

Division of Bond Finance
Interest Rate Calculations

Economic Estimating Conference
Interest Rates for Use in 2019-20 Appropriations

July 19, 2018

Division of Bond Finance

Calculation of Long-Term Interest Rate

| <i>Long-Term Interest Rate Information*</i> | | |
|-----------------------------------------------------------|--------------|--------------|
| Current Long-Term Interest Rate ¹ | 3.85% | 3.85% |
| Plus: Volatility Spread ² | 0.70% | 0.75% |
| Long-Term Interest Rate Range | 4.55% | 4.60% |
| Recommended Long-Term Interest Rate for FY 2019-20 | 5.00% | |

¹ Current interest rate estimate for a 30-year bond issue based on current yields and credit spreads.

² Uses two measures to calculate interest rate volatility; (1) TM3 Municipal Market Data ("MMD") high-low range over the last 12 months of 70 bps and (2) Bond Buyer 11 GO Bond Index maximum annual change over the last 20 years of 75 bps.

Long-Term Interest Rate Recommendation:

Despite the interest rate range noted above, which is based on the Division of Bond Finance's historical methodology that analyzes interest rate trends and volatility over the past 20 years and most recent 12-month period, the Division would recommend maintaining the current long-term interest rate for appropriation purposes at 5.00%.

We are concerned that long-term interest rates may move higher in the next 12-24 months as a result of several market factors. First, the Federal Reserve has continued to move towards a more restrictive monetary policy, including increasing the discount rate (2 increases totaling 50 bps in 2018 to-date, with an additional 2 increases expected before the end of 2018 and with current estimates implying an additional 3 increases in 2019) which may place upward pressure on long-term bond rates. Further, the tapering of quantitative easing (i.e., reducing the size of the Federal Reserve's balance sheet) could also push interest rates higher. Additionally, investor appetite for tax-exempt municipal bonds is still evolving following the passage of tax reform, and rates may increase given the reduced benefit of tax-exemption for some traditional municipal investors. Current municipal rates are being constrained by a supply demand imbalance, as the volume of issuance in 2018 is down nearly 20% year-over-year because many issuers accelerated deals into December 2017 in advance of the effective date of tax reform.

* The Division of Bond Finance has supplied the above interest rates to assist the REC in adopting official rates that would be used by state agencies for planning and budgetary purposes for Fiscal Year 2019-20, except for PECO interest rates which are adopted through a separate process. There can be no assurance that actual interest rates for any particular bond issue will not exceed the rates shown above.

Division of Bond Finance

Calculation of Short-Term Interest Rate

| <i>Short-Term Interest Rate Information*</i> | | |
|------------------------------------------------------------|--------------|--------------|
| Average Everglades 2007AB Rate in Past Twelve Months | 1.15% | 1.15% |
| Plus: Volatility Spread ³ | <u>1.50%</u> | <u>2.00%</u> |
| Short-Term Interest Rate Range | 2.65% | 3.15% |
| Recommended Short-Term Interest Rate for FY 2019-20 | 3.00% | |

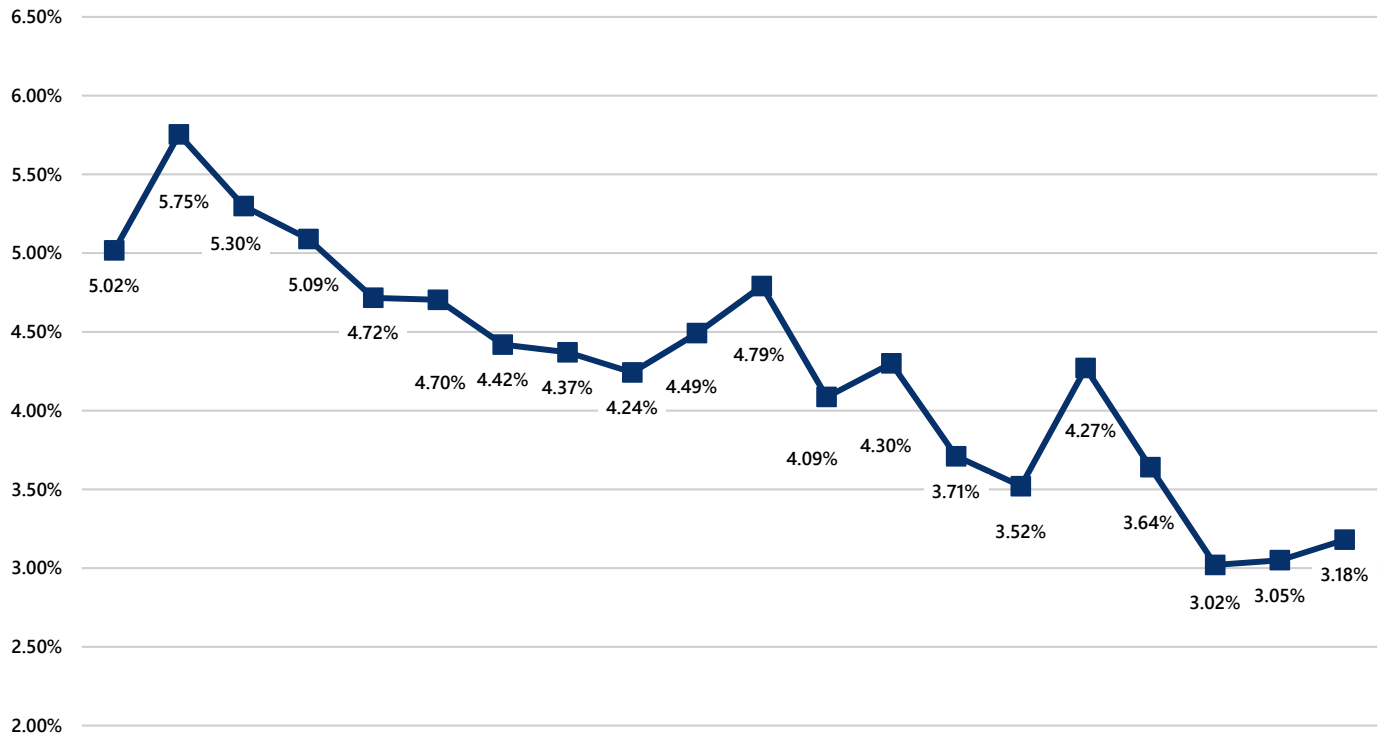
³ Uses the volatility from 20-year change in SIFMA rates of between 150 bps and 200 bps.

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Long-Term Interest Rate Volatility

Change in Bond Buyer 11 GO Bond Average Annual Interest Rates Last 20 Years

The maximum change in the annual average Bond Buyer GO Bond Index over the last 20 years is 75 bps.



| Fiscal Year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Average |
|--------------|---------|-------|---------|---------|---------|---------|---------|---------|---------|-------|-------|---------|-------|---------|---------|-------|---------|---------|-------|-------|--------------------|
| BB 11 GO Avg | 5.02% | 5.75% | 5.30% | 5.09% | 4.72% | 4.70% | 4.42% | 4.37% | 4.24% | 4.49% | 4.79% | 4.09% | 4.30% | 3.71% | 3.52% | 4.27% | 3.64% | 3.02% | 3.05% | 3.18% | 4.28% |
| YOY Change | (0.16)% | 0.74% | (0.46)% | (0.21)% | (0.37)% | (0.01)% | (0.28)% | (0.05)% | (0.13)% | 0.25% | 0.30% | (0.71)% | 0.21% | (0.59)% | (0.19)% | 0.75% | (0.63)% | (0.62)% | 0.03% | 0.13% | 0.34% ⁴ |

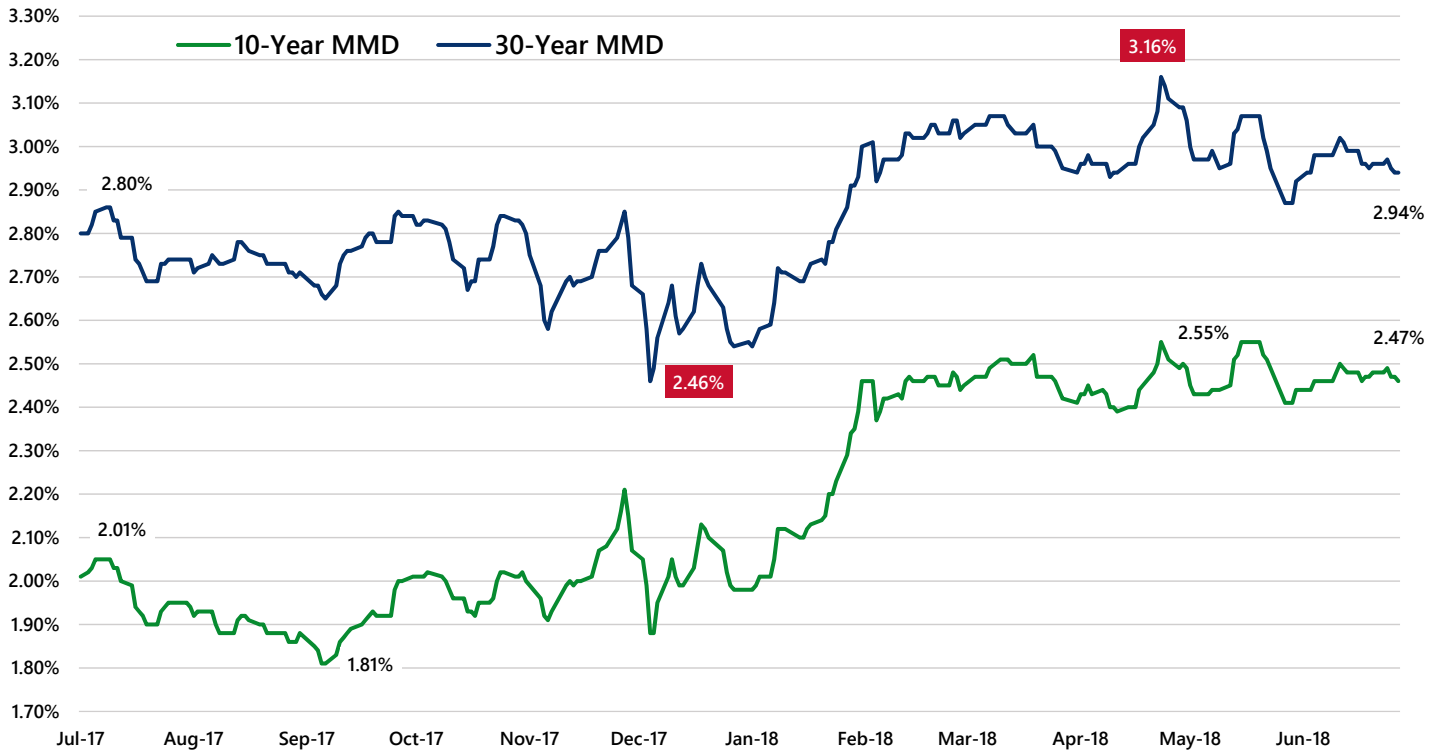
⁴ Average calculated using absolute values of year-over-year changes.

Long-Term Interest Rate Volatility

Change in MMD AAA Rates

Last 12 Months

The 30-year MMD AAA interest rate ranged from a low of 2.46% to 3.16% over the last 12 months, a difference of 70 bps.

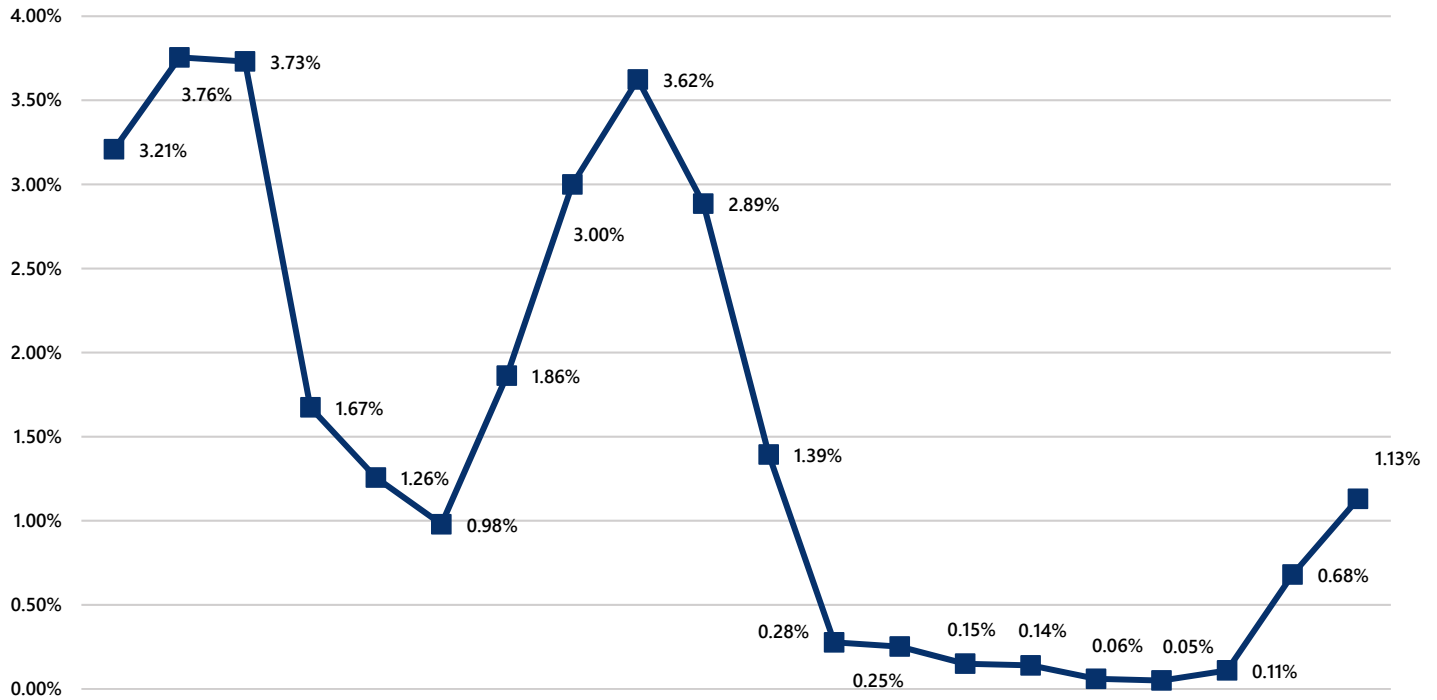


Short-Term Interest Rate Volatility

Change in SIFMA Annual Average Interest Rates

Last 20 Years

The maximum annual change in the SIFMA Index over the last 20 fiscal years is 206 bps, with 149 bps representing the next largest annual change.



| Fiscal Year | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Average |
|-------------|---------|-------|---------|---------|---------|---------|-------|-------|-------|---------|---------|---------|---------|---------|---------|---------|---------|-------|-------|-------|--------------------|
| SIFMA Avg | 3.21% | 3.76% | 3.73% | 1.67% | 1.26% | 0.98% | 1.86% | 3.00% | 3.62% | 2.89% | 1.39% | 0.28% | 0.25% | 0.15% | 0.14% | 0.06% | 0.05% | 0.11% | 0.68% | 1.13% | 1.64% |
| YOY Change | (0.41)% | 0.55% | (0.02)% | (2.06)% | (0.42)% | (0.28)% | 0.88% | 1.14% | 0.62% | (0.74)% | (1.49)% | (1.12)% | (0.03)% | (0.10)% | (0.01)% | (0.08)% | (0.01)% | 0.06% | 0.57% | 0.45% | 0.55% ⁵ |

⁵ Average calculated using absolute values of year-over-year changes.

Short-Term Interest Rate

Last 12 Months

Average Everglades Bonds Variable Rate Resets

The average variable reset rate over the past 12 months is 1.15%.

| <u>Date</u> | <u>Rate</u> |
|-------------|-------------|
| 7/5/2017 | 0.88 |
| 7/12/2017 | 0.87 |
| 7/19/2017 | 0.84 |
| 7/26/2017 | 0.87 |
| 8/2/2017 | 0.81 |
| 8/9/2017 | 0.79 |
| 8/16/2017 | 0.78 |
| 8/23/2017 | 0.79 |
| 8/30/2017 | 0.80 |
| 9/6/2017 | 0.79 |
| 9/13/2017 | 0.85 |
| 9/20/2017 | 0.90 |
| 9/27/2017 | 0.96 |
| 10/4/2017 | 0.93 |
| 10/11/2017 | 0.93 |
| 10/18/2017 | 0.92 |
| 10/25/2017 | 0.93 |
| 11/1/2017 | 0.94 |
| 11/8/2017 | 0.94 |
| 11/15/2017 | 0.96 |
| 11/22/2017 | 0.97 |
| 11/29/2017 | 0.99 |
| 12/6/2017 | 1.03 |
| 12/13/2017 | 1.12 |
| 12/20/2017 | 1.45 |
| 12/27/2017 | 1.76 |
| 1/3/2018 | 1.47 |
| 1/10/2018 | 1.35 |
| 1/17/2018 | 1.24 |
| 1/24/2018 | 1.19 |
| 1/31/2018 | 1.09 |
| 2/7/2018 | 1.00 |
| 2/14/2018 | 1.01 |
| 2/21/2018 | 1.10 |
| 2/28/2018 | 1.14 |
| 3/7/2018 | 1.16 |
| 3/14/2018 | 1.26 |
| 3/21/2018 | 1.41 |
| 3/28/2018 | 1.57 |
| 4/4/2018 | 1.65 |
| 4/11/2018 | 1.76 |
| 4/18/2018 | 1.81 |
| 4/25/2018 | 1.78 |
| 5/2/2018 | 1.63 |
| 5/9/2018 | 1.53 |
| 5/16/2018 | 1.39 |
| 5/23/2018 | 1.21 |
| 5/30/2018 | 1.04 |
| 6/6/2018 | 1.04 |
| 6/13/2018 | 1.38 |
| 6/20/2018 | 1.52 |
| 6/27/2018 | 1.51 |
| Average | 1.15 |

Short-Term Interest Rate

Everglades Series 2007A&B Variable Rate Bonds

Interest Rates since Issuance

