000 par of General Fund Revenue and Revenue Refunding bonds, Project No. 122 consisting of Series A Revenue Bonds, Series B Refunding Bonds, and Series D Federally Taxable Refunding bonds. The Project No. 122 bond proceeds provided permanent financing for approximately $175 million of General Fund supported capital projects authorized over multiple sessions of the General Assembly, and refunded approximately $94,150,000 par of outstanding SPBC Bonds for present value savings. The transaction achieved an All-In True Interest Cost of 2.751% and a net present value savings of $10,795,564.58 (or 11.466% savings from the refunded bonds). The bonds were issued via negotiated sale with Citigroup serving as senior managing underwriter and Kutak Rock LLP as bond counsel. The bonds achieve ratings of A1/A+//A+ from Moody's, Fitch, and Kroll respectively.

The remaining component of this transaction is the Series C (Forward Delivery) which is expected to close May 4, 2020. This piece of the transaction involves pricing refunding bonds on October 8, 2019 and closing the refunding bonds on May 4, 2020 when the refunded bonds

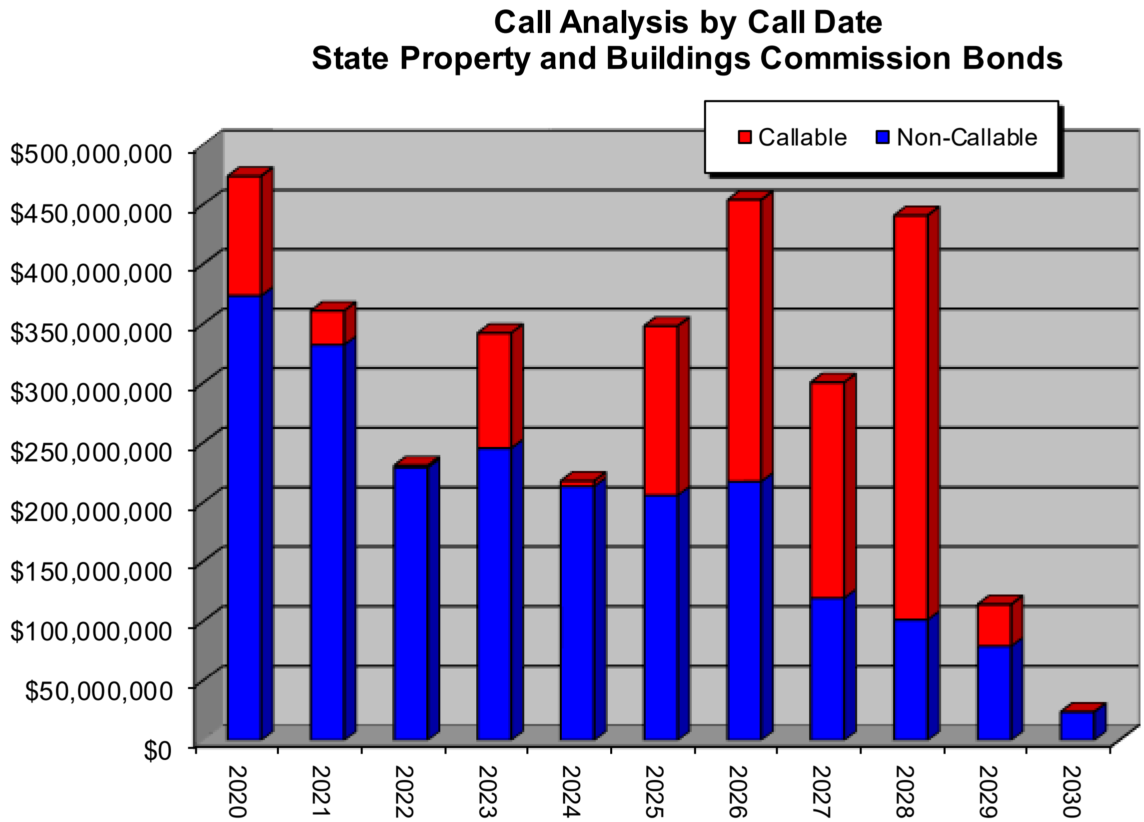
DEBT MANAGEMENT

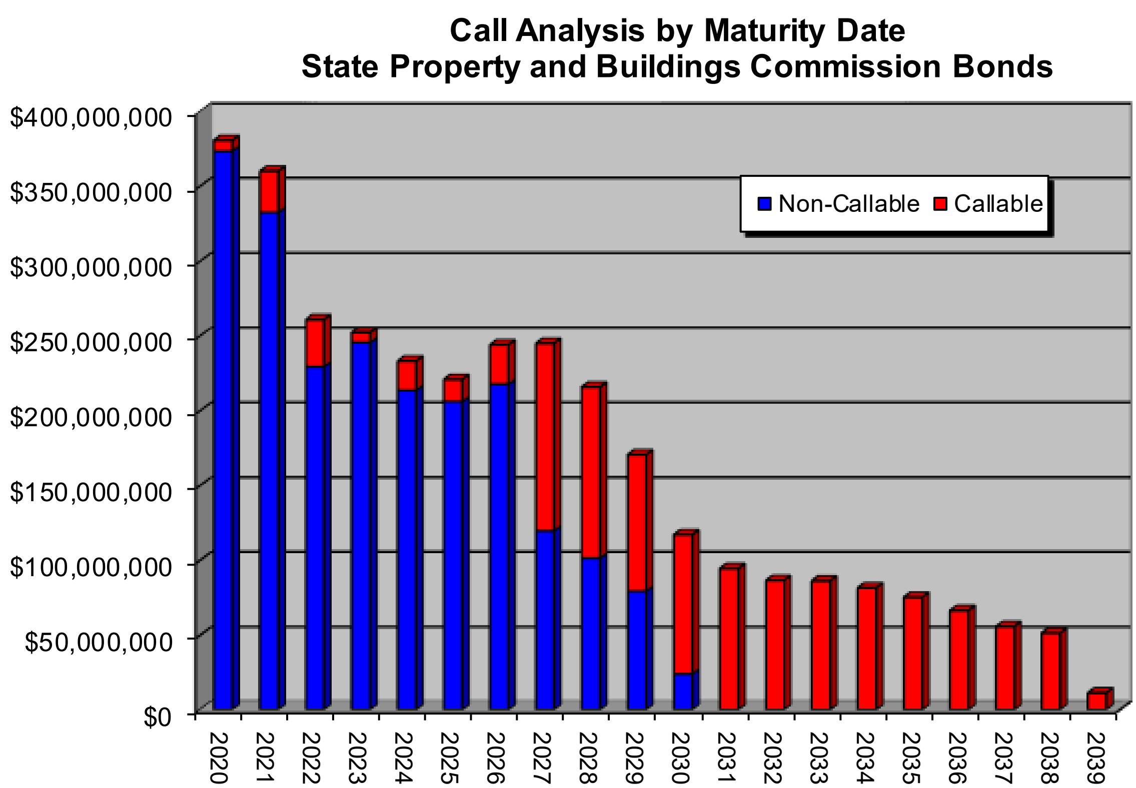
are callable. The $66,710,000 par amount of bonds will refund certain outstanding SPBC Project No. 98 bonds for a net present value savings of $1,742,738 upon close.

Looking Forward

In light of the January 1, 2018 federal tax law change that tightened the parameters by which tax-exempt municipal bonds could be advanced refunded, the Commonwealth has added to the methods of evaluation for examining potential refunding candidates. Since tax advantaged bonds are no longer eligible to be advance refunded on a tax-exempt basis, the Commonwealth now gives consideration to advance refunding its municipal bonds on a taxable basis or through a forward delivery of tax-exempt bonds. Additional diligence and financial modeling is necessary to ensure optimal economic savings in these transactions.

DEBT MANAGEMENT





DEBT MANAGEMENT

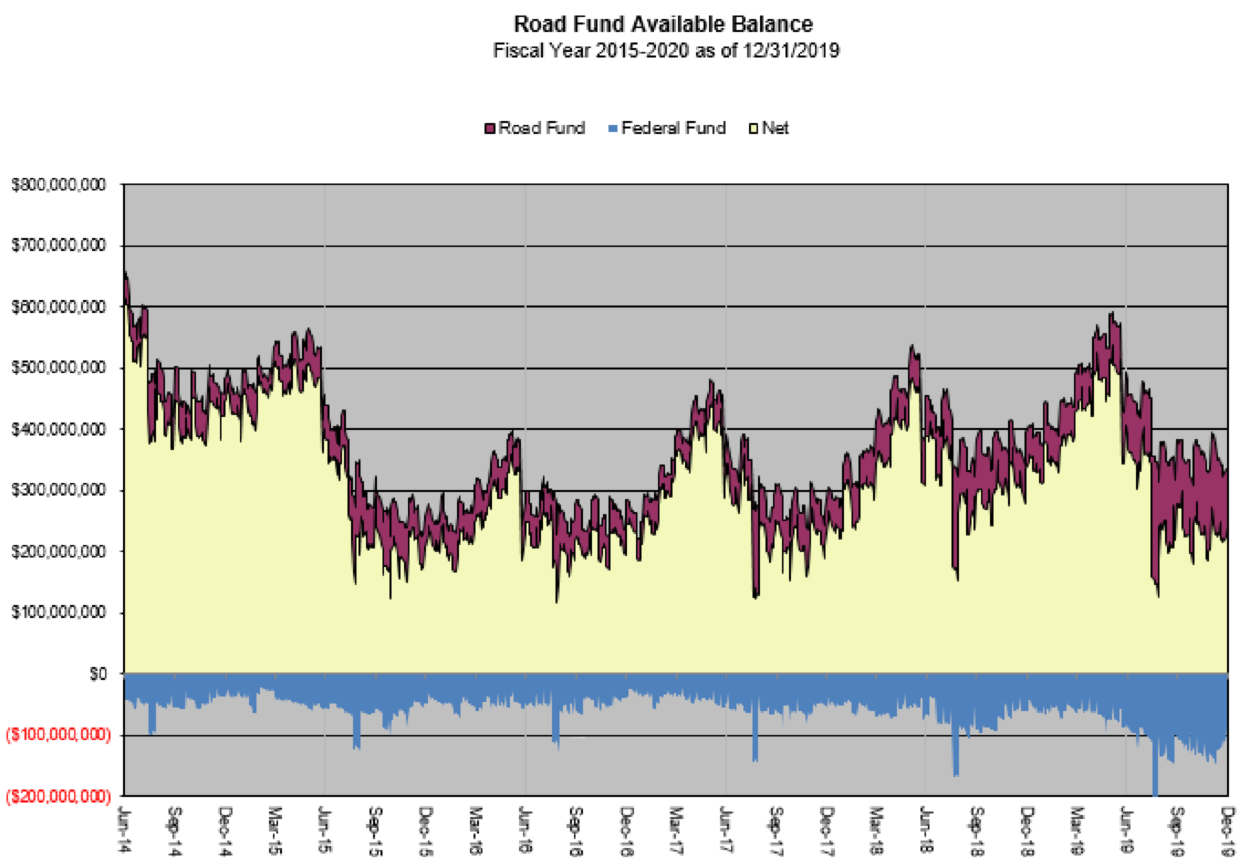
Road Fund

The Road Fund average daily cash balance for the first half of Fiscal Year 2020 was $259 million compared to $303 million for the first half of Fiscal Year 2019. The Road Fund cash was invested in the Intermediate Term Investment Pool which had a duration of 0.88 years as of December 31, 2019. The Road Fund earned a positive $2.568 million on a cash basis for the first half of Fiscal Year 2020 versus a positive $3.799 million for the first half of Fiscal Year 2019. The Road Fund investment earnings declined year-over-year because of lower short term rates and a lower road fund balance, the continued relatively low level of investable balances at certain times during the fiscal year limits the investment opportunities.

As of December 31, 2019, the Turnpike Authority of Kentucky (TAK) had $1.104 billion of bonds outstanding with a weighted average coupon of 4.87% and an average life of 6.18 years.

Road Fund debt service expected to be paid in Fiscal Year 2020 is $151.232 million, resulting in a net interest margin (investment income earned year-to-date less debt service paid) of negative $148.664 million. The negative amount stems from the level of investable balances and a general low level of interest rates on the investment side in addition to the limited callability of fixed rate obligations on the liability side.

No debt related to the road fund was issued or refunded during the reporting period.



SUMMARY

ALCo's approach to managing the Commonwealth's interest-sensitive assets and interest-sensitive liabilities has provided tremendous flexibility and savings in financing the Commonwealth's capital construction program.

Since its inception, ALCo has been instrumental in adding incremental returns on investment income to the Commonwealth's investment portfolio. ALCo has continued to manage General Fund intra-year cashflow deficits through its TRAN program when cost effective. Until Fiscal Year 2010, ALCo had issued a General Fund TRAN each fiscal year since 1998 (with the exception of FY 2004), providing millions of dollars of incremental gains for the General Fund over this time. In fiscal 2019 market conditions again created an opportunity to utilize the TRAN program. ALCo's management approach to project funding has also allowed the Commonwealth to take advantage of short-term yields and achieve millions of dollars in budgetary savings through debt service lapses.

As always, ALCo continues to analyze potential opportunities for savings and to evaluate new financing structures which offer the Commonwealth the ability to diversify risk within its portfolio while taking advantage of market demand for various new or unique products.

APPENDIX

APPENDIX A

STATE INVESTMENT COMMISSION
Corporate Credits Approved For Purchase
as of December 31, 2019

Company Name	Repurchase Agreements	Debt	Notes	Company Name	Repurchase Agreements	Debt	Notes
Apple Inc		Yes	Yes	MUFG Bank LTD/NY		Yes	Yes
Bank of Montreal	Yes	Yes	Yes	MUFG Securities Americas Inc	Yes	No	No
Bank of Nova Scotia	Yes	Yes	Yes	Natixis SA/New York		Yes	Yes
Berkshire Hathaway Inc		Yes	Yes	Nestle Finance International		Yes	Yes
BNP Paribas Securities Corp	Yes	Yes	Yes	Oracle Corp		Yes	Yes
BNY Mellon NA		Yes	Yes	PepsiCo Inc		Yes	Yes
Boeing Co/The		Yes	Yes	Pfizer Inc		Yes	Yes
Canadian Imperial Bank of Comm		Yes	Yes	PNC Bank NA		Yes	Yes
Chevron Corp		Yes	Yes	Praxair Inc		Yes	Yes
Cisco Systems Inc		Yes	Yes	Procter & Gamble Co/The		Yes	Yes
Cooperatieve Rabobank		Yes	Yes	Royal Bank of Canada	Yes	Yes	Yes
Cornell University		Yes	No	Royal Dutch Shell PLC		Yes	Yes
Costco Wholesale Corp		Yes	Yes	Salvation Army		Yes	No
Deere & Co		Yes	Yes	State Street Corp		Yes	Yes
Exxon Mobil Corp		Yes	Yes	Sumitomo Mitsui Trust Bank		Yes	Yes
Guggenheim Securities, LLC	Yes	No	No	Swedbank AB		Yes	Yes
Home Depot Inc		Yes	Yes	Texas Instruments Inc.		Yes	Yes
Honda Motor Co Ltd		Yes	Yes	Toronto-Dominion Bank/The		Yes	Yes
HSBC Bank USA NA		Yes	Yes	Total SA		Yes	Yes
IBRD - World Bank		Yes	Yes	Toyota Motor Corp		Yes	Yes
Intel Corp		Yes	Yes	UBS AG (U.S.)		Yes	Yes
Intl Business Machines Corp		Yes	Yes	US Bank NA		Yes	Yes
Johnson & Johnson		Yes	Yes	Wal-Mart Stores Inc		Yes	Yes
Lloyds Bank PLC		Yes	Yes	Walt Disney Co/The		Yes	Yes
Merck & Co. Inc.		Yes	Yes	Wells Fargo & Co		Yes	Yes
Microsoft Corp		Yes	Yes				

*Addition:

APPENDIX A

STATE INVESTMENT COMMISSION
Securities Lending Agent Approved Counterparties
as of December 31, 2019

Company Name	Securities Lending	REPO
Alaska USA Federal Credit Union	Yes	Yes
Alaska USA Trust Company	Yes	Yes
BMO Capital Markets Corp	Yes	No
Bank of Nova Scotia	Yes	No
Barclays Capital, Inc	Yes	Yes
BNP Paribas Prime Brokerage, Inc.	Yes	No
BNP Paribas Securities Corp.	Yes	No
Cantor Fitzgerald & Co.	Yes	Yes
Citigroup Global Markets Inc	Yes	Yes
Credit Suisse Securities (USA) LLC	Yes	Yes
CYS Investments, Inc.	Yes	Yes
Daiwa Capital Markets America Inc	Yes	Yes
Deutsche Bank Securities Inc.	Yes	Yes
Dynex Capital Inc.	Yes	Yes
Goldman Sachs and Company	Yes	Yes
Hatteras Financial Corp	Yes	Yes
HSBC Securities (USA) Inc	Yes	Yes
ING Financial Markets LLC	Yes	Yes
Jefferies LLC	Yes	Yes
JP Morgan Securities LLC	Yes	No
Merrill Lynch Pierce Fenner & Smith Inc	Yes	Yes
Mizuho Securities USA, Inc	Yes	Yes
Morgan Stanley & Co. LLC	Yes	Yes
NatWest Markets Securities Inc.*	Yes	Yes
Nomura Securities International Inc	Yes	Yes
Pershing LLC	Yes	Yes
Redwood Trust	Yes	Yes
RBC Capital Markets LLC	Yes	No
SG Americas Securities LLC	Yes	Yes
Societe Generale	Yes	Yes
TD Securities (USA), Inc	Yes	Yes
Two Harbors Investment Corp	Yes	Yes
UBS Securities LLC	Yes	Yes
Wells Fargo Securities LLC	Yes	Yes

APPENDIX B

ALCo Financial Agreements	ALCo FRN Series A Hedge	ALCo FRN Series A Hedge	ALCo FRN Series B Hedge	ALCo FRN Series B Hedge
Fund Source	General Fund	General Fund	General Fund	General Fund
Hedge	2017 FRN	2027 FRN	2021 FRN	2025 FRN
Counter-Party	Deutsche Bank AG	Deutsche Bank AG	Deutsche Bank AG	Deutsche Bank AG
Long-Term Senior Debt Ratings *(Moody's / S&P /Fitch)*		A3/BBB+/BBB	A3/BBB+/BBB	A3/BBB+/BBB
Termination Trigger *(Moody's / S&P)*	Baa3/BBB-	Baa3/BBB-	Baa3/BBB-	Baa3/BBB-
Swap Type	Fixed Pay	Fixed Pay	Fixed Pay	Fixed Pay
Benchmark	67% 3M LIBOR + 40	67% 3M LIBOR + 53	67% 3M LIBOR + 52	67% 3M LIBOR + 55
Reset	Quarterly	Quarterly	Quarterly	Quarterly
Notional Amount	Expired 11/1/17	36,450,000	27,465,000	70,935,000
Amortize (yes/no)	yes	yes	yes	yes
Original Execution Date	5/16/2007	5/16/2007	5/16/2007	5/16/2007
Start Date	5/31/2007	5/31/2007	5/31/2007	5/31/2007
Assignment Date	2/14/2011	2/14/2011	2/14/2011	2/14/2011
Mandatory Early Termination				
End Date	11/1/2017	11/1/2027	11/1/2021	11/1/2025
Fixed Rate pay-(rec)	3.839%	4.066%	4.042%	4.125%
Day Count	30/360	30/360	30/360	30/360
Payment Dates	February 1, May 1, August 1, November 1			
Security Provisions	General Fund Debt Service Appropriations			
Current Market Valuation December 31, 2019 (negative indicates payment owed by ALCo if terminated)	Expired 11/1/17	(3,896,689)	(974,242)	(7,374,847)
Interest Earnings (not applicable)				
Total	not applicable	not applicable	not applicable	not applicable

Swap Summary

As of December 31, 2019:

Total Notional Amount Executed

General Fund	Road Fund
243,080,000	0

Net Exposure Notional Amount

General Fund	Road Fund
134,850,000	0

Total Notional Amount Executed by Counter Party

Deutsche Bank (assigned from Citibank on 2/14/2011)

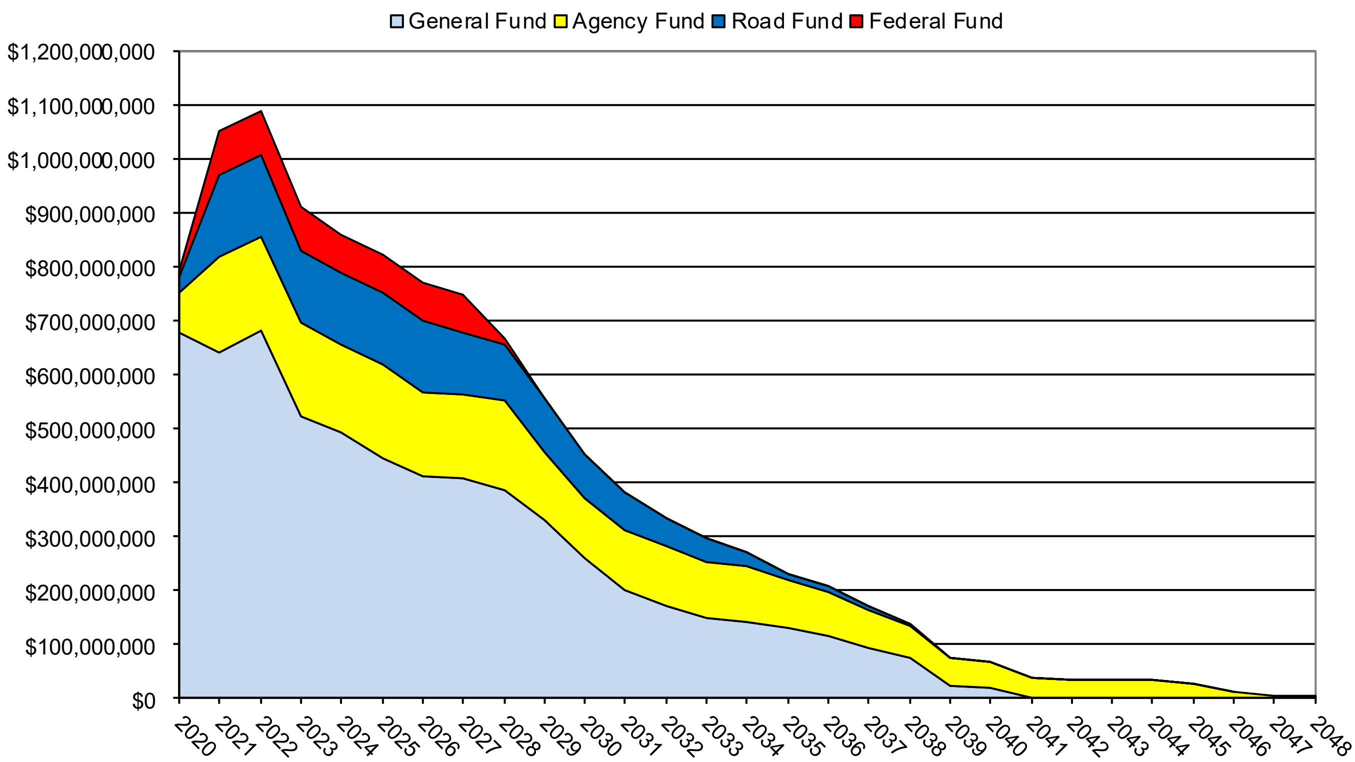
243,080,000

	Debt: General Fund	Debt: Road Fund	10% Net Exposure: General Fund	10% Net Exposure: Road Fund
Bonds Outstanding	3,867,390,000	1,130,990,000	386,739,000	113,099,000
Authorized but Unissued	413,180,000	62,500,000	41,318,000	6,250,000
Total	4,280,570,000	1,193,490,000	428,057,000	119,349,000

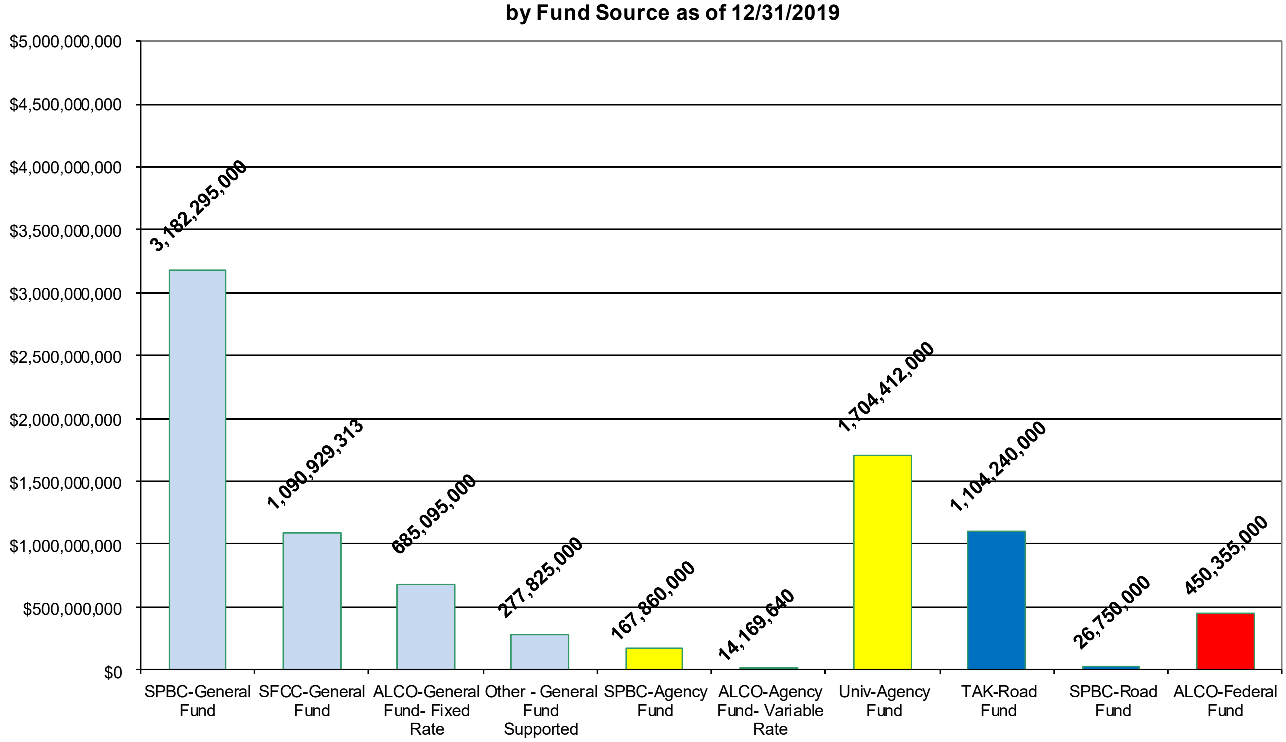
Investment Pool Balance: Other Funds	Investment Pool Balance: Net Road Fund	10% Investment Portfolio: Other Funds	10% Investment Portfolio: Net Road Fund
4,054,861,067	242,766,264	405,486,107	24,276,626

APPENDIX C

Appropriation Supported Debt Service by Fund Source as of 12/31/2019



Appropriation Debt Principal Outstanding by Fund Source as of 12/31/2019



*This data does not include debt issued for judicial center projects and paid for by the Administrative Office of the Courts in the Court of Justice or debt issued by the Lexington -Fayette Urban County Government for the Eastern State Hospital.

APPENDIX D

COMMONWEALTH OF KENTUCKY
ASSET/LIABILITY COMMISSION
SCHEDULE OF NOTES OUTSTANDING
AS OF 12/31/2019

FUND TYPE / SERIES TITLE		AMOUNT ISSUED	DATE OF ISSUE	MATURITY DATE	PRINCIPAL OUTSTANDING
General Fund Project & Funding Notes					
2007 A, B Series		$243,080,000	5/2007	11/2027	$134,850,000
2010 1st Series-KTRS Funding Notes		$467,555,000	8/2010	4/2020	$8,560,000
2011 1st Series-KTRS Funding Notes		$269,815,000	3/2011	4/2022	$76,860,000
2013 1st Series-KTRS Funding Notes		$153,290,000	2/2013	4/2023	$64,825,000
	FUND TOTAL	**$1,133,740,000**			**$285,095,000**
Tax and Revenue Anticipation Notes					
2019 Series A		$400,000,000	7/2019	6/2020	$400,000,000
	FUND TOTAL	**$400,000,000**			**$400,000,000**
Agency Fund Project Notes					
2018 Agency Fund Project Note (KCTCS)		$27,775,000	6/2018	10/2023	$14,169,640
	FUND TOTAL	**$27,775,000**			**$14,169,640**
Federal Hwy Trust Fund Project Notes					
2010 1st Series		$89,710,000	3/2010	9/2022	$89,710,000
2013 1st Series		$212,545,000	8/2013	9/2025	$151,325,000
2014 1st Series		$171,940,000	3/2014	9/2026	$132,175,000
2015 1st Series		$106,850,000	10/2015	9/2027	$77,145,000
	FUND TOTAL	**$581,045,000**			**$450,355,000**
ALCo NOTES TOTAL		**$2,142,560,000**			**$1,149,619,640**

REPORT PREPARED BY:

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