COMMONWEALTH OF KENTUCKY

KENTUCKY ASSET/LIABILITY COMMISSION

SEMI-ANNUAL REPORT

For the period ending June 30, 2020

47th 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

KENTUCKY ALCo ASSET/LIABILITY COMMISSION

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/

TEAM KENTUCKY™

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INTRODUCTION

The Kentucky Asset/Liability Commission ("ALCo" or the "Commission") presents its 47th 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 January 1, 2020 through June 30, 2020.

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 reduced the federal funds rate from 1.50% - 1.75% in December 2019 to 0.00% - 0.25% ending June 2020.
- The unemployment rate elevated to 11.1% ending June 2020 from 3.5% in December 2019.
- The annual rate of economic growth as measured by gross domestic product (GDP) progressively fell over the first two quarters of 2020. The seasonally adjusted rate for the first quarter was -5.0% and second quarter reporting -32.9%.
- Inflation finished the first half of 2020 in a declining trend with the core rate (ex-energy and food) ending at 0.9% as of June 2020.

On the international level

- The emergence of the global pandemic COVID -19 in the first quarter of 2020 caused world-wide severe economic and capital markets shocks as the effects of the shut-down of economic activity and in some cases partial or complete re-openings were weighed against public health.
- Futures for gold topped $1,800 an ounce for the first time since 2012, as the ongoing global pandemic boosted demand for assets perceived as safe havens.

On the state level

- There was solid revenue growth during the first nine months of the Fiscal Year 2020, followed by significant declines in the last three months of the year due to the COVID-19 pandemic.
- General Fund receipts totaled $11.567 billion for Fiscal Year (FY) 2020. General Fund receipts increased 1.5% over FY 2019 collections.
- Road Fund receipts for FY 2020 totaled $1.5 billion which represented a 4.8% decrease over the previous fiscal year.
- The COVID-19 pandemic has clearly impacted the employment and income of Kentuckians and Kentucky businesses.
- Large unfunded pension liabilities continue to put stress on the Commonwealth's credit rating.
- Implementation of bond authorizations from prior-year sessions of the General Assembly continued. Bond issues for the period are discussed later in the report.

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Market Overview

The COVID-19 outbreak is causing tremendous human and economic hardship across the United States and around the world. The virus and the measures taken to protect public health have induced a sharp decline in economic activity and a surge in job losses, with the unemployment rate, which had been at a 50-year low, soaring to a postwar record high. Weaker demand and significantly lower oil prices are holding down consumer price inflation. The disruptions to economic activity here and abroad significantly affected financial conditions and impaired the flow of credit to U.S. households and businesses. In response to these developments, the Federal Reserve quickly lowered its policy rate to close to zero in March to support economic activity and took extraordinary measures to stabilize markets and bolster the flow of credit to households, businesses, and communities. Financial conditions have improved, in part reflecting policy measures to support the economy and the flow of credit.

Employment

The severe economic repercussions of the pandemic have been especially visible in the labor market. Since February, employers have shed nearly 20 million jobs from payrolls, reversing almost 10 years of job gains. The unemployment rate jumped from a 50-year low of 3.5% in February to a post World War II high of 14.7% in April and then moved down to a still very elevated 11.1% in June.

Inflation

Consumer price inflation has slowed abruptly. The 12-month measure of personal consumption expenditures (PCE) inflation that excludes food and energy items (so-called core inflation), which historically has been a better indicator of where overall inflation will be in the future than the total figure, fell from 1.8% in February to 0.9% in June. This slowing reflected monthly readings for March and April that were especially low because of large price declines in some categories most directly affected by social distancing. Overall inflation also has been held down by substantially lower energy prices, which more than offset the effects of surging prices for food. Despite the sharp slowing in inflation, survey-based measures of longer-run inflation expectations have generally been stable at relatively low levels. However, market-based measures of inflation compensation have moved down to some of the lowest readings ever seen.

Economic Growth

After posting a moderate gain in 2019, GDP fell at an annual rate of 5% in the first quarter, with that decline likely all occurring in the final weeks of the quarter. In the second quarter, real GDP plummeted at a breathtaking pace with the final reported number of -32.9%. This severe contraction reflects a steep drop in consumer spending associated with measures to contain the spreading virus. Uncertainty about the economic outlook also likely has pushed down business fixed investment, and events abroad

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have led to a steep drop in exports. In the manufacturing sector, output fell sharply in March and posted its largest decline on record in April as many factories closed temporarily for all or most of both months. This decrease in factory output included nearly all motor vehicle and civilian aircraft manufacturers. However, amid some easing of restrictions, manufacturing activity moved up in May, partly as a result of the ramp-up in automotive production.

Interest Rates

After moving lower over the second half of 2019, nominal Treasury yields fell sharply in late February and early March as investors' concerns regarding the implications of the COVID-19 outbreak for the economic outlook led to both falling policy expectations and flight-to-safety flows, with longer-term Treasury security yields dropping to historically low levels. Longer term yields increased moderately and realized volatility spiked for a period in March as selling pressures grew, leading to dealer balance sheet capacity constraints and impaired trading conditions, before falling back again after the Federal Reserve's actions helped restore smooth market functioning. More recently, yields on longer-term Treasury securities rose somewhat, linked at least partially to the expected increase in the issuance of longer-term Treasury securities as well as some improvement in investor sentiment.

Yields on 30-year agency MBS an important determinant of mortgage interest rates, decreased somewhat, on balance though less than the yields on nominal Treasury securities, since the start of the year and remained very low by historical standards.

Early in the year, yields on both investment and speculative grade corporate bonds as well as primary and secondary market municipal bonds were near record lows. Spreads on corporate bond yields over comparable maturity Treasury yields were in the lower end of their historical distribution. Since mid-February, corporate spreads have increased appreciably as market functioning deteriorated and credit quality declined. In March, spreads to comparable maturity Treasury securities increased sharply for corporate debt but remained below those observed during the 2008 Global Financial Crisis. Spreads started to normalize following the Federal Reserve announcements of corporate bond facilities in late March, particularly for investment-grade corporate debt, but remain higher than at the end of 2019. Similarly, yields and spreads for municipal debt rose strikingly in March, with spreads to comparable-maturity Treasury securities spiking to their highest level since the Global Financial Crisis as market functioning declined and concerns about municipal credit quality arose. Yields on municipal debt partially recovered following

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Federal Reserve announcements in late March and April of support to municipal debt markets through municipal liquidity facility (MLF).

Equities

Equity prices continued to increase early in the year before tumbling in March, dropping as much as 34% from peak to trough. Prices have mostly recovered against a background of unprecedented, forceful, and rapid monetary and fiscal policy responses as well as recent tentative signs of economic revival associated with the easing of restrictions and in the face of bleak forecasts for U.S. firms' earnings in 2020. The decline in stock prices was widespread across all sectors, with the largest declines in the energy and banking sectors. Measures of implied and realized stock price volatility for the S&P 500 index, the VIX and the 20-day realized volatility, spiked to levels that were most recently observed during the financial crisis. They have since retraced much of that increase but remain at elevated levels.

Outlook

The path ahead is extraordinarily uncertain. First and foremost, the pace of recovery will ultimately depend on the evolution of the COVID-19 outbreak in the United States and abroad and the measures undertaken to contain it. Importantly, some small businesses and highly leveraged firms might have to shut down permanently or declare bankruptcy, which could have longer lasting repercussions on productive capacity. In addition, there is uncertainty about future labor demand and productivity as firms shift their production processes to increase worker safety, realign their supply chains, or move services online. Furthermore, if employees are not called back to their former jobs, their period of unemployment could increase, potentially leading to lower wages when they do eventually find a job. Finally, applications for employer identification numbers, which are an early indicator of new business formations, are tracking well below levels from recent years and may suggest a slower pace of future job creation

The expected path of the federal funds rate over the next several years has declined since early January and is now flat at the effective lower bound for the next few years. Before the Federal Reserve lowered the target range for the federal funds rate to 0.00 - 0.25% in March, policy expectations dropped substantially in late February and early March as COVID-19 concerns intensified. Market based measures suggest that the expected federal funds rate remains below 0.25% through mid 2023. Survey based measures of the expected path of the policy rate also moved down from the levels observed at the end of 2019. According to the results of the Survey of Primary Dealers and Survey of Market Participants (both conducted by the Federal Reserve Bank of New York in April) the median of respondents' modal projections implies a flat trajectory for the target range of the federal funds rate at the effective lower bound for the next few years.

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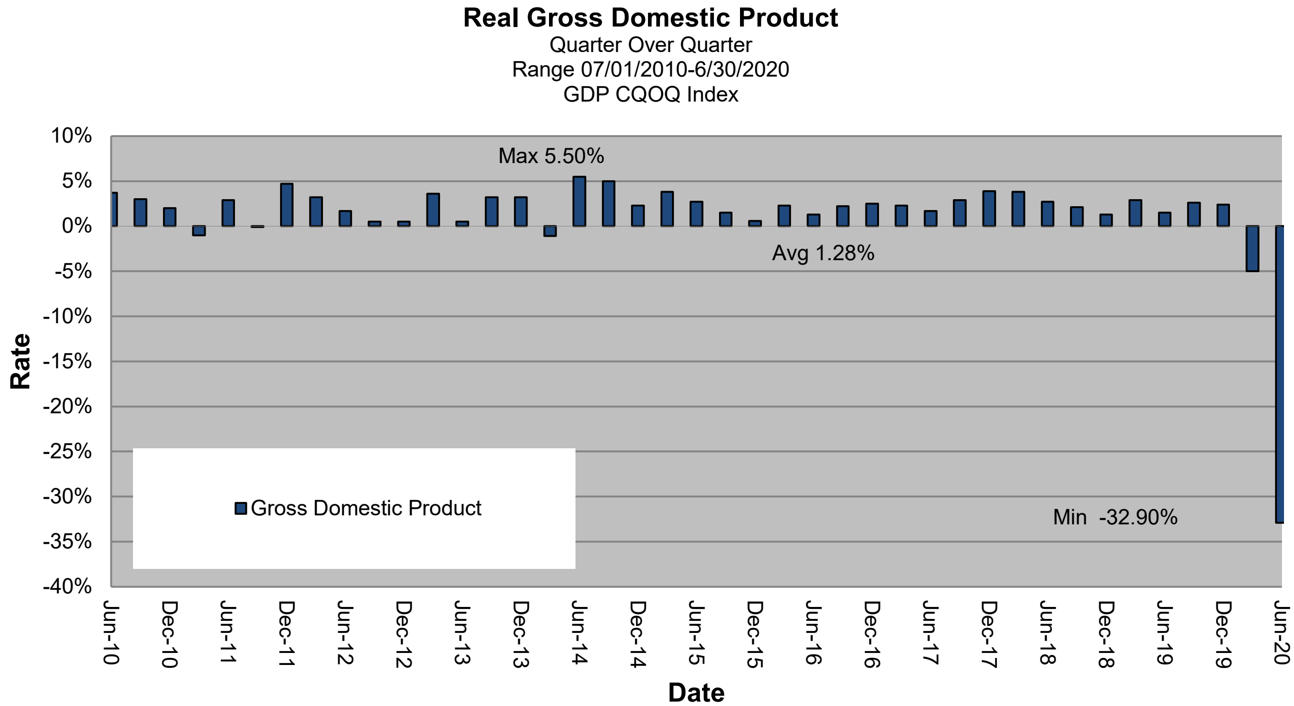
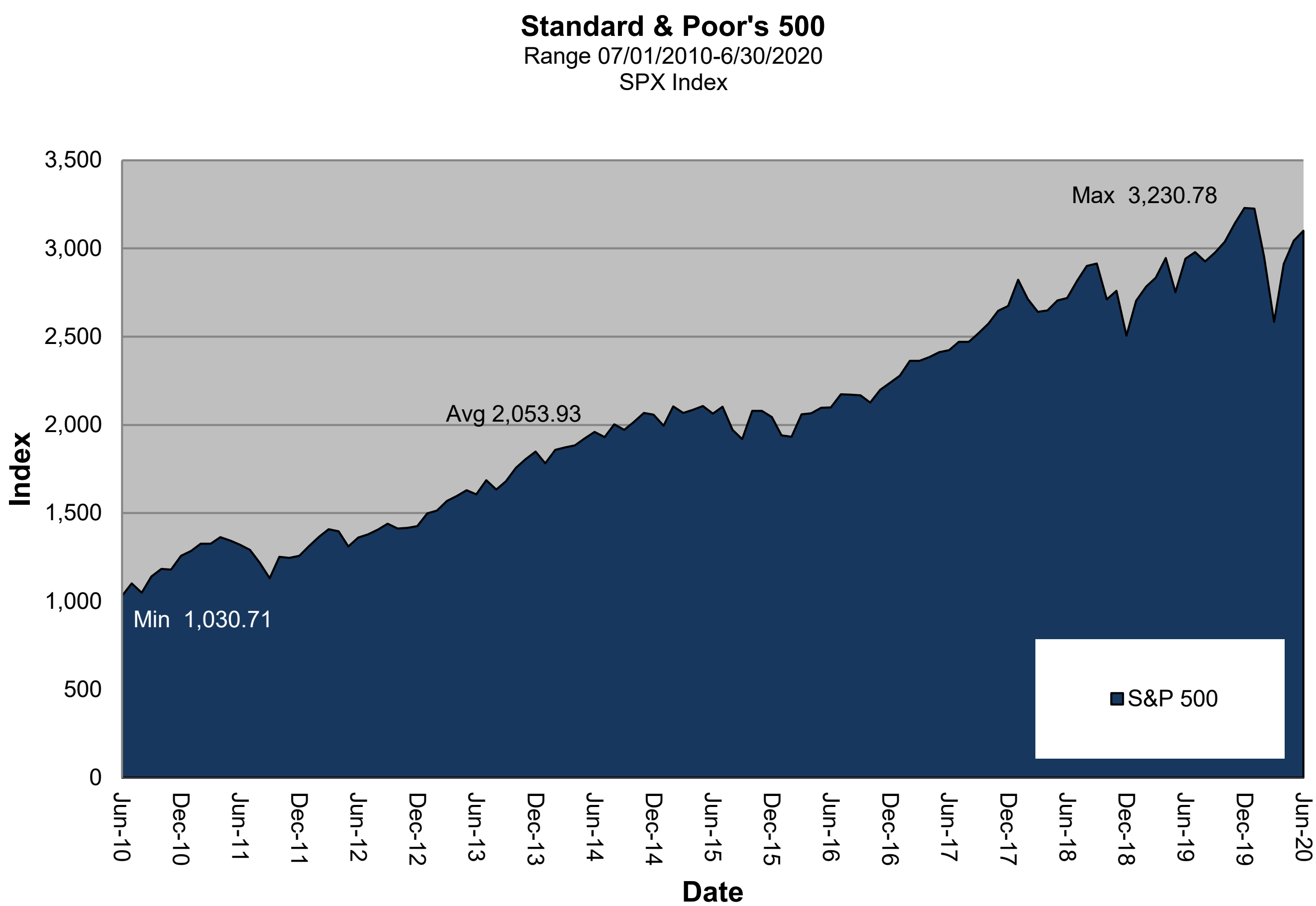
Real Gross Domestic Product & Standard & Poor's 500





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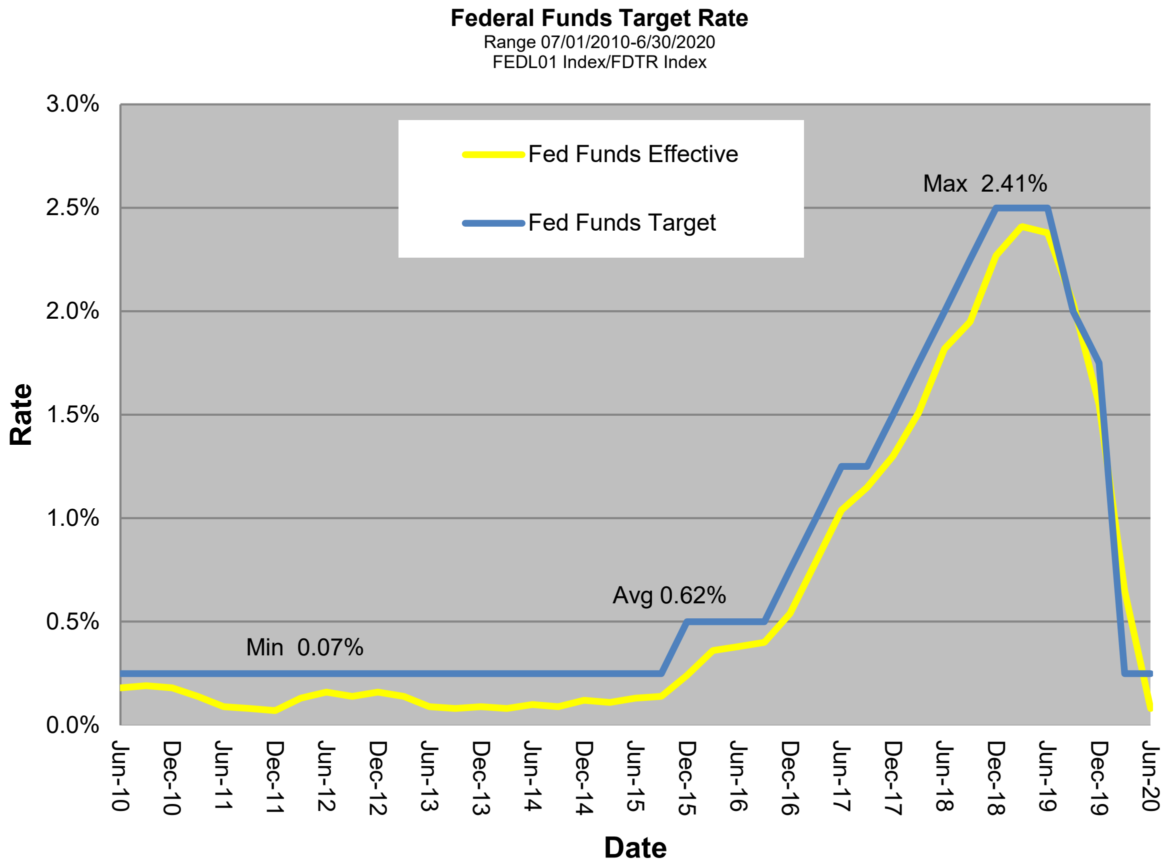
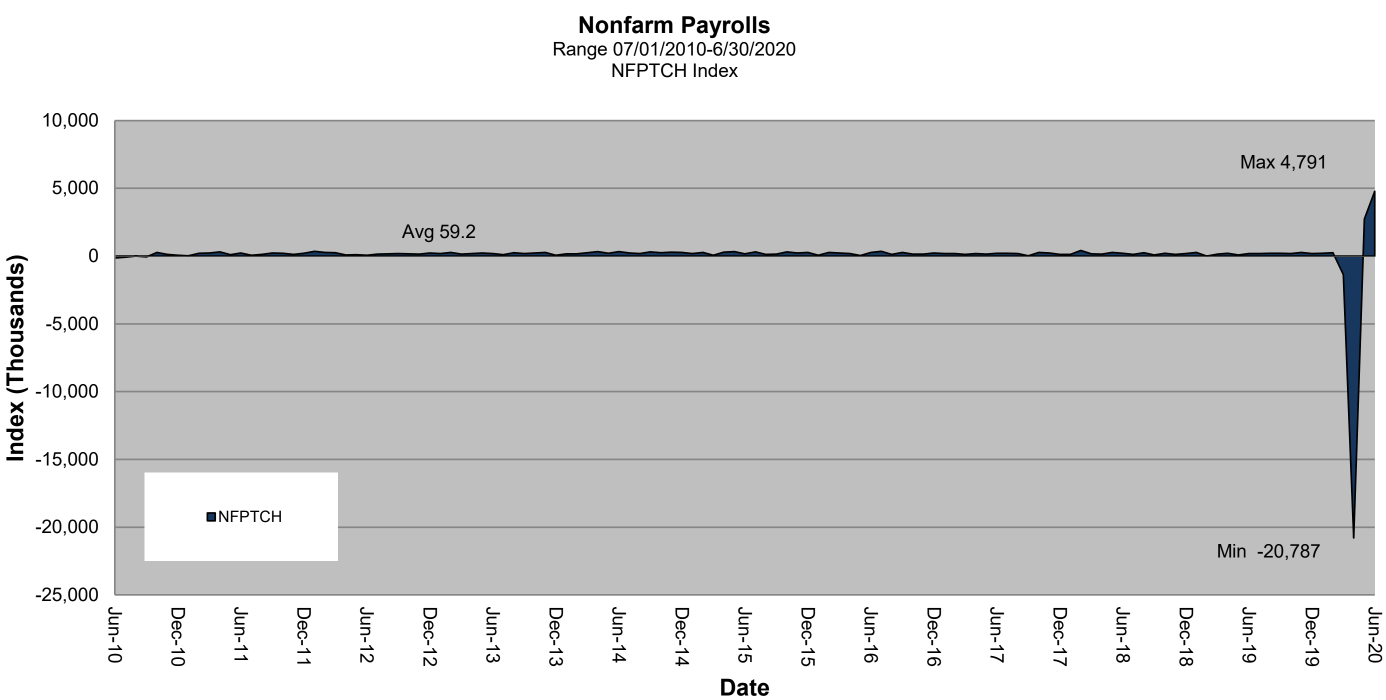
Federal Funds Target Rate & NonFarm Payrolls





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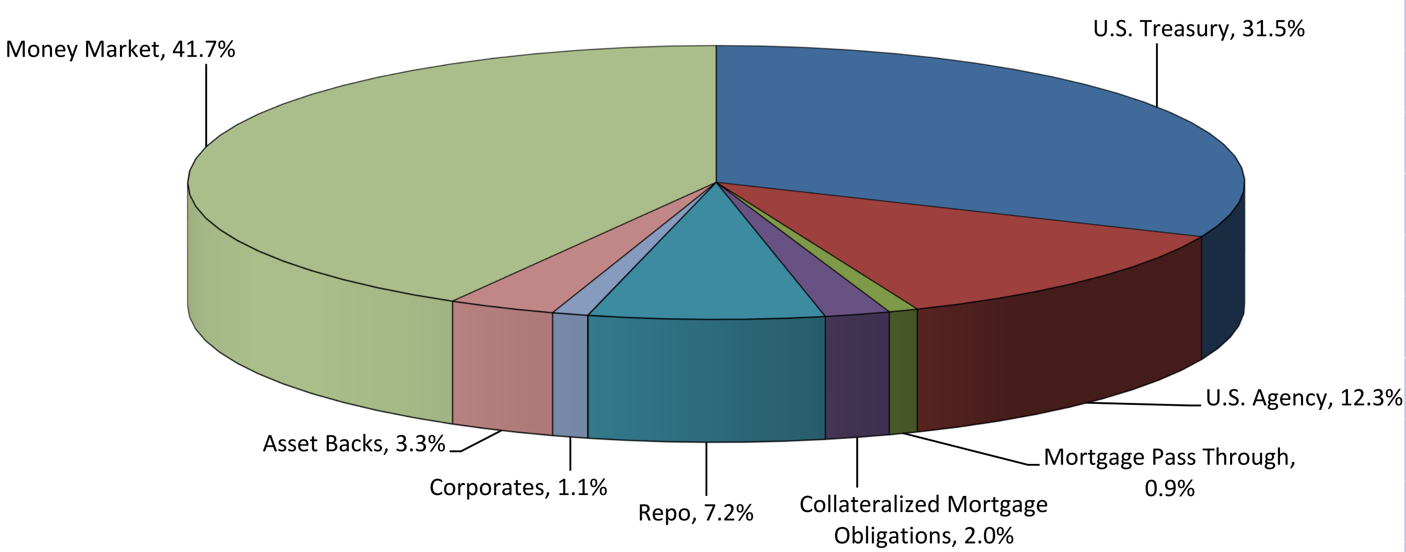
Portfolio Management

For six months ending June 30, 2020, the Commonwealth's investment portfolio was approximately $6.0 billion , a increase spurred by the receipt of federal stimulus funds as a direct result of COVID-19. The portfolio was invested in U. S. Treasury Securities (31.5%), U. S. Agency Securities (12.3%), Mortgage-Backed Securities (2.9%), Repurchase Agreements (Repo) (7.2%), Corporate Securities (1.1%), Asset-Backed Securities (3.3%), and Money Market Securities (41.7%). The portfolio had a market yield of 0.17% and an effective duration of 0.34 of a year.

The total portfolio is broken down into three investment pools. The pool balances as of June 30, 2020 was $1.8 billion (Short Term Pool), $1.8 billion (Limited Term Pool), $2.4 billion (Intermediate Term Pool)

Distribution of Investments as of June 30, 2020



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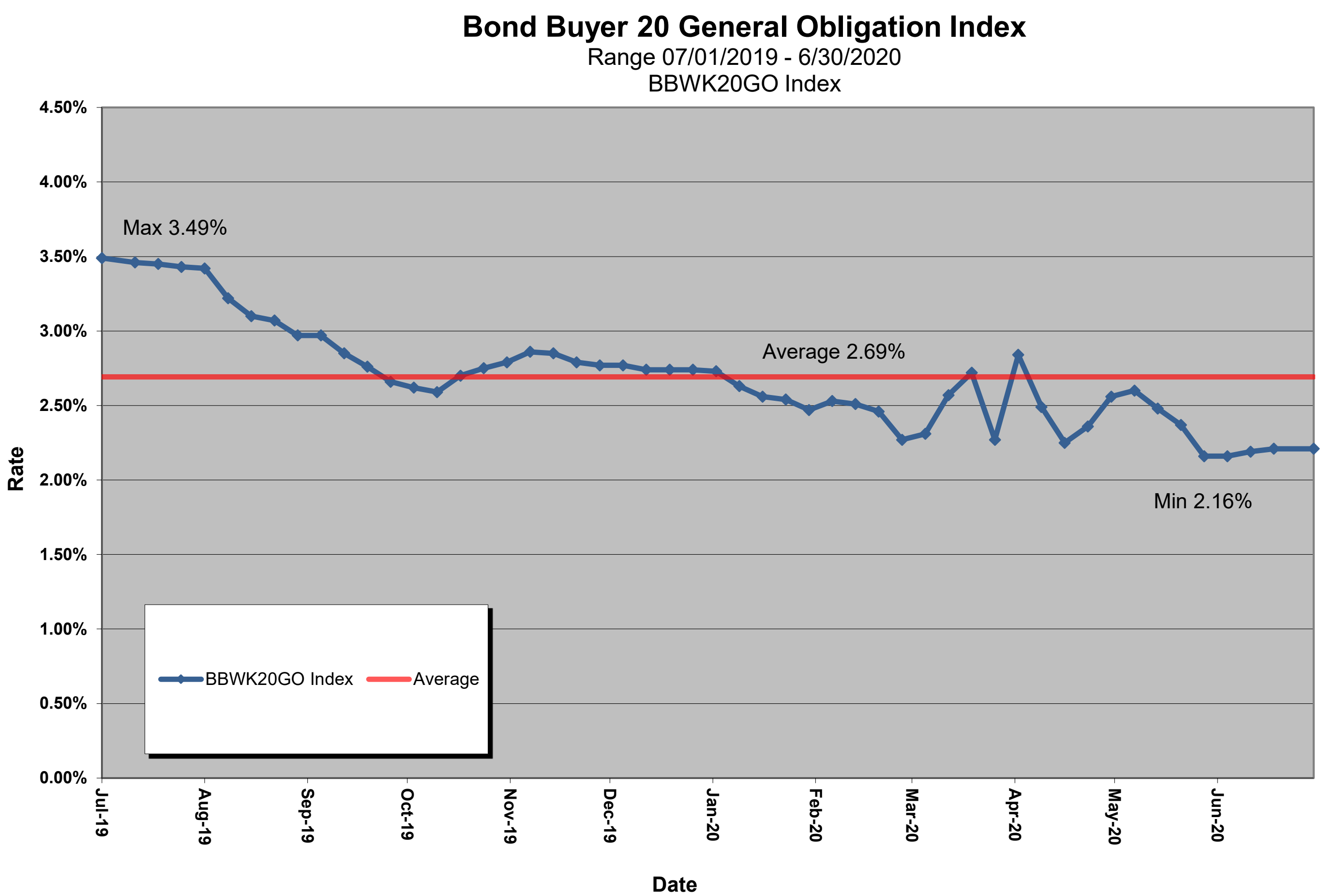
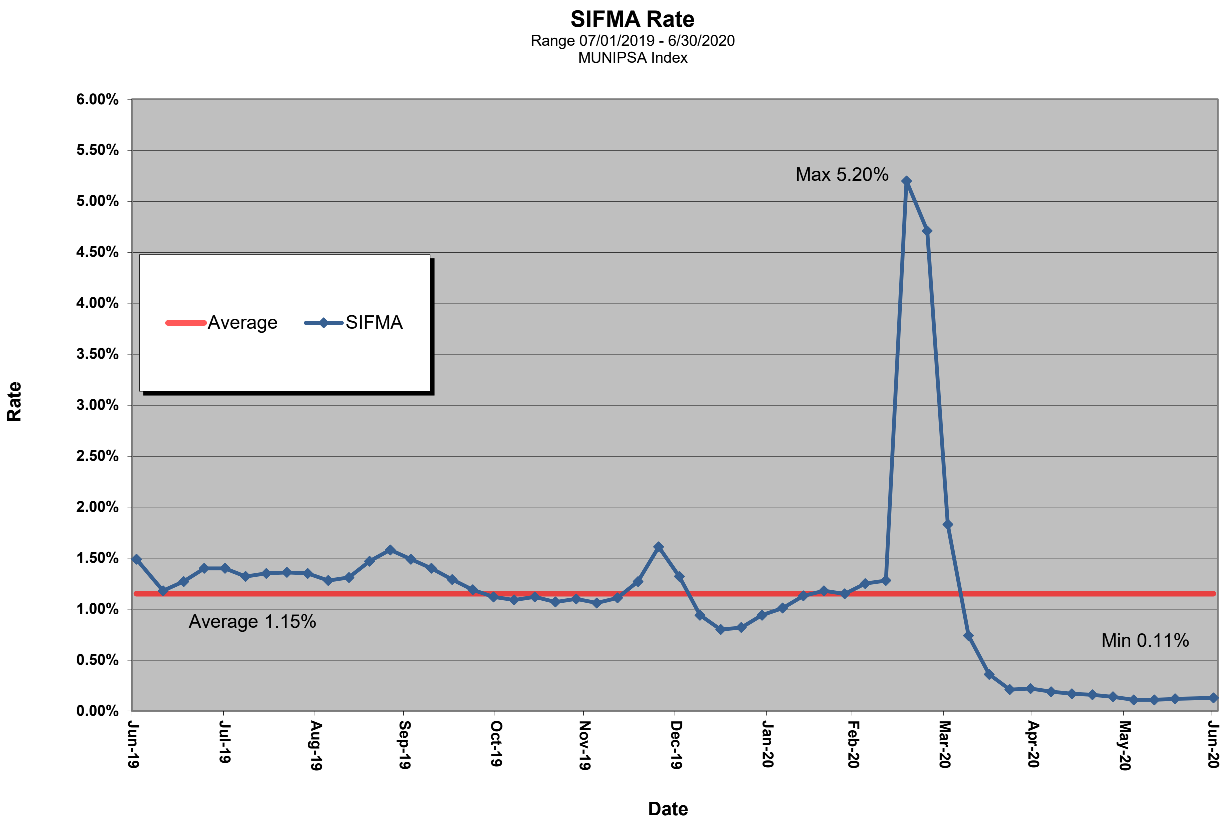
Tax-Exempt Interest Rates and Relationships

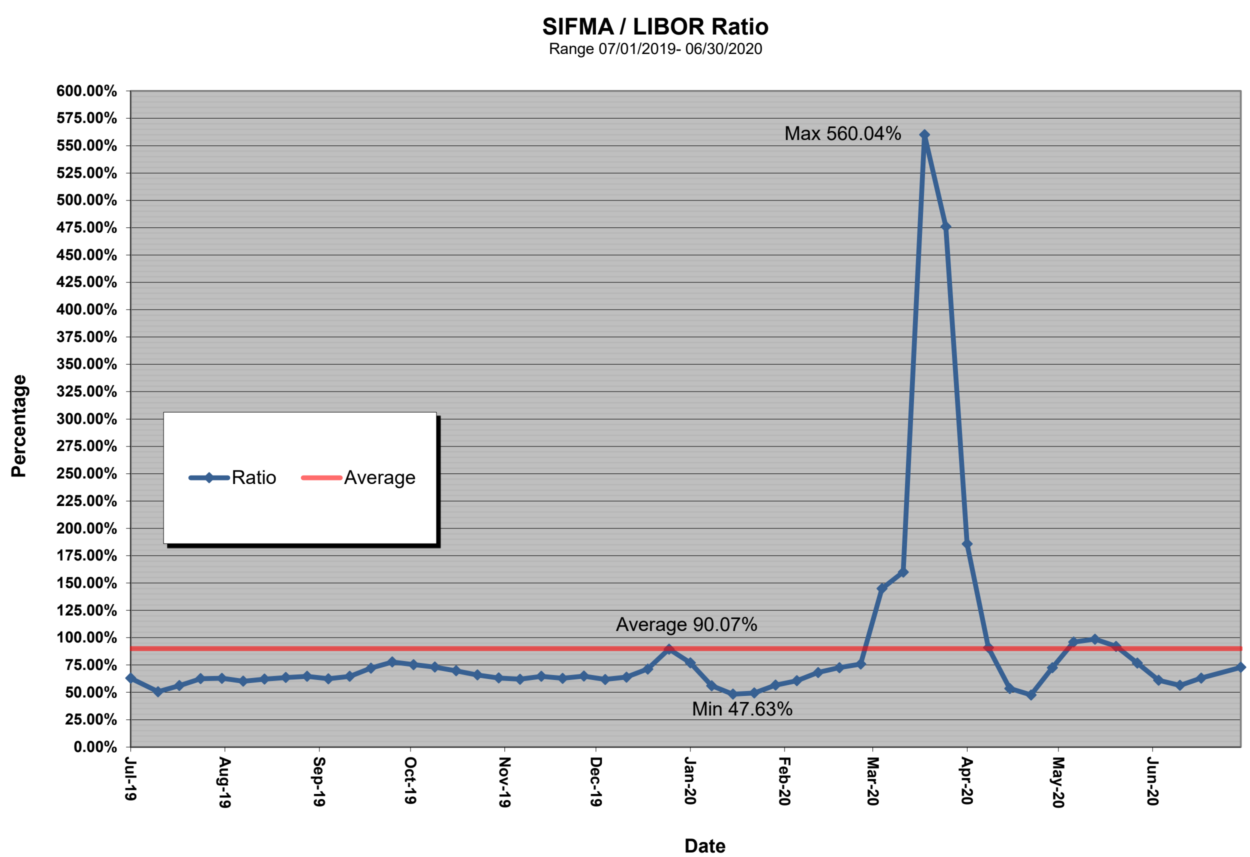
The Bond Buyer 20 General Obligation Index averaged 2.69% for Fiscal Year 2020. The high was 3.49% at the beginning of July 2019 and the low was 2.16% in June 2020.

The Securities Industry and Financial Markets Association (SIFMA) Municipal Swap Index averaged 1.15% for Fiscal Year 2020. The high was 5.20% in March 2020 and the low was 0.11% in June 2020. The 30-day USD London Interbank Offered Rate (LIBOR) averaged 1.43% for Fiscal Year 2020. The high was 2.37% in July 2019 and the low was 0.17% in May 2020. During the year, SIFMA traded at a high of 560.04% of the 30-day LIBOR in late March 2020, at a low of 47.63% in April 2020, and at an average of 90.07% for the Fiscal Year.



SIFMA & SIFMA/LIBOR Ratio





CREDIT MANAGEMENT

Mid-Year Reflection

Credit

The dominant storyline of the first half of 2020 was the COVID-19 pandemic and the enormous effect it had on markets as lockdown orders took effect in late March and supply chains faced significant disruptions. Consumer spending plummeted and despite healthy rebounds in May and June as the economy restarted, remains below pre-pandemic levels. After an initial dip, personal income growth skyrocketed as lower paid workers began to receive more from unemployment than they did working previously, in addition to stimulus checks being sent to every qualifying adult. With the supplemental unemployment payment set to expire at the end of July, personal income levels could plummet as millions remain unemployed. Household debt continued to rise and now exceeds $14 trillion. Mortgage rates fell to a 50-year low, helping keep the housing market afloat while other industries crumbled. Auto loan delinquency rates are skewed by a number of lenders offering forbearance on payments. While this means borrowers have stopped payments, the loans are marked as current on the lenders' books. This has actually caused a drop in delinquency rates, although that's clearly not an accurate picture. Payments on student loans have also been halted, making it difficult to determine the health of that credit market. While new borrowers have been helped by extremely low rates.

As the aggregate amount of corporate debt continues to set new record highs, the overall quality is rapidly decreasing following a wave of credit rating downgrades in the first half of the year. Companies were loading up on cheap debt before the pandemic started and now face the toughest business conditions in at least a decade. Fitch estimates that leveraged loan defaults could nearly double to 6% in 2020 as business struggle to meet their obligations. Spreads on corporate debt initially widened in the first four months of the year before the Fed accelerated its bond purchasing program and drove yields back down. Respondents to the Senior Loan Officer Opinion Survey on Bank Lending Practices, or SLOOS, reported that lending standards for commercial and industrial loans tightened in the first half as banks sought to decrease risk in the face of an economic downturn. Banks cited the need to focus on existing clients instead of adding new ones with so much economic uncertainty ahead. Standards also tightened on credit card and auto loans. Demand for mortgage loans increased as mortgage rates fell to all-time lows.

The first half of 2020 saw four companies removed from the State Investment Commission Corporate Credit Approved list and several downgrades as the economic downturn damaged credit quality. Oracle Corp, Honda Motor Corp, Lloyds Bank, and Walt Disney Co were all dropped from the approved list when their credit rating fell below the minimum standard. In addition, Toyota,

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HSBC, MUFG, Swedbank, Exxon, and Merck all had their credit rating downgraded but remain on the approved list.

Credit Process

Our strategy is to invest 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, our goal is to deliver consistent longer-term investment performance over U.S. Treasuries.

Default Monitoring

The Bloomberg credit risk model is our 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).

Industry/Company Analysis

We use a combination of 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 approved list on a quarterly basis. During the first half of 2020, Oracle Corp, Honda Motor Corp, Lloyds Bank and Walt Disney Co. were removed from the Corporate Credits Approved list. The Corporate Credits Approved list as of June 2020 is found in Appendix A.

State Investment Commission

The State Investment Commission (SIC) 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 three-fold: 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 June 30, 2020, the Commonwealth's 2020-2021 budget includes authorized debt service for over $1.58 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 financed over a number of future biennia bond transactions. 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 $1

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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. A portion of the General Fund and Agency Restricted Fund authorizations have been permanently financed.

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 total authorization under House Bill 268 is General Fund supported.

2020 Regular Session

The 2020 Regular Session of the General Assembly delivered House Bill 99 to the Governor on March 18, 2020 and delivered House Bill 352 (Executive Branch Budget other than the Transportation Cabinet) and House Bill 353 (Kentucky Transportation Cabinet Budget) to the Governor on April 1, 2020, establishing an Executive Branch Budget for the first year only of the biennium ending June 30, 2022. The Governor signed House Bill 99 on March 25, 2020 and vetoed certain line items in House Bill 352 and House Bill 353 on April 13, 2020. The General Assembly overrode all gubernatorial vetoed line items on April 15, 2020. Together, the bills authorized bond financing for projects totaling a net amount of $351.67 million to support various capital initiatives of the Commonwealth. The total authorization is General Fund supported. Agency Fund projects totaling $429.80 million were listed without debt service appropriation. No additional Road Fund supported authorizations were appropriated. A portion of the General Fund authorizations have been permanently financed.

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Authorized but Unissued Debt Summary

The balance of prior bond authorizations of the General Assembly dating from 2010 through 2020 totals $1,582.62 million. Of these prior authorizations, $705.80 million is General Fund supported, $814.32 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 June 30, 2020:

Legislative Session (Year)	General Fund (millions)	Agency Fund (millions)	Road Fund (millions)	TOTAL (millions)
2010	$27.03	$17.50	$50.00	$94.53
2012	8.46		12.50	20.96
2014	42.07			42.07
2016	108.97	20.58		129.55
2018	302.60	354.10		656.70
2019	75.00			75.00
2020*	316.67	422.14		738.81
Bond Pool Proceeds	(175.00)			(175.00)
TOTAL	$705.80	$814.32	$62.50	$1,582.62

The balance of prior bond authorizations of the General Assembly dating from 2010 through FYE 2020 totals $1,582.62 million. Of these prior authorizations, $705.80 million is General Fund supported, $814.32 million is Agency Restricted Fund supported, and $62.5 million is supported by Road Fund appropriations.

*General Fund bonds totaling $316.67 million authorized by the 2020 Legislative session cannot be issued until the fiscal year beginning July 1, 2020. Prior authorization of Agency Restricted bonds totaling $270.54 million were not reauthorized, are expected to lapse July 1, 2020, and are not included in this chart.

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 to 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 June 30, 2020:

	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 are rated, but may not carry ratings from all rating agencies.

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Cash Management Strategies

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

Tax and Revenue Anticipation Notes (TRAN)

The Commission authorized the FY 2020 TRAN program in a principal amount not to exceed $400 million. On July 10, 2019 $400 million was issued to mature on June 25, 2020. The 2019 Series A TRANs were sold by J.P. Morgan Securities LLC on June 25, 2019 and carried a coupon of 3.0% to yield 1.40%. The total net benefit from this transaction to the Commonwealth was $954,899.73. The General Fund will continue to borrow internally from the state investment pools to provide short-term liquidity, but market conditions provided an opportunity for additional interest earnings through the issuance of a TRAN and restructuring a portion of the investment portfolio.

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).

For six months ending June 30, 2020, the Commonwealth's investment portfolio was approximately $6.0 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:

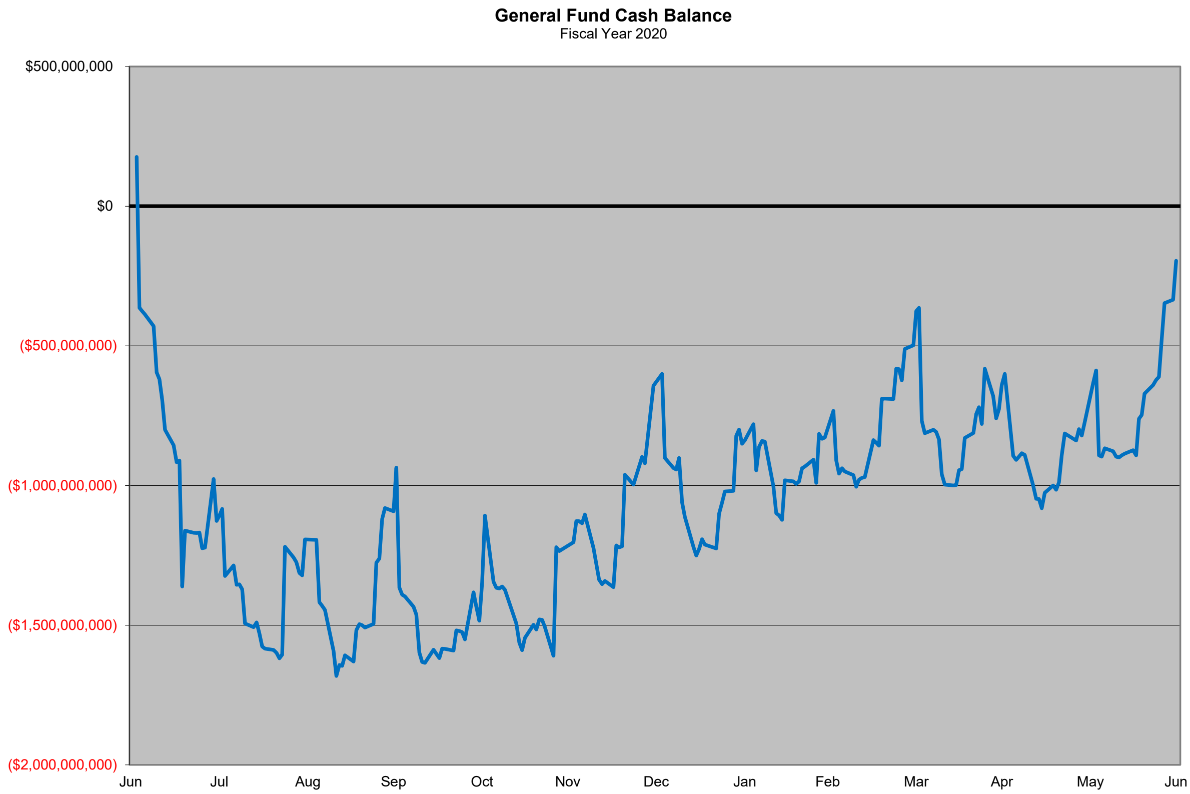
(a) Judgments, with a final maturity of not more than ten (10) years; and

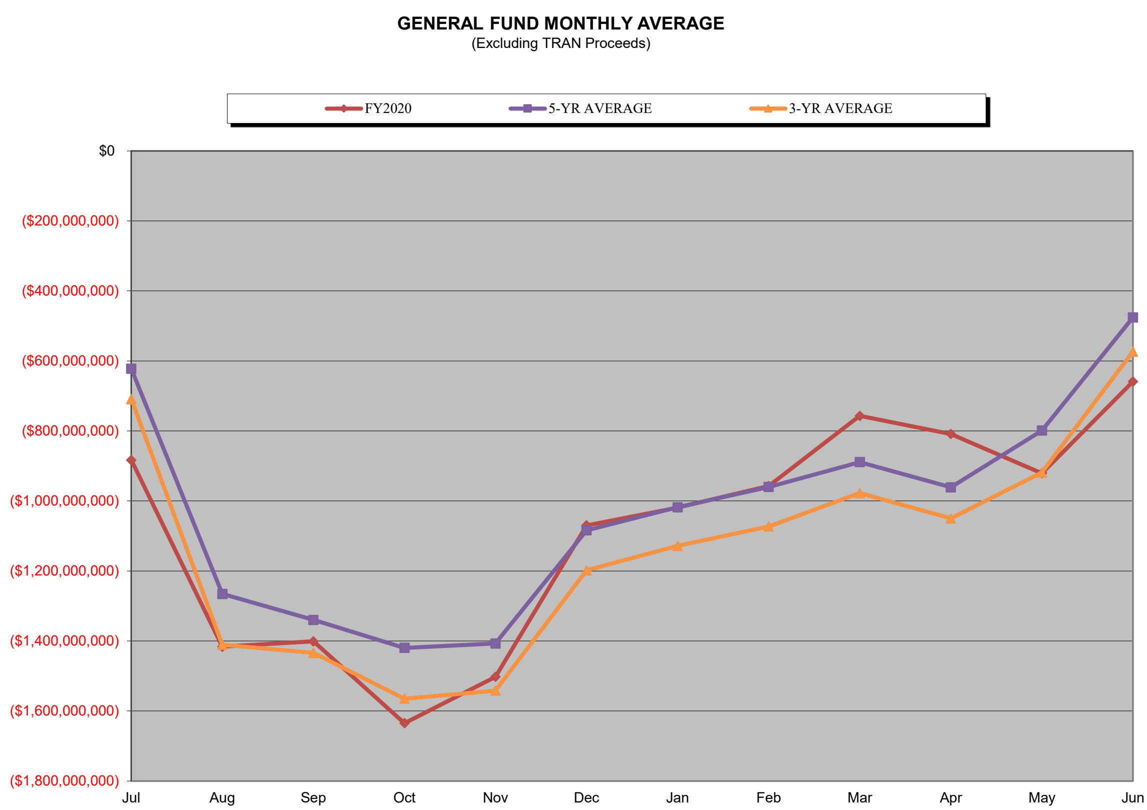
(b) The finance or refinance of obligations owed under KRS 161.550(2) or 161.553(2)

"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.

DEBT MANAGEMENT





DEBT MANAGEMENT

ALCo Financial Agreements

As of June 30, 2020, 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 hedge the floating rates on the FRNs and lock 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

DEBT MANAGEMENT

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 June 30, 2020 are presented in Appendix B.

Asset/Liability Model

General Fund

The total SPBC debt portfolio as of June 30, 2020 had $3.331 billion of bonds outstanding with a weighted average coupon of 4.93% and a weighted average life of 6.19 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 $542.853 million callable portion had a weighted average coupon of 4.63%.

The SPBC debt structure has 45% of principal maturing in 5 years and 71% 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, primarily influenced by debt restructuring and

DEBT MANAGEMENT

the minimal amount of long-term new money permanent financings within the last several years.

For the Fiscal Year 2020 the General Fund had a maximum balance of $175.985 million on July 1, 2019, and a low of negative $1.681 billion on September 9, 2019.

The average and median balances were negative $1.064 billion and negative $1.004 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 was $1.101 billion for Fiscal Year 2020. This number is significantly higher than the prior year because of the TRAN debt service repayment that was paid in Fiscal Year 2020. In addition to the Commonwealth General Fund debt service, General Fund debt service of $11.256 million was 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 was 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 not obligations of the Commonwealth, 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 123

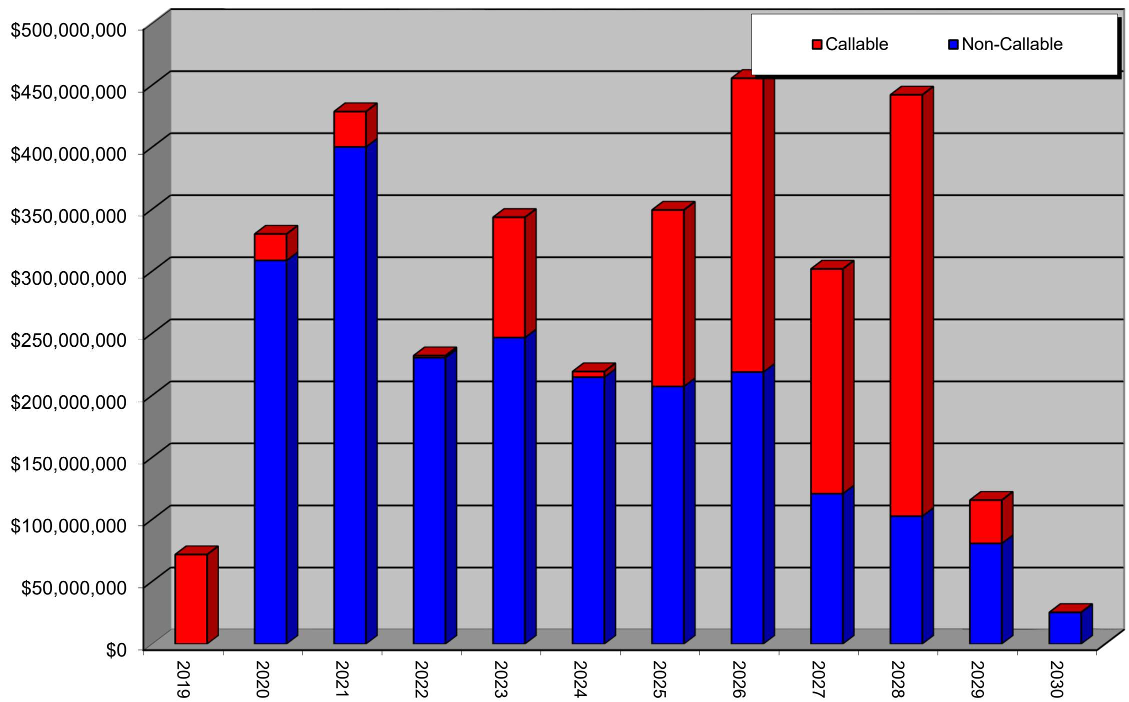
On June 10, 2020, SPBC closed $35,245,000 par of General Fund Revenue bonds, federally taxable Project No. 123 Series A. The Project No. 123 bond proceeds provided permanent financing for a $35 million economic development project for the Kentucky Economic Development Finance Authority. The transaction achieved an All-In True Interest Cost of 3.534%. The project 123 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+ from Moody's, and Fitch, respectively.

Looking Forward

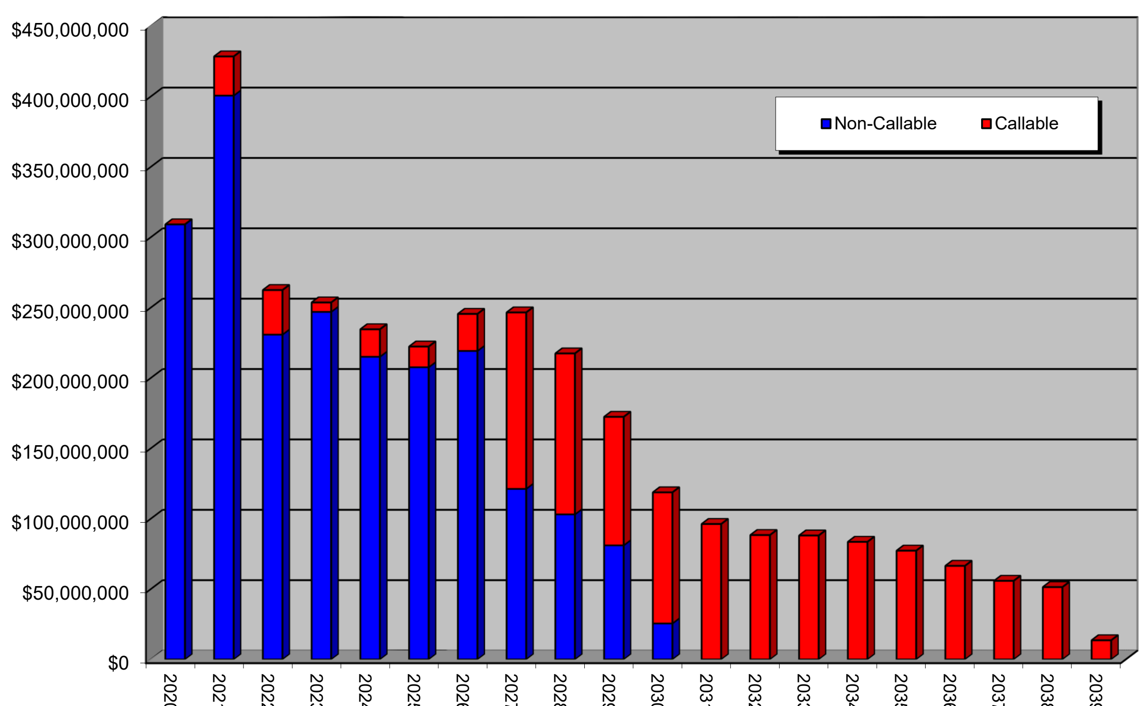
In light of the January 1, 2018 federal tax law change that tightened the parameters by which tax-exempt municipal bonds could be advanced refunded, the Commonwealth has added to the methods of evaluation for examining potential refunding candidates. Since tax advantaged bonds are no longer eligible 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 economic savings in these transactions.

DEBT MANAGEMENT

Call Analysis by Call Date
State Property and Buildings Commission Bonds



Call Analysis by Maturity Date
State Property and Buildings Commission Bonds



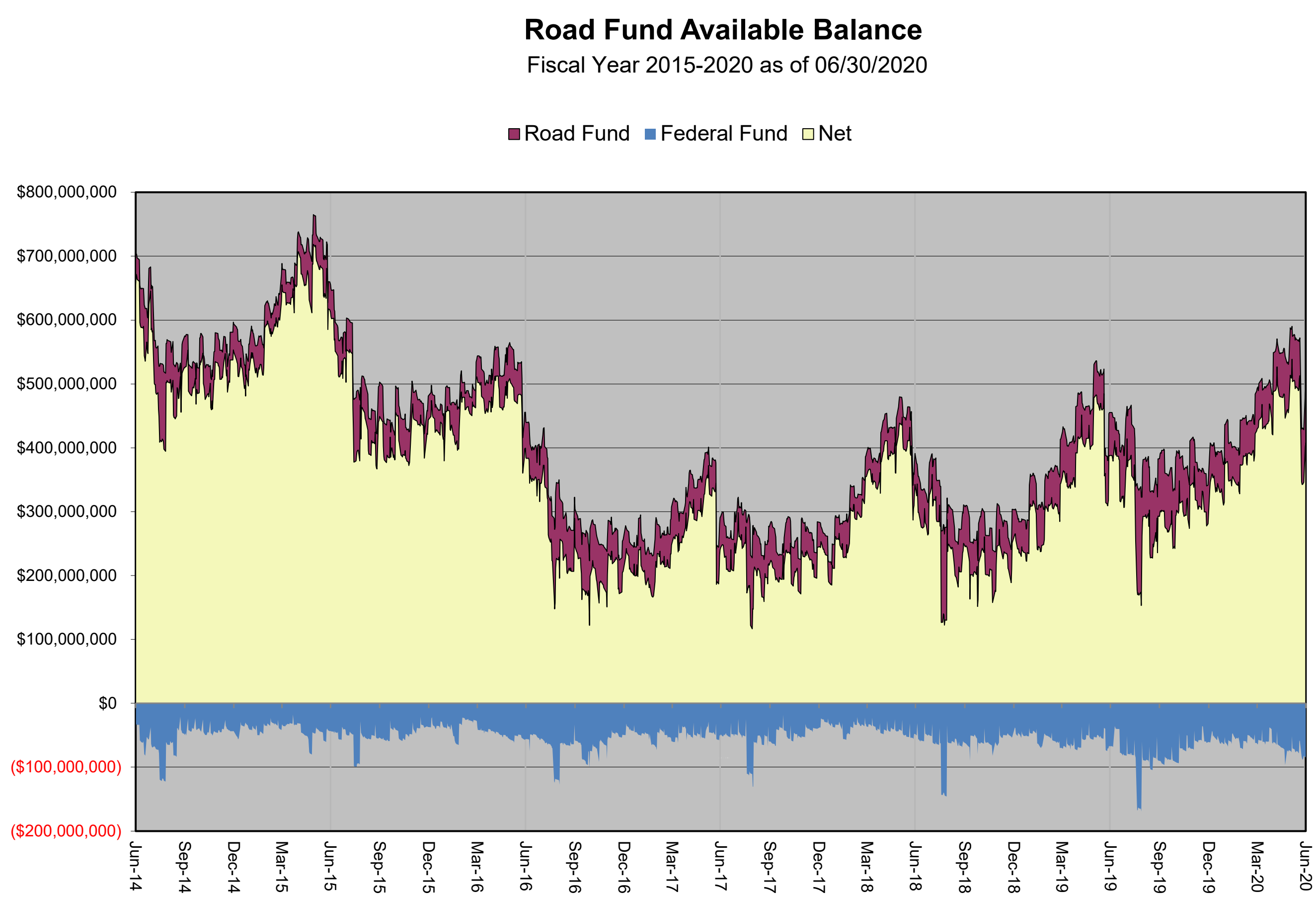
DEBT MANAGEMENT

Road Fund

The Road Fund average daily cash balance for Fiscal Year 2020 was $293 million compared to $358 million for Fiscal Year 2019. The Road Fund cash was invested in the Intermediate Term Investment Pool which had a duration of 0.69 years as of June 30, 2020. The Road Fund earned positive $6.688 million on a cash basis for Fiscal Year 2020 versus $11.924 million for Fiscal Year 2019. The Road Fund earnings declined year over year because of lower short term rates and lower receipts. The continued relatively low level of investable balances at certain times during the fiscal year limits the investment opportunities.

As of June 30, 2020, the Turnpike Authority of Kentucky (TAK) had $1.012 billion of bonds outstanding with a weighted average coupon of 4.89% and an average life of 6.20 years.

Road Fund debt service paid in Fiscal Year 2020 was $151.334 million, resulting in a net interest margin (investment income earned year-to-date less debt service paid) of negative $144.646 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.



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 cash flow 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 June 30, 2020

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

*Addition:

*Removed

Honda Motor Co Ltd
Oracle Corp
Lloyds Bank PLC
Walt Disney Co/The

APPENDIX A

STATE INVESTMENT COMMISSION
Securities Lending Agent Approved Counterparties
as of June 30, 2020

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

As of June 30, 2020

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 June 30, 2020 (negative indicates payment owed by ALCo if terminated)	Expired 11/1/17	(4,997,574)	(911,436)	(9,314,535)
Interest Earnings (not applicable)				
Total	not applicable	not applicable	not applicable	not applicable

Swap Summary

Total Notional Amount Executed		Net Exposure Notional Amount	
General Fund	Road Fund	General Fund	Road Fund
243,080,000	0	134,850,000	0

Total Notional Amount Executed by Counter Party

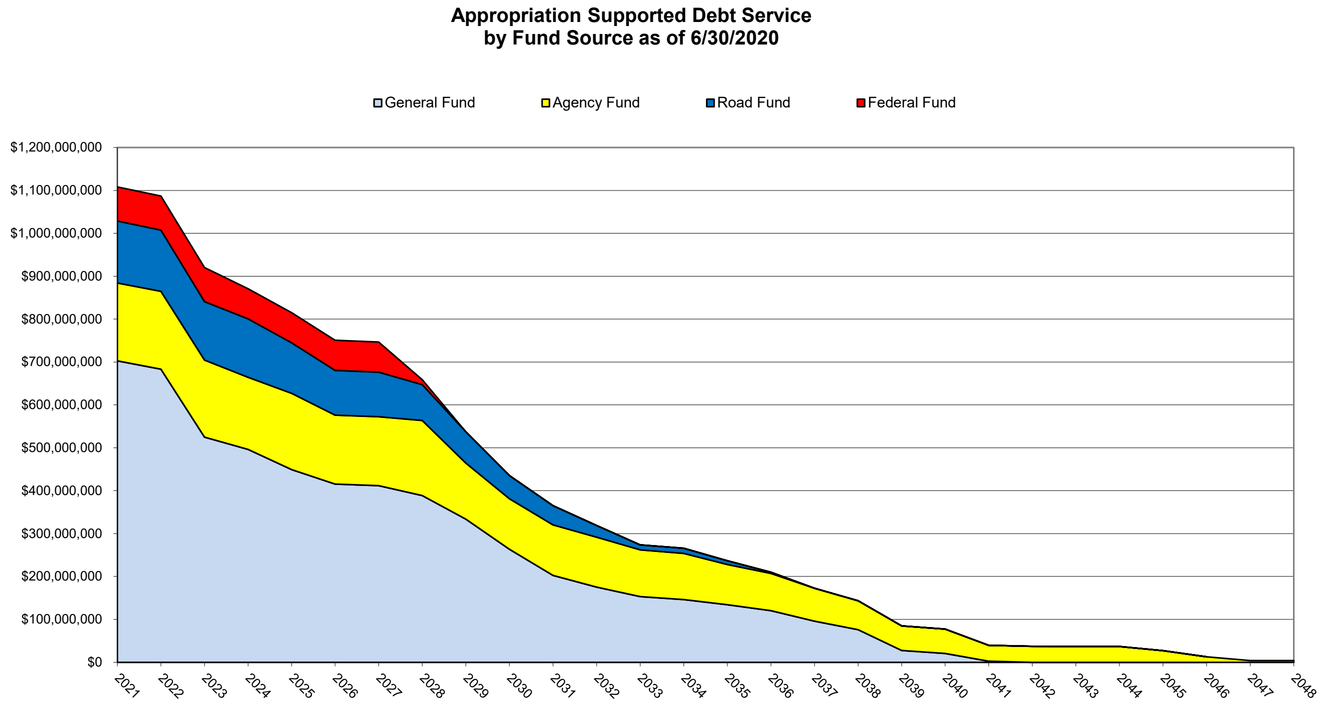
Deutsche Bank (assigned from Citibank on 2/14/2011)

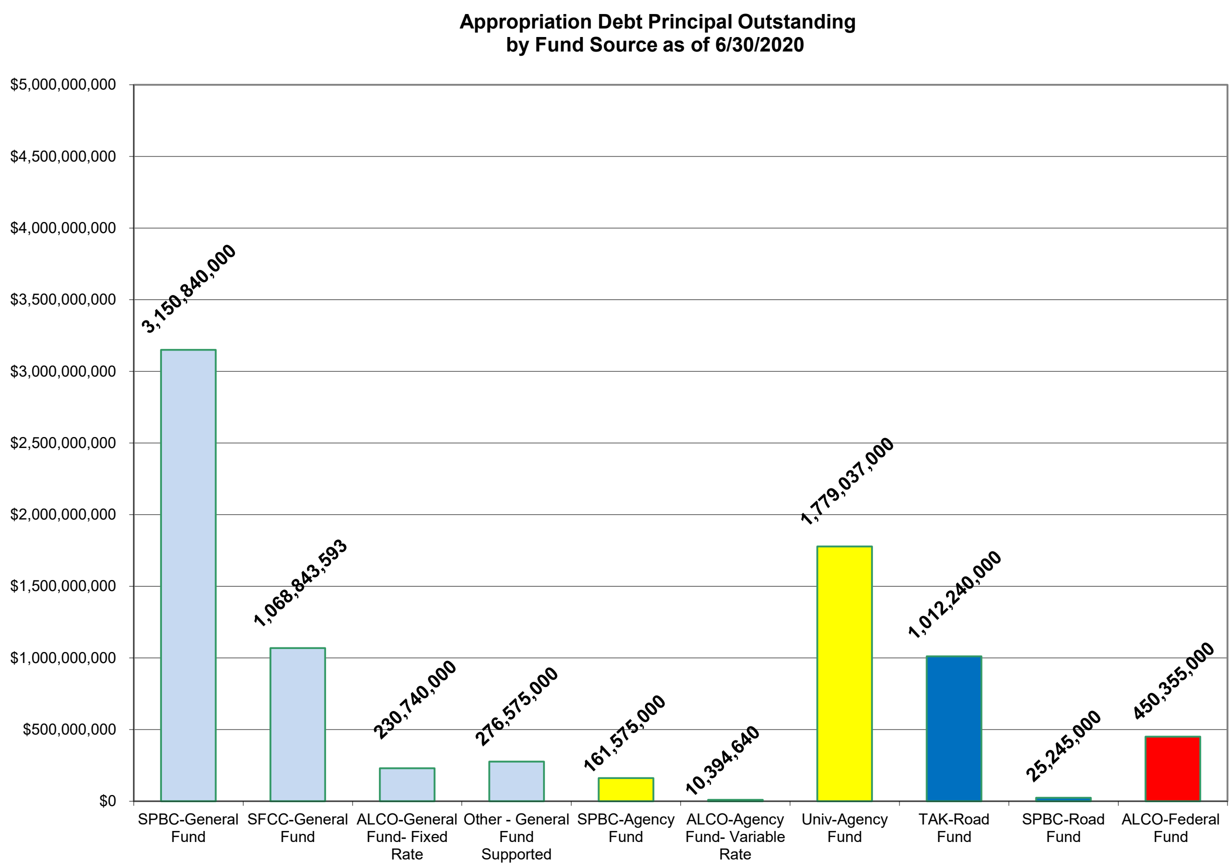
243,080,000

	Debt		10% Net Exposure	
	General Fund	Road Fund	General Fund	Road Fund
Bonds Outstanding	3,381,580,000	1,037,485,000	338,158,000	103,748,500
Authorized but Unissued	705,800,000	62,500,000	70,580,000	6,250,000
Total	4,087,380,000	1,099,985,000	408,738,000	109,998,500

Investment Pool Balance		10% Investment Portfolio	
Other Funds	Net Road Fund	Other Funds	Net Road Fund
6,028,584,731	373,110,031	602,858,473	37,311,003

APPENDIX C





*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 06/30/2020

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
2011 1st Series-KTRS Funding Notes		$269,815,000	3/2011	4/2022	$46,665,000
2013 1st Series-KTRS Funding Notes		$153,290,000	2/2013	4/2023	$49,225,000
	FUND TOTAL	**666,185,000**			**$230,740,000**
Agency Fund Project Notes					
2018 Agency Fund Project Note (KCTCS)		$27,775,000	6/2018	10/2023	$10,394,640
	FUND TOTAL	**$27,775,000**			**$10,394,640**
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		**1,275,005,000**			**$691,489,640**

REPORT PREPARED BY:

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Creating Financial Value for the Commonwealth

TEAM KENTUCKY