

**REPORT PREPARED FOR THE  
FLORIDA HURRICANE CATASTROPHE FUND**



**CLAIMS-PAYING CAPACITY ESTIMATES**

**OCTOBER 17, 2019**

***ONCE FINALIZED, THE STATEMENT OF THE FHCF'S ESTIMATED BORROWING CAPACITY, ESTIMATED CLAIMS-PAYING CAPACITY, AND PROJECTED YEAR-END BALANCE REQUIRED UNDER S. 215.555(4)(c)2., F.S., WILL BE PUBLISHED IN THE FLORIDA ADMINISTRATIVE REGISTER AS REQUIRED BY LAW.***

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## I. Introduction

The Florida Hurricane Catastrophe Fund (“FHCF”) is a tax-exempt trust fund created by the State of Florida in 1993 and is administered by the State Board of Administration of Florida under Section 215.555, Florida Statutes. Its sole purpose is to stabilize the State’s property insurance markets by providing contractually specified coverage that provides reimbursement for a portion of residential property insurers’ hurricane losses. Participation is mandatory for authorized property insurers, subject to limited exceptions.

Participating insurers pay the FHCF annual reimbursement premiums as consideration for this coverage. The reimbursement premiums are based on insured values of covered properties, as reported annually to the FHCF. The FHCF statute requires the annual adoption of a reimbursement premium formula that generates “actuarially indicated” premiums as defined by law. An insurer’s premium is proportionate to its coverage selection at a percentage level and its share of the FHCF’s total risk exposure.

The annual reimbursement contract provides for reimbursement of a percentage of an insurer’s residential hurricane losses in excess of its “retention” which is determined under a statutory formula. Reimbursement is provided at one of three percentage levels (90%, 75%, or 45%) selected in advance by the insurer.

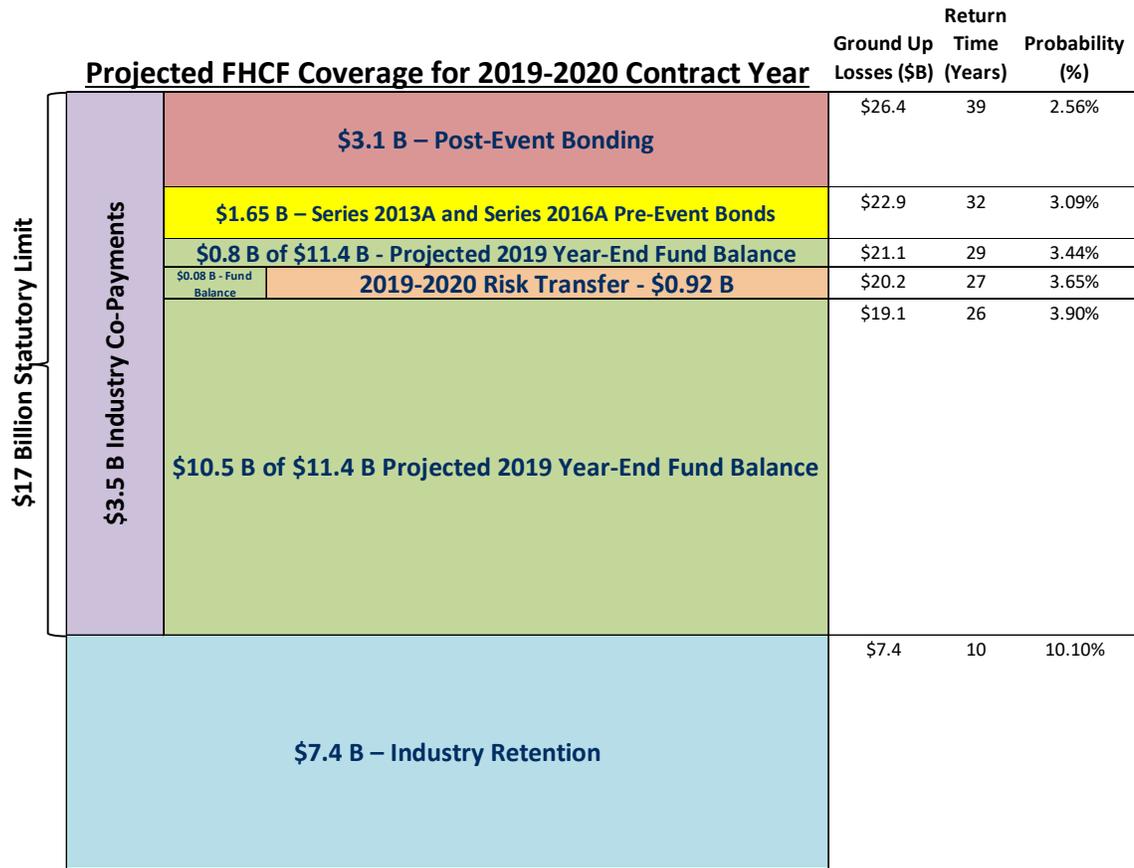
The FHCF may obtain funds to pay its contractual reimbursement obligations from the following available potential sources:

- (1) *Accumulated reimbursement premiums*
- (2) *Recoveries from reinsurance and other risk-transfer mechanisms*
- (3) *Pre-event bond proceeds and other pre-event liquidity resources*
- (4) *Proceeds of post-event revenue bonds issued under Section 215.555(6), Florida Statutes, and secured by emergency assessments, if needed*
- (5) *Emergency assessments under Section 215.555(6)(b), Florida Statutes, if needed*
- (6) *Investment earnings on accumulated reimbursement premiums and emergency assessments*

The actual and potential obligations of the FHCF are limited by statute. For the contract year June 1, 2019 – May 31, 2020, the maximum potential liability of the FHCF is \$17 billion, with total liquid resources of \$13.9 billion, which is approximately \$3.1 billion below the maximum potential liability and therefore would require \$3.1 billion of post-event borrowing. In addition, the FHCF statute limits the Fund’s reimbursement liability to its actual claims-paying capacity, which may depend on financial market



conditions at the time of sale if any post-event revenue bonds are needed to pay claims. The following chart summarizes the FHCF’s projected coverage for the 2019-2020 contract year based on assumptions prepared by Paragon Strategic Solutions, the FHCF’s consulting actuary.



Numbers may not add due to rounding. Not drawn to scale

Ground-up losses exclude 10% of loss adjustment expenses (“LAE”) on the industry co-payments.

*In this chart the relevant data are aggregated for FHCF participating insurers. The references to probabilities, probable maximum losses, and cash exhaustion are shown for illustrative purposes only. The probabilities in this chart are presented as if all of the participating insurers had uniform exposures and loss experiences. In actual practice, each participating insurer has its own retention and coverage limits based upon its actual exposures, and therefore each participating insurer has its own unique probability of triggering its FHCF coverage and reaching its FHCF coverage limit.*

Pursuant to Section 215.555(4)(c)(2), Florida Statutes, “in May and October of the contract year, the board shall publish in the Florida Administrative Register a statement of the fund’s estimated borrowing capacity, the fund’s estimated claims-paying capacity, and the projected balance of the fund as of December 31.” The purpose of these claims-paying capacity estimate reports is to provide an estimate of the borrowing and claims-paying capacity of the FHCF for the 2019 season in order to assist the FHCF’s participating insurers in determining their reimbursements.

Providing estimates at these particular times of the year is useful from the perspective that some insurers operate in multiple states and tend to purchase their private reinsurance effective January, while many other insurers operate solely in Florida and purchase their private reinsurance prior to June, effective June 1<sup>st</sup> of each year.



## II. The Process

As in prior years, in order to estimate the FHCF's borrowing capacity for the 2019 and 2020 seasons, we took the following three steps:

- (1) Evaluated market conditions for the FHCF using our internal resources. Raymond James & Associates, Inc. ("Raymond James"), a full service broker-dealer with approximately \$11 billion in market capitalization (NYSE:RJF, [www.raymondjames.com](http://www.raymondjames.com)), serves as the independent financial advisor to the FHCF. Raymond James also serves as an advisor to numerous other governmental catastrophe insurance entities across the country and our experience includes the evaluation and placement of risk transfer programs in the traditional and capital markets, the issuance of pre-event bonds and other liquidity mechanisms, the issuance of post-event bonds, and serving as an investment consultant. We rank number one as financial advisor to state-sponsored public insurance entities and are among the top 10 municipal underwriters in the country and participate daily in the market for fixed income securities similar to those the FHCF has issued or would issue to help meet its reimbursement obligations after an event and have served as advisor or underwriter on the issuance of over \$40 billion of debt and related financial instruments for the FHCF and other governmental catastrophe insurance entities around the country since 2005. Raymond James currently has over \$824 billion of assets under management.
- (2) Solicited formal written feedback from the five current senior managing underwriters of the FHCF's financial services team. These firms – Bank of America / Merrill Lynch, Citi, J.P. Morgan, Morgan Stanley and Wells Fargo – are among the largest financial services firms in the world, and each one has an extensive experience and expertise with FHCF securities and similar instruments for other municipal issuers. They all were also part of the team for the successful execution of the Series 2013A and Series 2016A pre-event financings. In the solicitation for the preparation of this report, we asked them to provide their estimates, given certain assumptions, of the FHCF's bonding capacity. As always, in our written request for feedback, we sought to ensure that the underwriters had a clear understanding of the purpose of asking them to provide such estimates and the uses therefore. A copy of the solicitation and the response of each of the managers is contained in Appendix A.
- (3) We evaluated the written feedback and determined a recommended bonding capacity estimate for inclusion in this report.

Raymond James and the FHCF staff utilized the resources of the FHCF's five senior managing underwriters to estimate FHCF bonding capacity



**III. Analytical Considerations**

The FHCF has very strong debt repayment capabilities. From a credit standpoint, the ability to levy emergency assessments on all property and casualty insurance lines except workers' compensation, medical malpractice, federal flood, and accident and health lines is similar to a statewide sales tax on an essential product with an underlying premium base of \$50.4 billion<sup>1</sup>. The strength of this pledged revenue stream is the primary reason the three major rating agencies – Moody's, Standard & Poor's, and Fitch – rate the FHCF's debt Aa3, AA, and AA, respectively. To put these ratings in perspective, less than 5% of U.S. corporations have ratings in the AA category by all three rating agencies.

**The major constraint, if any in the future, for the FHCF in achieving its maximum reimbursement obligation is potential limitation of market access and capacity, not a lack of assessment capability or credit strength**

While the FHCF statute does limit the amount of assessments that can be levied – 6% for losses attributable to one contract year and 10% for losses attributable to all years – these percentages, when applied to the current assessment base of \$50.4 billion mean the FHCF could levy annual assessments of as much as \$3.02 billion for losses from hurricanes occurring in one contract year and as much as \$5.04 billion for losses from hurricanes occurring over multiple contract years. These annual amounts, in conjunction with the other available resources of the FHCF, are estimated to be more than sufficient to support enough bonds to enable the FHCF to meet its maximum initial season obligation and subsequent season coverage as well, assuming that the fixed income markets continue to function in a normal manner and the FHCF has market access to issue such bonds at the current market rate for the initial season, or even at inflated rates of 6%.

Economic and market conditions have significantly improved over the last ten years with the U.S. and global interest rates at historically low levels and fixed rate issuance is at all-time highs, which enabled the FHCF to successfully execute the \$2 billion Series 2013A and \$1.2 billion Series 2016A taxable pre-event financings in 2013 and 2016, respectively. However, market conditions and access are never guaranteed, especially after an event or multiple events either in Florida or globally, and therefore always carry marginal uncertainty, which is critical to understanding the potential challenges the FHCF may face, especially after a large event. In addition, since 2015 the FHCF has purchased reinsurance each year. For the 2019 season, the FHCF transferred \$920 million of a \$1 billion layer of risk through traditional reinsurance at an attachment point of \$10.5 billion.

Under section 215.555(4)(b)2, Florida Statutes, an insurer is prohibited from electing a lower coverage percentage upon renewal of its FHCF reimbursement contract if any post-event revenue bonds

<sup>1</sup> See Appendix B for an analysis of the size and growth of the FHCF's assessment base over time.



are outstanding. However, since the defeasance of all outstanding FHCF post-event revenue bonds in 2014, some participating insurers based on their risk exposure, elected to take advantage of global risk transfer markets and lowered their coverage percentage selection starting in the 2015-2016 contract year until the 2018-2019 contract year. The average coverage percentage selection dropped from 89.9% in the 2014-2015 contract year to 73.5% for the 2018-2019 contract year, but has increased to 81.6% for the 2019-2020 contract year as a result of hardening pricing conditions in the global reinsurance markets due to significant global insured losses in 2017 and 2018. As a result of these changes and the enactment into law of HB 301, which increased the FHCF’s LAE allowance from 5% to 10%, the co-payment amount for a \$17 billion FHCF payout decreased from approximately \$6.0 billion for the 2018-2019 Contract Year to \$3.5 billion for the 2019-2020 Contract Year.

As reflected in the table below, for the 2019-2020 Contract Year, the FHCF has approximately \$13.9 billion of liquidity resources, which is approximately \$3.1 billion below its maximum statutory obligation of \$17 billion. After an event and depending on the market conditions and interest rates, the FHCF may be able to either draw on its pre-event bond proceeds and repay the pre-event bonds by issuing post-event bonds, or the FHCF could issue post-event bonds in the amount of \$4.7 billion and leave its \$1.65 billion of pre-event bond proceeds outstanding for a subsequent season(s). The table below shows the FHCF’s obligations and its projected liquidity resources for the 2019-2020 Contract Year.

<b>FHCF Obligations and Liquidity Resources – 2019-2020 Contract Year</b>	<b>Amount (\$B)</b>
<b>Total Potential FHCF Obligations</b>	<b>\$17.0</b>
<b>Projected 2019 Year-End Fund Balance</b>	<b>\$11.4</b>
<b>Risk Transfer</b>	<b>\$0.9</b>
<b>Series 2013A and Series 2016A Pre-Event Bonds Balance</b>	<b>\$1.7</b>
<b>Total Liquidity Resources</b>	<b>\$13.9</b>
<b>Total Liquidity Resources Below Potential Obligations</b>	<b>\$3.1</b>

*Numbers may not add due to rounding*

If the FHCF were to leave all its Series 2013A and Series 2016A pre-event bond proceeds outstanding for the subsequent season, the potential maximum amount of post-event bonding needed is projected to be approximately \$4.7 billion for the 2019-2020 contract year. The FHCF could execute this size of transaction in one or multiple series over a 12-month period – this issuance amount is standard in the taxable and tax-exempt markets. For example, annual par amount issued over a calendar year by a single municipal issuer has exceeded \$4.7 billion 14 times since 2016.

The FHCF’s 2019-2020 Contract Year liquidity resources reflect losses and loss reserves in the total amount of \$6.45 billion from Hurricanes Irma and Michael. At this time, the FHCF’s ultimate losses and loss reserves estimated by Paragon Strategic Solutions Inc., the FHCF’s consulting actuary, are \$5.00 billion from Hurricane Irma and \$1.45 billion from Hurricane Michael.



Largest 25 Taxable Municipal Issuances By Par Amount Since 2016					
Rank	Issuer Name	State	Year of Sale	Issue Description	Par (\$MM)
1	New York Transportation Dev Corp	NY	2016	Special Facilities Bonds	\$2,410
2	California	CA	2018	Various GO & Refunding Bonds	\$2,147
3	Hudson Yards Infrastructure Corp	NY	2017	Second Indenture Revenue Bonds	\$2,142
4	Chicago City-Illinois	IL	2018	General Airport Sr Ln Rev Bonds	\$2,013
5	Empire State Development Corp	NY	2017	State Personal Inc Tax Rev Bonds	\$1,843
6	NYS Dorm Authority	NY	2018	State Sales Tax Revenue Bonds	\$1,782
7	San Francisco City & Co Airport Comm	CA	2019	Revenue Bonds	\$1,764
8	Empire State Development Corp	NY	2017	State Personal Inc Tax Rev Bonds	\$1,751
9	NYS Dorm Authority	NY	2018	State Sales Tax Revenue Bonds	\$1,692
10	San Jose City Successor Redev Agcy	CA	2017	Sr Tax Allocation Refunding Bonds	\$1,678
11	NYS Dorm Authority	NY	2018	St Personal Income Tax Rev Bonds	\$1,670
12	NYS Dorm Authority	NY	2017	State Personal Inc Tax Rev Bonds	\$1,667
13	California	CA	2016	Various Purpose GO Bonds	\$1,649
14	NYS Dorm Authority	NY	2019	State Personal Inc Tax Rev Bonds	\$1,627
15	California	CA	2017	Various Purpose GO Bonds	\$1,577
16	Empire State Development Corp	NY	2019	State Personal Inc Tax Rev Bonds	\$1,544
17	California	CA	2016	Various Purpose GO Bonds	\$1,468
18	NYC Transitional Finance Auth	NY	2019	Future Secured Subordinate Bonds	\$1,450
19	NYC Transitional Finance Auth	NY	2018	Building Aid Revenue Bonds	\$1,412
20	New York City-New York	NY	2019	General Obligation Bonds	\$1,400
21	Georgia	GA	2017	General Obligation Bonds	\$1,390
22	NYS Dorm Authority	NY	2017	State Sales Tax Revenue Bonds	\$1,381
23	Georgia	GA	2016	General Obligation Bonds & GO Refundin	\$1,371
24	NYC Transitional Finance Auth	NY	2019	Future Tax Secured Sub Bonds	\$1,350
25	NYS Dorm Authority	NY	2018	State Sales Tax Revenue Bonds	\$1,330

Source: Thomson Financial for long-term negotiated taxable issuances from January 1, 2016 to September 30, 2019.

Largest 25 Tax Exempt Municipal Issuances By Par Amount Since 2016					
Rank	Issuer Name	State	Year of Sale	Issue Description	Par (\$MM)
1	Illinois	IL	2017	General Obligation Bonds	\$4,500
2	NJ Tobacco Settlement Fin Corp	NJ	2018	Tobacco Settlement Bonds	\$3,147
3	California	CA	2016	General Obligation Bonds	\$2,951
4	California	CA	2017	GO Var Purpose & Refunding Bonds	\$2,793
5	New Jersey Trans Trust Fund Au	NJ	2016	Revenue Notes	\$2,741
6	California	CA	2016	GO Various Purpose & Ref Bonds	\$2,653
7	California	CA	2017	GO Various Purpose & Ref Bonds	\$2,538
8	Denver City and Co-Colorado	CO	2018	Subordinate Revenue Bonds	\$2,526
9	North Texas Tollway Auth (NTTA)	TX	2017	2nd Tier System Rev & Ref Bonds	\$2,509
10	California	CA	2019	Various Purpose GO Bonds	\$2,405
11	California	CA	2019	Various Purpose GO Ref Bonds	\$2,292
12	California	CA	2018	GO & Various Purpose Ref Bonds	\$2,181
13	Hudson Yards Infrastructure Corp	NY	2017	Second Indenture Revenue Bonds	\$2,142
14	California	CA	2019	Various Purpose GO & Ref Bonds	\$2,024
15	Metropolitan Transport Auth (MTA)	NY	2017	Transport Rev Ref Green Bonds	\$2,021
16	Chicago City-Illinois	IL	2018	General Airport Sr Ln Rev Bonds	\$2,013
17	Bay Area Toll Authority (BATA)	CA	2017	Subordinate Toll Bridge Rev Bonds	\$1,954
18	Empire State Development Corp	NY	2017	State Personal Inc Tax Rev Bonds	\$1,843
19	NYS Dorm Authority	NY	2018	State Sales Tax Revenue Bonds	\$1,782
20	San Francisco City & Co Airport Comm	CA	2019	Revenue Bonds	\$1,764
21	Colorado Health Facilities Auth	CO	2019	Revenue Bonds	\$1,761
22	Empire State Development Corp	NY	2017	State Personal Inc Tax Rev Bonds	\$1,751
23	NYS Dorm Authority	NY	2017	State Personal Inc Tax Rev Bonds	\$1,750
24	California Health Facs Fin Auth	CA	2017	Revenue Bonds	\$1,747
25	NYS Dorm Authority	NY	2018	St Personal Income Tax Rev Bonds	\$1,700

Source: Thomson Financial for long-term negotiated tax-exempt issuances from January 1, 2016 to September 30, 2019.



After a hurricane event, the FHCF most likely will not need to do one single large financing. Based on a higher attachment point and the past payout patterns, the FHCF could also meet its 2019-2020 obligations by issuing more than one series of bonds over a period of 12 months or longer, if needed. Accordingly, it is also helpful to evaluate which issuers in the municipal market (both taxable and tax-exempt) have issued the most debt in a 12-month period. The charts below show the largest amount issued every year since 2016 has exceeded \$4.7 billion.

Largest 25 Issuers By Issued Par Amount In 2016		
Rank	Issuer Name	Par (\$MM)
1	California	\$8,921
2	NYS Dorm Authority	\$5,863
3	Metropolitan Transport Auth (MTA)	\$5,192
4	Massachusetts	\$4,826
5	NYC Transitional Finance Auth	\$4,750
6	Massachusetts Dev Finance Agcy	\$4,132
7	New York City-New York	\$3,882
8	Connecticut	\$3,657
9	Chicago City-Illinois	\$3,513
10	Illinois	\$3,362
11	Illinois Finance Authority	\$3,327
12	New York Transportation Dev Corp	\$3,255
13	California Health Facs Fin Auth	\$3,214
14	Pennsylvania	\$2,841
15	New Jersey Trans Trust Fund Au	\$2,741
16	Pennsylvania Turnpike Commission	\$2,713
17	Univ of Texas Sys Bd of Regents	\$2,628
18	Michigan Finance Authority	\$2,567
19	Regents of the Univ of California	\$2,391
20	Wisconsin	\$2,197
21	Indiana Finance Authority	\$2,165
22	Miami-Dade Co-Florida	\$1,957
23	California Statewide CDA (CSCDA)	\$1,950
24	Chicago City BOE	\$1,930
25	Texas Transportation Commission	\$1,894

Largest 25 Issuers By Issued Par Amount 2017		
Rank	Issuer Name	Par (\$MM)
1	California	\$8,869
2	NYS Dorm Authority	\$7,435
3	NYC Transitional Finance Auth	\$6,503
4	Metropolitan Transport Auth (MTA)	\$5,645
5	California Health Facs Fin Auth	\$3,782
6	New York City-New York	\$3,743
7	Wisconsin	\$3,487
8	Massachusetts	\$3,101
9	New Jersey Turnpike Authority	\$3,080
10	Bay Area Toll Authority (BATA)	\$2,813
11	Chicago City-Illinois	\$2,809
12	Illinois Finance Authority	\$2,631
13	Regents of the Univ of California	\$2,621
14	Wisconsin Public Finance Auth	\$2,594
15	Massachusetts Dev Finance Agcy	\$2,572
16	North Texas Tollway Auth (NTTA)	\$2,509
17	Pennsylvania Turnpike Commission	\$2,281
18	New Jersey Economic Dev Auth	\$2,209
19	Hudson Yards Infrastructure Corp	\$2,142
20	Philadelphia City-Pennsylvania	\$2,014
21	Miami-Dade Co-Florida	\$1,957
22	Triborough Bridge & Tunnel Auth	\$1,924
23	Houston City-Texas	\$1,830
24	Texas A&M University System	\$1,786
25	NYS Housing Fin-Mortgage Agcy	\$1,775

Largest 25 Issuers By Issued Par Amount 2018		
Rank	Issuer Name	Par (\$MM)
1	NYS Dorm Authority	\$9,150
2	NYC Transitional Finance Auth	\$7,758
3	Texas	\$7,295
4	California	\$6,279
5	New York City-New York	\$4,479
6	Massachusetts	\$3,923
7	Metropolitan Transport Auth (MTA)	\$3,680
8	Connecticut	\$3,558
9	Denver City and Co-Colorado	\$3,319
10	NJ Tobacco Settlement Fin Corp	\$3,147
11	Texas Water Development Board	\$3,128
12	California Municipal Fin Auth	\$3,048
13	New Jersey Trans Trust Fund Au	\$2,763
14	Kentucky Pub Energy Au (PEAK)	\$2,731
15	Los Angeles City-California	\$2,703
16	Chicago City BOE	\$2,512
17	Golden State Tobacco Sec Corp	\$2,496
18	NYC Municipal Water Fin Auth	\$2,477
19	Colorado	\$2,326
20	Houston City-Texas	\$2,275
21	Chicago City-Illinois	\$2,238
22	Regents of the Univ of California	\$2,059
23	Main Street Natural Gas Inc	\$2,022
24	Port Authority of NY & NJ	\$1,987
25	NYC Housing Dev Corp	\$1,969

Largest 25 Issuers By Issued Par Amount 2019 YTD		
Rank	Issuer Name	Par (\$MM)
1	California	\$7,666
2	NYS Dorm Authority	\$4,021
3	Metropolitan Transport Auth (MTA)	\$3,804
4	Massachusetts	\$3,765
5	San Francisco City & Co Airport Comm	\$3,078
6	Colorado Health Facilities Auth	\$3,049
7	NYC Transitional Finance Auth	\$2,950
8	Florida Development Fin Corp	\$2,849
9	New York City-New York	\$2,394
10	NYC Municipal Water Fin Auth	\$2,300
11	New Jersey Trans Trust Fund Au	\$1,750
12	Washington	\$1,739
13	Michigan Finance Authority	\$1,669
14	Bay Area Toll Authority (BATA)	\$1,594
15	Empire State Development Corp	\$1,544
16	Connecticut	\$1,520
17	NYC Housing Dev Corp	\$1,500
18	North Carolina	\$1,500
19	Miami-Dade Co-Florida	\$1,499
20	Austin City-Texas	\$1,393
21	Massachusetts Dev Finance Agcy	\$1,391
22	Main Street Natural Gas Inc	\$1,371
23	Houston City-Texas	\$1,371
24	Port Authority of NY & NJ	\$1,301
25	Pennsylvania Turnpike Commission	\$1,288

Source: Thomson Financial for long-term issuances from January 1, 2016 to September 30, 2019.



In reviewing this history of large municipal issuers, however, it is important to note that the FHCF has been a relatively infrequent but large issuer of debt. Since 2006, the FHCF has completed seven bond issues totaling \$12.1 billion (three tax-exempt issues totaling \$2.6 billion and four taxable issues totaling \$9.5 billion), of which \$3.2 billion in pre-event debt has been issued since 2012, but with \$1.65 billion outstanding as of July 1, 2019. By comparison, for example, since 2016, the State of California has completed 45 long-term bond issues totaling over \$31 billion, the New York State Dormitory Authority has completed 120 long-term bond issues totaling over \$26 billion, the New York City Transitional Finance Authority has completed 64 long-term bond issues totaling approximately \$22 billion, and the Commonwealth of Massachusetts has completed 64 long-term bond issues totaling over \$15 billion. The FHCF's debt has always been issued with relatively short maturities ranging from 1-7 years (although it has the authority to issue debt with maturities of up to 30 years). All of the issuers listed above have had final maturities greater than 30 years.

As a less frequent issuer with relatively less debt outstanding and primarily at the shorter end of the yield curve, the FHCF is not as well covered by investor credit analysts in the primary or secondary markets who invest at the long-end of the yield curve, even though it has very strong credit ratings. This relative lack of long-term exposure and investor familiarity could potentially be a limiting factor in determining the FHCF's potential market access for larger amounts and/or longer maturities in the short run.

Analysis of potential market acceptance of large amounts of FHCF debt must include not only relevant historical references, but also an evaluation of current market conditions and cash flow needs. In this regard, conditions seem to be excellent in both tax-exempt and taxable municipal markets, as well as in the corporate market.

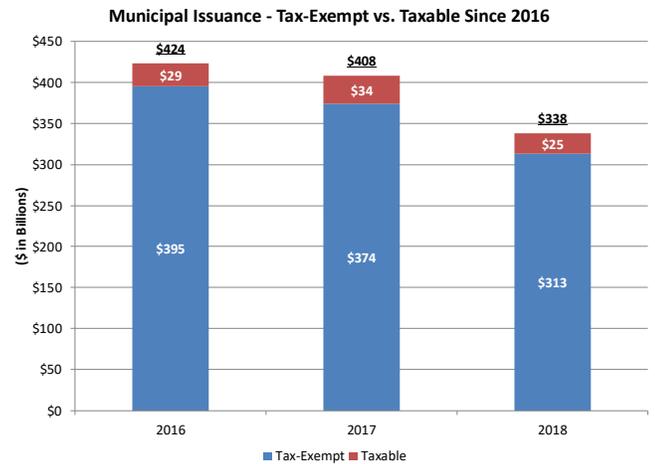
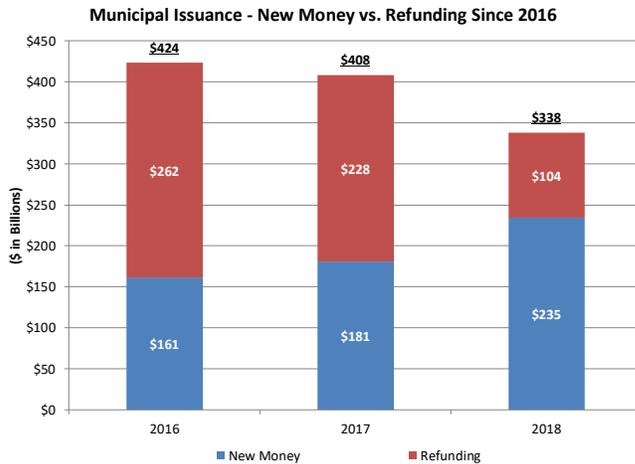
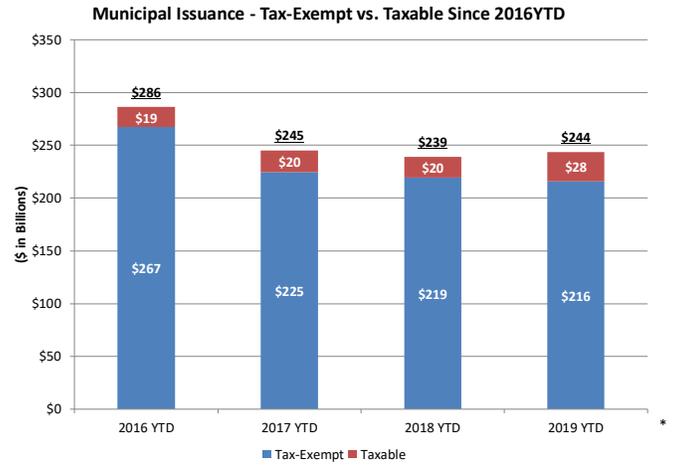
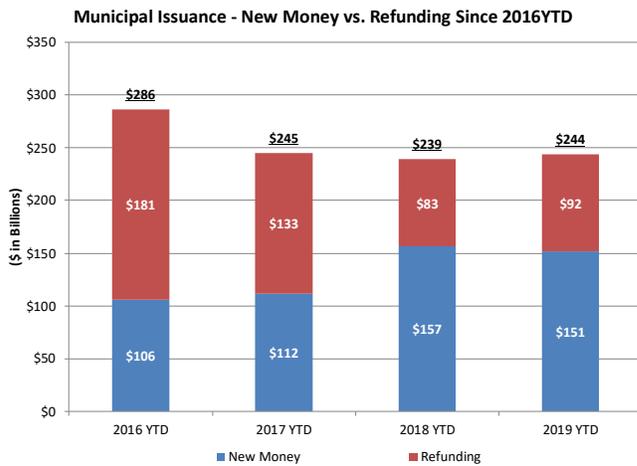
In 2018, corporate issuance of \$1.4 trillion (\$1.2 trillion investment grade, \$173 billion high yield, and \$39 billion convertible) is 18% lower than the record issuance of \$1.7 trillion (\$1.4 trillion investment grade, \$284 billion high yield, and \$27 billion convertible) in 2017. Year-to-date 2019, corporate bond issuance is \$1.1 trillion (\$934 billion investment grade, \$207 billion high yield, and \$1 billion convertible), or relatively flat to the \$1.2 billion issued over the same time period in 2018. The corporate bond market has topped \$1 trillion each year since 2011 as interest rates have been consistently historically low.

While corporate bond issuance has reached record levels since 2011, most issuances are for financial engineering rather than to build manufacturing plants or infrastructure to fund growth – i.e., more issuances are to fund mergers and acquisitions or stock buybacks, which include International Business Machines Corp.'s \$20 billion issuance in May 2019 to help fund its purchase of Red Hat Inc. and Bristol-



Myers Squibb Co.'s \$19 billion issuance in May 2019 to help fund the largest biotechnology takeover in history with the purchase of Celgene Inc.

For 2018, municipal long-term issuance was 17% lower compared to 2017 with \$338 billion of issuance. For year-to-date 2019, municipal long-term negotiated issuance is relatively flat compared to the same time period in 2018 with \$244 billion of issuance. Prior to the Tax Reform Bill of 2018, a majority of municipal issuance over the past few years has been issued for refundings to capitalize on low interest rates, which is evidenced by the amount of new money issuance for 2017 – \$181 billion, or 44% of the total \$326 billion of long-term issuance – versus eleven years ago – in 2007, \$274 billion, or 64% of the total \$429 billion of issuance, was for new money projects. As part of the Tax Reform Bill of 2018, the tax-exempt provision for advance refundings was eliminated, which has affected the volume of refundings – 31% and 38% of municipal issuance was for refundings in 2018 and 2019, respectively.



Source: Thomson Financial for municipal long-term issuances from January 1, 2016 to September 30, 2019.

The reduction in both the corporate and municipal markets in 2018 is a reflection of recent tax-law changes, which have allowed for repatriation of overseas cash as well as the elimination of state and local tax deductions (“SALT”) of over \$10,000. There is strong investor demand in both the tax-exempt and taxable markets as evidenced by the \$75 billion in issuance of U.S. investment-grade corporate bonds in



the first week of September (\$28 billion was issued in a single day), the most in a week since 1972; however, global market conditions can be volatile after a large or multiple global or U.S. events. Nonetheless, the FHCF has multiple factors working in its favor independent of market trends, including, but not limited to: (1) the FHCF is a well-regarded, highly-rated credit (AA category), closely associated with (though not guaranteed by) the State of Florida, a blue-chip name in the market; (2) in February 2016, the FHCF successfully priced \$1.2 billion of Series 2016A taxable pre-event bonds with 3 and 5-year maturities at a true interest cost of 2.52%, which re-established the strength of the FHCF credit in the taxable market; and (3) similar to its pre-event financings, any post-event bond issuances of the size the FHCF may need to undertake would also be included in the various benchmark indices market observers use to track market performance, so institutional money managers seeking to at least match indexed returns may have a strong additional incentive to buy FHCF bonds, particularly if they are offered at interest rates marginally higher than those usually associated with typical AA rated credits.

Estimating the FHCF's post-event bonding capacity is an inexact science. To do so requires a consideration of the factors above, an extrapolation about what market conditions might exist after hurricanes of various sizes, and an evaluation of the many subjective and substantive considerations surrounding these estimates and the uses thereof. Certainty is not a defining characteristic of an exercise like this; nor can the results be responsibly guaranteed. Nevertheless, with the proper experience, market perspective and analysis, we can make estimates suitable for the FHCF's requirements – conservative estimates, not guaranteed to be accurate, but responsibly determined using the best available sources.

One additional note of caution is that financial markets can be highly volatile and uncertain at various times. Such uncertainty may create an additional risk for participating insurers who rely on the FHCF for reimbursements. Although financial market conditions have significantly improved since the Great Recession of 2007 and are currently volatile but still very conducive to favorable debt issuance, it is not possible to guarantee financial market conditions into the future for long-term sustainability of the FHCF. The FHCF's estimated post-event borrowing capacity is subjective and depends heavily on the opinions of its five senior managing underwriters' and our evaluation and analysis of their responses to our questions. As such, participating insurers should recognize the potential impact that financial markets can have on the FHCF's claims-paying ability for a subsequent or future seasons. The following pages provide current bonding and claims-paying capacity estimates.



#### IV. Bonding and Claims-Paying Capacity Estimates

To estimate the FHCF's bonding capacity, we used the general process described in Section II and detailed in Appendix A. The specific wording of the capacity question we asked the FHCF's senior managing underwriters was as follows:

**The preliminary estimated bonding capacity of the FHCF for the current contract year is \$9.0 billion**

*"Please provide us with your firm's opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 and 12-24 months at rates that are at or above the current "market" scale, as needed."*<sup>2</sup>

We considered all data elements, and based on cash flow requirement projections from Paragon Strategic Solutions Inc., the FHCF's consulting actuary, guidance from FHCF staff about potential payout timing, and a desire for prudence, as in the past we continue to use the capacity estimates for the first 12 months in formulating the bonding capacity estimate for the initial season.

In general, it would take a hurricane event resulting in ground-up losses exceeding approximately \$22.9 billion to exhaust the FHCF's projected liquid resources of approximately \$13.9 billion, or \$3.1 billion below its potential maximum obligation of \$17.0 billion. The amount of debt that the FHCF can raise within the first twelve months is helpful for the FHCF and participating insurers in protecting their financial solvency as well as for the FHCF to preserve its remaining pre-event bond proceeds of \$650 million for a subsequent season (\$1 billion matures on July 1, 2020 and therefore will not be available for the 2020-2021 contract year).

We are also comfortable including estimates that contained some above-market interest rate capacity estimates in recognition of the fact that the FHCF has ample assessment capability within its statutory limits to issue bonds, even at significantly higher rates<sup>3</sup>. For purposes of calculating the potential assessment impact of the FHCF's bonding needs, we have calculated the assessment rate if the FHCF post-event bonds carry interest rates at current market levels as well as at an "above market" interest rate of 6%. There is also some overlap between tax-exempt and taxable capacity estimates as the investor base has changed and market acceptance has increased for municipal taxable bonds and the success of the Series 2013A and Series 2016A pre-event taxable financings, which may marginally reduce the capacity for tax-exempt debt. A summary of the senior managers' responses is shown in the table on the following page:

<sup>2</sup> The complete information request and all responses are included in Appendix A.

<sup>3</sup> For example, a 30-year bond issue at a 6% interest rate sized to produce the maximum potential FHCF obligation (\$4.7 billion) for the current contract year, assuming no pre-event bonds are used to pay claims and no pre-event bonds are refinanced, would require an annual assessment of only 0.67%, well below the 6% statutory cap.



FHCF Post-Event Estimated Bonding Capacity						
	Bank of America / Merrill Lynch	Citi	J.P. Morgan	Morgan Stanley	Wells Fargo	Average <sup>1</sup>
<b>Bonding Estimates</b>						
<b>Tax-Exempt:</b>						
0-12 Months	\$2-\$3B	\$3.5-\$4.0B	\$5-\$6B	\$4-\$5B	\$6-\$8B	\$4.7B
12-24 Months	\$2-\$3B	\$3.5-\$4.0B	\$3-\$4B	\$4-\$5B	\$3-\$5B	\$3.7B
<i>Total tax-exempt</i>	<i>\$4-\$6B</i>	<i>\$7-\$8B</i>	<i>\$8-\$10B</i>	<i>\$8-\$10B</i>	<i>\$9-\$13B</i>	<i>\$8.4B</i>
<b>Taxable:</b>						
0-12 Months	\$3.5-\$5.5B	\$3-\$4B	\$4-\$5B	\$5-\$5.5B	\$3-\$4B	\$4.3B
12-24 Months	\$3.5-\$5.5B	\$4-\$5B	\$3-\$4B	\$5-\$6B	\$2-\$3B	\$4.1B
<i>Total taxable</i>	<i>\$7-\$11B</i>	<i>\$7-\$9B</i>	<i>\$7-\$9B</i>	<i>\$10-\$11.5B</i>	<i>\$5-\$7B</i>	<i>\$8.4B</i>
<b>Tax-Exempt and Taxable</b>						
<b>0-12 Months Total</b>	<b>\$5.5-\$8.5B</b>	<b>\$6.5-\$8.0B</b>	<b>\$9-\$11B</b>	<b>\$9-\$10.5B</b>	<b>\$9-\$12B</b>	<b>\$9.0B</b>
<b>12-24 Months Total</b>	<b>\$5.5-\$8.5B</b>	<b>\$7.5-\$9.0B</b>	<b>\$6-\$8B</b>	<b>\$9-\$11B</b>	<b>\$5-\$8B</b>	<b>\$7.8B</b>
<b>0-24 Months Total</b>	<b>\$11-\$17B</b>	<b>\$14-\$17B</b>	<b>\$15-\$19B</b>	<b>\$18-\$21.5B</b>	<b>\$14-\$20B</b>	<b>\$16.8B</b>

<sup>1</sup> Averages are rounded to the nearest hundred million dollars

As discussed earlier, we believe that using only the 0-12 months number to compute an average is a prudent approach to estimating bonding capacity for the initial season. Using this methodology yields an estimated bonding capacity of approximately \$9.0 billion and this capacity is significantly above what would be needed to meet the FHCF’s potential obligations for the initial season if it were to leave its already issued pre-event bond proceeds outstanding, even if one conservatively expects that the FHCF payout after an event will need to occur within the first twelve months. However, when considering the larger picture of the FHCF’s ability to pay additional claims for a subsequent season, the FHCF’s bonding capacity beyond 0-12 months is also an important factor. Each of the senior managers believes that the FHCF would have significant additional capacity in the period 12-24 months after an event<sup>4</sup>. This additional capacity could be used to fund a portion of the amount potentially needed for the 2020-2021 contract year or subsequent season losses, in the approximate amounts as shown on the following pages.

### Estimated Claims-Paying Capacity

Estimated claims-paying capacity of the FHCF is equal to the sum of the projected year-end fund balance plus risk transfer, if any, and any other financing resources available, and the estimated bonding capacity. The FHCF projects that its year-end fund balance for the 2019-2020 contract year is \$11.36 billion, its risk transfer placement is \$920 million for the 2019-2020 contract year, and it has an estimated bonding capacity of \$9.0 billion (which includes repayment of pre-event bond proceeds in the amount of \$1.65 billion), which equals a total estimated claims-paying capacity of \$21.3 billion, or \$4.3 billion above its statutory limit of \$17.0 billion.

The subsequent season may have some remaining unused bonding capacity from the initial season, but for purposes of this analysis we assume the available initial season bonding capacity in the amount of

<sup>4</sup> The longer the time frame for estimation purposes, the greater the degree of uncertainty.



\$9.0 billion is also available for the subsequent or 2020-2021 contract year. For any remaining losses beyond the FHCF’s estimated claims-paying capacity for the 2020-2021 season, the FHCF may have additional 12-24 month bonding capacity of up to \$7.8 billion available.

Under this scenario, if an event happens, we assume that the FHCF would leave its pre-event bond proceeds outstanding and issue \$4.7 billion of post-event bonds to fund its maximum potential obligation for the 2019-2020 contract year. For the 2020-2021 contract year, the FHCF can then use its estimated bonding capacity of \$9.0 billion (which includes repayment of pre-event bond proceeds) and the \$1.2 billion of reimbursement premiums projected to be accumulated during the subsequent season for total funding sources of \$10.2 billion, or approximately 60% of its potential maximum statutory obligation of \$17 billion for the 2020-2021 contract year. Under this scenario, the FHCF would need an additional \$6.8 billion in funding sources in order to reach its maximum statutory obligation of \$17 billion for the 2020-2021 contract year.

(\$ in Billions, Totals may not add due to rounding)	2019-2020 Contract Year	2020-2021 Contract Year
<b>FHCF Potential Coverage Obligation</b>		
<b>FHCF Coverage Obligation (A)</b>	<b>\$17.0</b>	<b>\$17.0</b>
<b>FHCF Estimated Funding Sources Available</b>		
Projected FHCF Year-End Fund Balance (B)	\$11.4	\$1.2
Risk Transfer (C)	\$0.9	\$0.0
2013A and 2016A Pre-Event Bond Proceeds Available <sup>1</sup> (D)	\$1.7	\$0.7
<b>Total Liquid Resources Available (B + C + D) = (E)</b>	<b>\$13.9</b>	<b>\$1.9</b>
<b>Additional Funds / Potential Borrowing Need (E - A) = (F)</b>	<b>(\$3.1)</b>	<b>(\$15.2)</b>
<b>FHCF Claims-Paying Capacity</b>		
Projected FHCF Year-End Fund Balance (B)	\$11.4	\$1.2
Risk Transfer (C)	\$0.9	\$0.0
Estimated FHCF Borrowing Capacity <sup>1</sup> (G)	\$9.0	\$9.0
<b>Total Estimated Claims-Paying Capacity (B + C + G) = (H)</b>	<b>\$21.3</b>	<b>\$10.2</b>
<b>Total Estimated Claims-Paying Capacity as a % of FHCF Coverage Obligation (H / A) = (I)</b>	<b>125%</b>	<b>60%</b>
<b>Amount Above / (Below) Coverage Obligation (H - A) = (J)</b>	<b>\$4.3</b>	<b>(\$6.8)</b>

Totals may not add due to rounding.

<sup>1</sup> Estimated borrowing capacity is inclusive of any repayment of pre-event bond proceeds. Pre-event bonds are available as a liquidity resource for the 2019-2020 contract year in the amount of \$1.65 billion but we are assuming no pre-event bonds will be used to pay claims for the 2019-2020 contract year and therefore will be available to pay claims for the 2020-2021 contract year in the amount of \$650 million (\$1 billion matures on July 1, 2020).

Under this scenario, the breakdown of the potential assessments required for the FHCF’s potential borrowing needs and repayment of pre-event bond proceeds are shown in the table on the following page based on current market interest rates and an “above market” interest rate of 6% over a 30-year period, for informational purposes only. As seen in the table on the following page, even with an “above market” rate of 6%, the FHCF has significant remaining assessment capabilities within its 6% statutory cap.



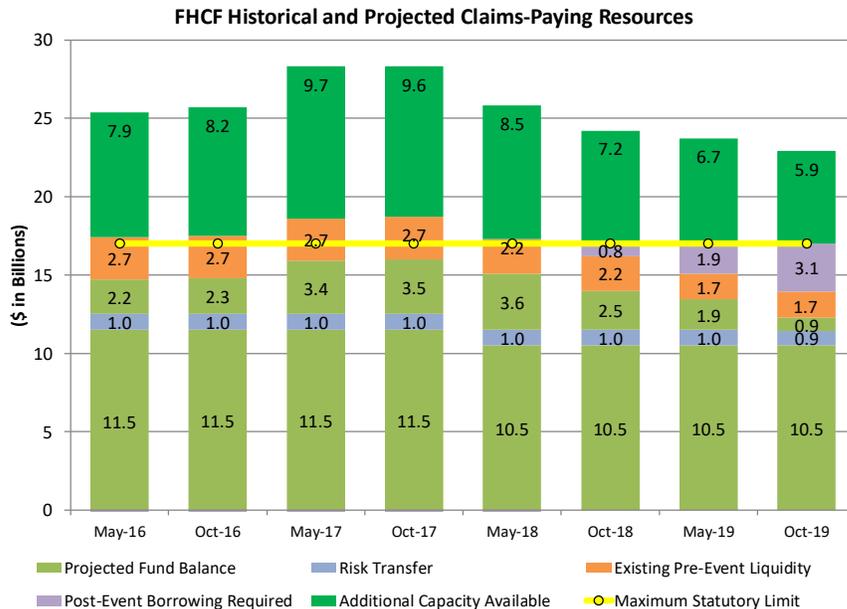
(\$ in Billions)	2019-2020 Contract Year	2020-2021 Contract Year
<b>Total Potential Borrowing</b>	<b>\$4.7</b>	<b>\$9.0</b>
<b>Assessment % if Financed at Current Market Rates</b>	<b>0.53%</b>	<b>N/A</b>
<b>Assessment % if Financed at "Above Market" Rate of 6%</b>	<b>0.67%</b>	<b>1.28%</b>

*\*For the 2020-2021 Contract Year, the FHCF is projecting a claims-paying capacity of \$10.2 billion, or 60% of its statutory limit.*

### Historical Perspective on Estimated Claims-Paying Capacity

The estimated claims-paying capacity of the FHCF over time is subject to changes in the projected fund balance, risk transfer amount, available pre-event liquidity, and estimates of bonding capacity. While the projected fund balance climbed steadily from 2006 to 2017 without a major hurricane that triggered the FHCF, the estimated \$5.00 billion of Hurricane Irma losses in 2017 and \$1.45 billion of Hurricane Michael losses in 2018 reduced the estimated FHCF’s projected fund balance to approximately \$11.36 billion for the 2019-2020 Contract Year. During this time the senior managers’ estimates of the FHCF’s bonding capacity have stabilized, but have significantly varied during other time periods, reflecting both the big picture fundamental changes to the market described in Section III and the impact of market volatility at the time we asked them for estimates. The current average estimate for 0-12 months of \$9.0 billion is \$400 million higher than it was in May 2019.

The chart below shows the total estimated initial season claims-paying resources of the FHCF since May 2016 with projected fund balance (light green), existing pre-event liquidity (orange), risk transfer (blue), post-event borrowing required (purple), if needed, and maximum statutory limit (yellow) with additional capacity available above (dark green) the maximum statutory limit.



*Numbers may not add due to rounding.*

*The additional capacity above the maximum statutory limit reflects the estimated borrowing capacity plus any additional funds available.*



The chart on the previous page reflects the history of the FHCF’s claims-paying resources. The outstanding pre-event notes, risk transfer, and the projected fund balance are reliable amounts since they are known prior to an event, but the post-event bonding capacity can vary depending on financial market conditions after a hurricane event. It is important that the FHCF’s claims-paying capacity estimates be reasonable and prudent in order to minimize financial risk for participating insurers for the initial and subsequent seasons as well as for long-term sustainability of the Florida insurance market.

Even though the range has narrowed and stabilized, it is interesting to compare the range of the estimates during this time period, which is indicative of the level of uncertainty and variability among the team of senior managers with regard to the FHCF’s bonding capacity. The table below shows the aggregate ranges for each estimate since May 2016.

Post-Event Estimated Bonding Capacity Over 12 Months (Senior Managers' Range)									
(\$ in Billions)	May-16	Oct-16	May-17	Oct-17	May-18	Oct-18	May-19	Oct-19	Oct. 2019 - May 2019 Change
Overall Range	\$4.5-\$12	\$5.5-\$12	\$5-\$12	\$6-\$12	\$6.5-\$12	\$5.5-\$12	\$6-\$12	\$5.5-\$12	←...→

The range of estimates shown in the table reflects the fundamental underlying volatility and uncertainty of the markets and the bonding capacity estimating process for the FHCF. We believe the process of using a survey of the opinions of the best experts with the most relevant experience, and employing a prudent approach to pick among several potential estimates of capacity, provides a reasonable estimate that suits the purposes of the FHCF and the needs of its participating insurers. While the FHCF is \$3.1 billion below fully funding the initial season, it has additional capacity available after an event for the subsequent season. This additional capacity still does not provide a guaranteed source of liquidity or claims-paying capacity for subsequent seasons, and the actual bonding results achieved by the FHCF after a hurricane could vary substantially from this estimate for subsequent seasons. The FHCF has \$13.9 billion of liquidity, \$3.1 billion below its potential maximum statutory obligation of \$17 billion for the 2019-2020 contract year. For the subsequent season, the FHCF has a projected potential claims-paying capacity of \$10.2 billion (assuming no pre-event bonds will be used to pay claims for the 2019-2020 contract year), or up to approximately 60% of its maximum statutory obligation of \$17 billion for the 2020-2021 contract year.





## Appendix A – Bonding Capacity Solicitation & Senior Manager Responses

## Sasha Stipanovich

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**From:** Sasha Stipanovich  
**Sent:** Friday, September 27, 2019 9:05 AM  
**Cc:** Kapil Bhatia  
**Subject:** FHCF Bonding Capacity Analysis

FHCF Senior Manager Team:

We need your input in preparation for presenting the FHCF's statutorily required semiannual bonding capacity estimate at the FHCF Advisory Council Meeting scheduled for October 17<sup>th</sup>.

***We would like to know your opinion of the FHCF's tax-exempt and taxable bonding capacity over a 0-12 month and 12-24 month period. We are still comfortable including estimates that contain some above-market interest rate capacity estimates in recognition of the fact that the FHCF has ample assessment capability within its statutory limits to issue bonds, even at above market rates, if needed. We use an above-market estimate of 7%, which is several hundred basis points above the FHCF's expected current market rates in order to add more conservatism to the analysis.***

In order to prepare the FHCF Bonding Capacity Report for October 2019, we need the following data elements from you by Friday, October 4<sup>th</sup>:

1. Please provide a 30-year tax-exempt scale for the FHCF using the MMD at the close of business Wednesday, October 2<sup>nd</sup>. This scale should be the one that you believe reflects a "market" scale given the FHCF's credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with 5.0% coupons throughout when writing the scale. Base the scale on an uninsured financing given the FHCF's current underlying ratings of Aa3/AA/AA (Moody's / S&P / Fitch).
2. Please provide a 30-year taxable scale using the Treasury curve at the close of business Wednesday, October 2<sup>nd</sup>. This scale should be the one that you believe reflects a "market" scale given the FHCF's credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with par-ish coupons throughout when writing the scale. Again, base the scale on an uninsured financing given again the FHCF's current underlying ratings of Aa3/AA/AA (Moody's / S&P / Fitch).
3. Please provide us with your firm's opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 **and** 12-24 months at rates that are at or above the current "market" scale, as needed. In addition, please include and describe briefly in your response if there is any overlap in tax-exempt / taxable capacity.

FHCF Post-Event Market Capacity			
Time Period	Tax-Exempt	Taxable	Total
0-12 Months			
12-24 Months			

**We would like to have to your responses back by close of business Friday, October 4<sup>th</sup>.** Additionally, we would like a representative from your firm (banker and/or underwriter) to be present at the meeting either via phone or in-person to answer any questions. If you have any questions or comments, please call or e-mail Kapil Bhatia (727-567-1791, [kapil.bhatia@raymondjames.com](mailto:kapil.bhatia@raymondjames.com)) or Sasha Stipanovich (727-567-1790, [sasha.stipanovich@raymondjames.com](mailto:sasha.stipanovich@raymondjames.com)).

# Memorandum



**To:** Florida Hurricane Catastrophe Fund

**From:** Bank of America Merrill Lynch

**Date:** October 4, 2019

**Subject:** Florida Hurricane Catastrophe Fund – October 2019 Bonding Capacity Analysis

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Bank of America Merrill Lynch (“BofAML”) is pleased to provide the Florida Hurricane Catastrophe Fund (“FHCF”) with our firm’s estimates and views of the FHCF’s post-event bonding capacity and current market borrowing costs.

## Market Commentary

Since FHCF’s last capacity report, the outlook for economic conditions have shifted significantly, as headwinds continue to introduce volatility in the domestic economy and global trade pressures increasingly stoke recession fears. The Federal Reserve cut rates twice this year after a pause in its aggressive tightening cycle in 2018, and it is expected to cut rates another 50 bps by the end of the year. The ongoing trade and tariff war with China has contributed to altering global trade flows and supply chains, and has enhanced the risks of slow or potentially negative growth, globally. This week, domestic growth concerns were heightened after the ISM manufacturing index registered its weakest showing in a decade, driving investors into safe haven securities. The World Trade Organization also slashed its forecast for trade growth for this year and next year. Global trade is expected to increase by 1.2% in 2019, down from projections of 2.6%, and 2019 is expected to be the weakest trade growth year since 2009. The political headwinds in Washington D.C. have also introduced a heightened sense of volatility into the market that, in conjunction with other economic headwinds, have sent equity markets into a tailspin.

Municipal bond funds have seen net inflows of approximately \$46.4 billion year to date with only a single week of outflows thus far this week (first week of January). Weekly municipal net bond fund flows year to date are nearly 5.5 times higher as compared to the same period last year. Since our last bonding capacity analysis presented at the May 2019 meeting, yields across the entire yield curve have continued their decline that began in early 2019. On the longer end of the tax-exempt MMD curve (10+ years), yields have decreased an average of 62 basis points and within 10 years, rates have fallen an average of 43 basis points. Yields in the municipal market have been driven by low supply as well as a flight to quality in the Treasury markets which has put downward pressure on municipal market rates. The MMD curve now exhibits the same inversion found in the Treasury yield curve. In the taxable market, the Treasury curve continues to exhibit an inversion in years 1 – 5 with the 1-5 UST spread widening to 30 bps. Since our May 2019 report, rates across the UST curve have decreased between 68 and 95 basis points, with the spread between the 1- and 30-year UST currently at 35 bps, down from 17 bps from our last update reflecting further flattening of the yield curve. New issue supply in the municipal market thus far in 2019 has averaged approximately \$5.8 billion per week, with 2019 total issuance projected to be approximately 14% above 2018 levels.

As we have stated in the past, despite the market dynamics in play in the current environment, a transaction or series of transactions by the FHCF and possibly other insurance-related entities in the State of Florida (Citizens, FIGA) after a hurricane event has been generally untested and may significantly impact market dynamics for a specific transaction. In the pages that follow, we provide BofAML’s estimate of the FHCF’s current borrowing costs, as well as our view on the FHCF’s unconstrained issuance capacity in the current market. If you have any questions, please contact the BofAML team.

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1. Please provide a 30-year tax-exempt scale for the FHCF using the MMD at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with 5.0% coupons throughout when writing the scale. Base the scale on an uninsured financing given the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s / S&P / Fitch).

Below, we have provided a 30-year tax-exempt scale reflecting our view of the FHCF’s estimated current market borrowing costs based on an uninsured financing, Aa3/AA/AA ratings from Moody’s, S&P and Fitch, respectively, and no capacity constraints.

Tax-Exempt Scale					
Term	Maturity (July 1)	Coupon	MMD	Spread	Yield
1	2020	5.000%	1.240%	10	1.340%
2	2021	5.000%	1.200%	15	1.350%
3	2022	5.000%	1.200%	20	1.400%
4	2023	5.000%	1.200%	25	1.450%
5	2024	5.000%	1.200%	30	1.500%
6	2025	5.000%	1.210%	35	1.560%
7	2026	5.000%	1.240%	38	1.620%
8	2027	5.000%	1.280%	40	1.680%
9	2028	5.000%	1.330%	43	1.760%
10	2029	5.000%	1.380%	45	1.830%
11	2030	5.000%	1.430%	48	1.910%
12	2031	5.000%	1.470%	50	1.970%
13	2032	5.000%	1.510%	50	2.010%
14	2033	5.000%	1.550%	50	2.050%
15	2034	5.000%	1.590%	50	2.090%
16	2035	5.000%	1.630%	50	2.130%
17	2036	5.000%	1.670%	50	2.170%
18	2037	5.000%	1.710%	50	2.210%
19	2038	5.000%	1.750%	50	2.250%
20	2039	5.000%	1.790%	50	2.290%
21	2040	-	1.820%	-	-
22	2041	-	1.850%	-	-
23	2042	-	1.880%	-	-
24	2043	-	1.910%	-	-
25	2044	5.000%	1.920%	55	2.470%
26	2045	-	1.930%	-	-
27	2046	-	1.940%	-	-
28	2047	-	1.950%	-	-
29	2048	-	1.960%	-	-
30	2049	5.000%	1.970%	55	2.520%

2. Please provide a 30-year taxable scale using the Treasury curve at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with par-ish coupons throughout when writing the scale. Again, base the scale on an uninsured financing given again the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s / S&P / Fitch).

Below, we have provided a 30-year taxable scale reflecting our view of the FHCF’s estimated current market borrowing costs based on an uninsured financing, Aa3/AA/AA ratings from Moody’s, S&P and Fitch, respectively, and no capacity constraints.

Taxable Scale					
Term	Maturity (July 1)	Coupon	UST	Spread	Yield
1	2020	2.230%	1.730%	50	2.230%
2	2021	2.080%	1.480%	60	2.080%
3	2022	2.130%	1.430%	70	2.130%
4	2023	2.230%	1.430%	80	2.230%
5	2024	2.330%	1.430%	90	2.330%
6	2025	2.420%	1.520%	90	2.420%
7	2026	2.520%	1.520%	100	2.520%
8	2027	2.590%	1.590%	100	2.590%
9	2028	2.640%	1.590%	105	2.640%
10	2029	2.690%	1.590%	110	2.690%
11	2030	2.710%	1.590%	112	2.710%
12	2031	2.740%	1.590%	115	2.740%
13	2032	2.760%	1.590%	117	2.760%
14	2033	2.790%	1.590%	120	2.790%
15	2034	2.810%	1.590%	122	2.810%
16	2035	-	-	-	-
17	2036	-	-	-	-
18	2037	-	-	-	-
19	2038	-	-	-	-
20	2039	3.230%	2.080%	115	3.230%
21	2040	-	-	-	-
22	2041	-	-	-	-
23	2042	-	-	-	-
24	2043	-	-	-	-
25	2044	-	-	-	-
26	2045	-	-	-	-
27	2046	-	-	-	-
28	2047	-	-	-	-
29	2048	-	-	-	-
30	2049	3.330%	2.080%	125	3.330%

- 
3. Please provide us with your firm’s opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 **and** 12-24 months at rates that are at or above the current “market” scale, as needed. In addition, please include and describe briefly in your response if there is any overlap in tax-exempt / taxable capacity.
- 

In the table below, we have provided our current tax-exempt and taxable “unconstrained” FHCF capacity estimates. We believe that sufficient demand exists at these capacity levels to complete a transaction of the sizes provided below and the risk of cross-market cannibalization is low.

<b>FLORIDA HURRICANE CATASTROPHE FUND POST-EVENT MARKET CAPACITY (\$ BILLION)</b>			
<b>Time Period</b>	<b>Tax-Exempt</b>	<b>Taxable</b>	<b>Total</b>
0-12 Months	\$2.0-3.0	\$3.5-5.5	\$5.5-8.5
12-24 Months	\$2.0-3.0	\$3.5-5.5	\$5.5-8.5
<b>0-24 Months</b>	<b>\$4.0-6.0</b>	<b>\$7.0-11.0</b>	<b>\$11.0-17.0</b>

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# Memorandum

To: Florida Hurricane Catastrophe Fund

From: Citigroup Global Markets Inc. ("Citi")

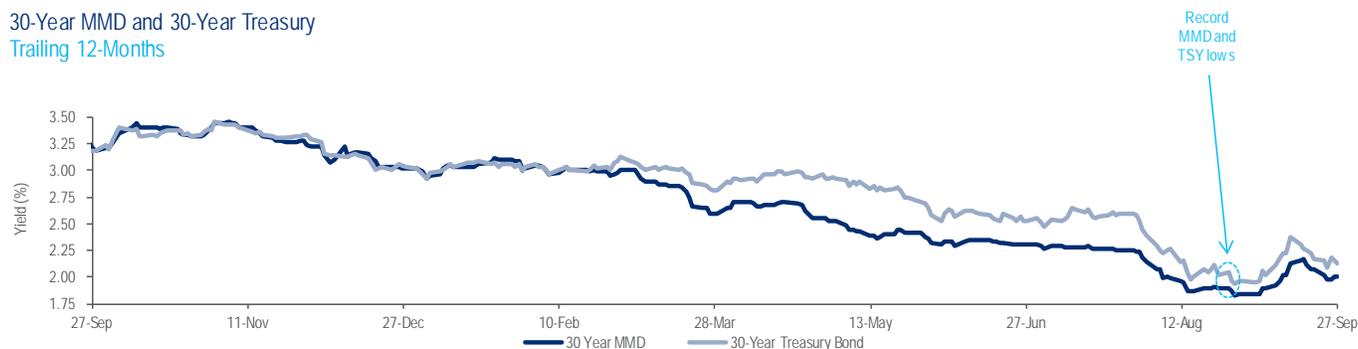
Date: October 4, 2019

Re: FHCF October 2019 Capacity Analysis

Citigroup is pleased to provide the Florida Hurricane Catastrophe Fund (the "FHCF") with an updated estimated post-event bond capacity analysis.

Municipal interest rates have generally trended downward since January 1, 2019. Significant portions of the MMD and Treasury yield curves have either hit or approached all-time lows this year, with macroeconomic conditions adjusting to heightening trade tensions and the Federal Reserve cutting interest rates twice thus far this year. 30-Year MMD has decreased by 101 basis points thus far in 2019. Supply is expected to increase by approximately 13% over 2018 supply, to a total of \$385 billion. Total new issue supply YTD is currently about \$280 billion, up approximately +6% year-over-year. Bond funds have netted 38 consecutive weeks of inflows YTD (\$67.4 billion total), partially attributed to increased high net worth retail demand on the heels of higher tax bills.

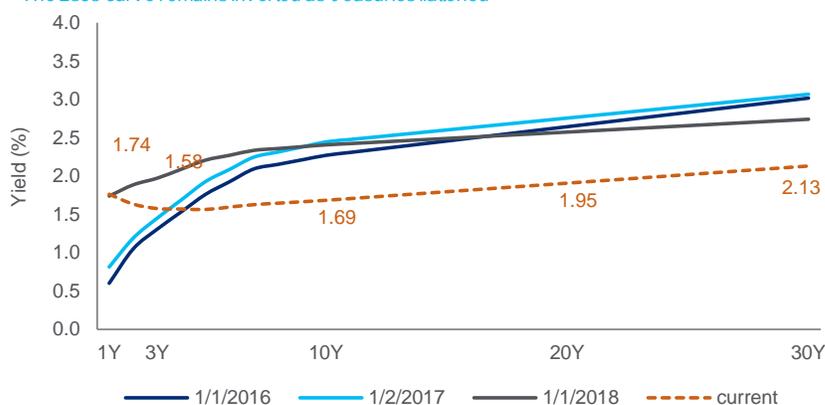
30-Year MMD and 30-Year Treasury  
Trailing 12-Months



**Yield Curve Environment.** Market dynamics have continued to pressure interest rates, leading to the continued flattening of the yield curve. Uncertainty surrounding the global economic outlook has contributed to maintaining the inversion in the short-term portion of the curve, given changing outlook from the Federal Reserve, mixed global monetary policy and macro-events. Most recently, markets have begun to price in an additional interest rate cut at the Federal Reserve's October meeting following weak data from the services sector. As of September 27, 2019, the 30-Year Treasury has decreased by 89 basis points YTD to 1.56%, leading to a

## US Treasury Yield Curve

The 2s5s curve remains inverted as treasuries flattened



Treasury yield curve with only 39 basis points of spread between the 1-Year and 30-Year Treasury Rates.

1. Please provide a 30-year tax-exempt scale for the FHCF using the MMD at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a "market" scale given the FHCF's credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with 5.0% coupons throughout when writing the scale. Base the scale on an uninsured financing given the FHCF's current underlying ratings of Aa3/AA/AA (Moody's / S&P / Fitch).

Tax-Exempt Scale				
Year	Oct 2 MMD	MMD Spread	Coupon	Base Yield
2020	1.23%	10	5.00%	1.33%
2021	1.21%	13	5.00%	1.34%
2022	1.20%	16	5.00%	1.36%
2023	1.20%	19	5.00%	1.39%
2024	1.20%	22	5.00%	1.42%
2025	1.20%	25	5.00%	1.45%
2026	1.24%	28	5.00%	1.52%
2027	1.27%	31	5.00%	1.58%
2028	1.32%	34	5.00%	1.66%
2029	1.37%	37	5.00%	1.74%
2030	1.42%	40	5.00%	1.82%
2031	1.47%	43	5.00%	1.90%
2032	1.51%	45	5.00%	1.96%
2033	1.55%	45	5.00%	2.00%
2034	1.59%	45	5.00%	2.04%
2035	1.63%	45	5.00%	2.08%
2036	1.67%	45	5.00%	2.12%
2037	1.71%	45	5.00%	2.16%
2038	1.75%	45	5.00%	2.20%
2039	1.79%	45	5.00%	2.24%
2040	1.82%			
2041	1.85%			
2042	1.88%			
2043	1.91%			
2044	1.92%	45	5.00%	2.37%
2045	1.93%			
2046	1.94%			
2047	1.95%			
2048	1.96%			
2049	1.97%	45	5.00%	2.42%

\*July Interpolated MMD

2. Please provide a 30-year taxable scale using the Treasury curve at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a "market" scale given the FHCF's credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with par-ish coupons throughout when writing the scale. Again, base the scale on an uninsured financing given against the FHCF's current underlying ratings of Aa3/AA/AA (Moody's / S&P / Fitch).

Taxable Scale					
Year	TSY	Oct 2 TSY	TSY Spread	Coupon	Yield
2020	2 Yr	1.48%	45	1.93%	1.93%
2021	2 Yr	1.48%	50	1.98%	1.98%
2022	3 Yr	1.43%	60	2.03%	2.03%
2023	5 Yr	1.43%	65	2.08%	2.08%
2024	5 Yr	1.43%	70	2.13%	2.13%
2025	7 Yr	1.53%	75	2.28%	2.28%
2026	7 Yr	1.53%	85	2.38%	2.38%
2027	10 Yr	1.60%	90	2.50%	2.50%
2028	10 Yr	1.60%	95	2.55%	2.55%
2029	10 Yr	1.60%	100	2.60%	2.60%
2030	10 Yr	1.60%	105	2.65%	2.65%
2031	10 Yr	1.60%	110	2.70%	2.70%
2032	10 Yr	1.60%	115	2.75%	2.75%
2033	10 Yr	1.60%	120	2.80%	2.80%
2034	10 Yr	1.60%	125	2.85%	2.85%
2035					
2036					
2037					
2038					
2039	30 Yr	2.09%	115	3.24%	3.24%
2040					
2041					
2042					
2043					
2044					
2045					
2046					
2047					
2048					
2049	30 Yr	2.09%	135	3.44%	3.44%

3. Please provide us with your firm's opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 and 12-24 months at rates that are at or above the current "market" scale, as needed. In addition, please include and describe briefly in your response if there is any overlap in tax-exempt / taxable capacity.

Time Period	Tax-Exempt	Taxable	Total
0-12 Months	\$3.5-4.0 bn	\$3.0-4.0	\$6.5-8.0
12-24 Months	\$3.5-4.0 bn	\$4.0-5.0	\$7.5-9.0
<b>Total</b>	<b>\$7.0-8.0 bn</b>	<b>\$7.0-9.0</b>	<b>\$14.0-17.0</b>

Our capacity numbers assume no overlap between the tax-exempt and taxable sectors.

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To: Florida Hurricane Catastrophe Fund  
 From: J.P. Morgan  
 Date: October 4, 2019  
 Subject: FHCF Estimated Bonding Capacity and Pricing

Please find below J.P. Morgan's estimate of the Florida Hurricane Catastrophe Fund's ("FHCF") potential bonding capacity over the next 0-12 and 12-24 months, based on current market conditions. In addition, we have provided indicative pricing for tax-exempt and taxable offerings, as requested.

## Market Update and Recent Developments<sup>1</sup>

Volatility continued to be elevated last week amid domestic and international political headlines and a slew of economic data as UST yields decreased week-over-week: 2-, 5-, 10-, and 30-year yields declined by 9, 8, 8, and 7 bps, respectively. On September 24<sup>th</sup>, Speaker of the House, Nancy Pelosi announced the launch of a formal impeachment inquiry of President Trump. In addition, U.S.-China trade negotiations continued with high-level trade negotiations scheduled to continue to take place in Washington in mid-October. Further, in a surprise announcement, the U.K. Supreme Court ruled unanimously that U.K. Prime Minister Boris Johnson's decision to prorogue the Commons was "unlawful", further fueling speculation regarding upcoming Brexit paths and timelines. Domestically, the New York Fed announced increased sizes for both the overnight and term repo operations which resulted in \$162 billion of liquidity being injected into the system. Also last week, U.S. economic data was heavy and mixed, driven by weakness in consumer spending while other GDP focused measures were in line with expectations.

In the municipal market, tax-exempt yield movements were muted compared to volatility in UST yields, as ratios recovered after last week's underperformance. Week-over-week, 2-, 5-, 10-, and 30-year MMD yields declined by 3, 5, 5, and 6 bps, respectively; 10-year MMD / UST ratios decreased 1%. Of note regarding primary municipal issuance, taxable municipal issuance (\$33.7bn) is already the highest of any full-year annual total over the past five years and 50% above the average of the full-year taxable issuance for those five years.

The following tables include J.P. Morgan's forecast for both UST and MMD rates over the four quarters, through 2Q2020.

### JPM U.S. Treasury Interest Rate Forecast (%)

	9/27/2019	10/27/19	12/31/19	3/31/2020	6/30/2020
	Current	1m Forecast	4Q19 Forecast	1Q20 Forecast	2Q20 Forecast
Fed Funds	1.85%	1.85%	1.35%	1.35%	1.35%
3M LIBOR	2.10%	2.10%	1.75%	1.60%	1.60%
2Y UST	1.62%	1.55%	1.30%	1.35%	1.40%
5Y UST	1.55%	1.50%	1.35%	1.40%	1.45%
10Y UST	1.67%	1.60%	1.50%	1.55%	1.60%
30Y UST	2.12%	2.10%	2.10%	2.15%	2.20%

Source: J.P. Morgan Research, *US Fixed Income Market Weekly*, 9/27/2019, jpmm.com; Rates as of 9/27/2019

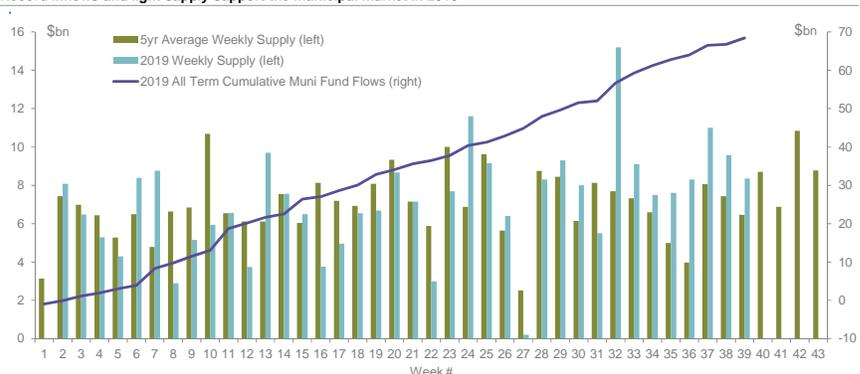
### JPM Tax-Exempt Yield Forecast (%)

	9/27/2019	10/27/19	12/31/19	3/31/20	6/30/20
	Current	1m Forecast	4Q19 Forecast	1Q20 Forecast	2Q20 Forecast
2Y MMD	1.22%	1.20%	1.00%	1.05%	1.05%
5Y MMD	1.23%	1.20%	1.05%	1.15%	1.15%
10Y MMD	1.42%	1.40%	1.30%	1.35%	1.40%
30Y MMD	2.01%	1.95%	2.00%	2.05%	2.10%
10Y MMD/UST Ratio	85.03%	87.50%	86.67%	87.10%	87.50%
30Y MMD/UST Ratio	94.81%	92.86%	95.24%	95.35%	95.45%

Source: J.P. Morgan Research, *US Fixed Income Markets Weekly - Municipals* 9/27/2019, jpmm.com, Rates as of 9/27/2019

Tax-reform continues to have an impact on the municipal market; however, strong demand and low supply has driven market dynamics in 2019. Municipal bond funds have received 38 consecutive weeks of inflows of \$68.4 billion YTD, the best start to the year since Lipper started recording the data series in 1992. Last week's long term primary market supply was approximately \$8.35 billion, 141% of the 5-year average for the equivalent week.

Record inflows and light supply support the municipal market in 2019



Source: J.P. Morgan Research, *US Fixed Income Markets Weekly*, 9/27/2019, jpmm.com; Lipper MoneyNet as of 9/25/2019, Bloomberg as of 9/27/2019. Excludes short-term issuance.

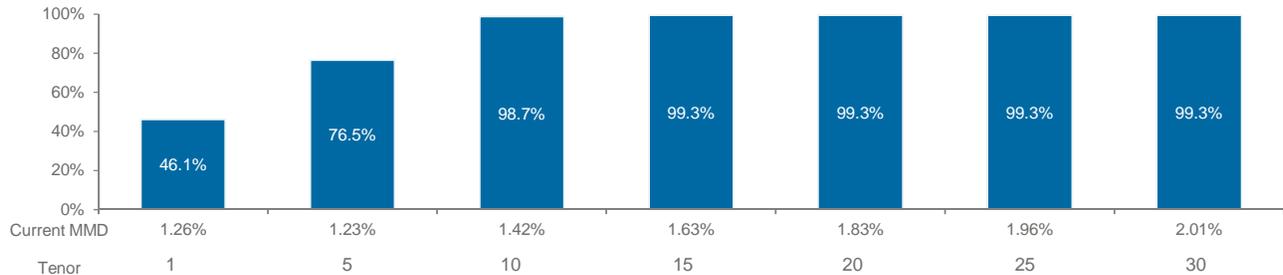
<sup>1</sup> J.P. Morgan, *Municipal Issuance Market Update*, 9/30/2019, jpmm.com

# J.P.Morgan

In addition, it is worth noting that current MMD yields are extremely low compared to historical levels, making this a very favorable time to issue bonds. The following table shows how often 30-year MMD has been higher than current levels over the last 20 years.

Over the past twenty years, the 30-year tax-exempt yield has been higher than current levels 99.3% of the time

Percentage of time over the past twenty years that MMD has been greater than current levels



Source: J.P. Morgan, Thomson Reuters Municipal Market Data; as of 9/27/2019; 25-year MMD reported beginning 1/1/1999

## Potential Market Capacity

Based on market conditions as of close of business Wednesday, October 2<sup>nd</sup>, J.P. Morgan estimates that FHCF could sell \$5-6 billion of tax-exempt bonds and \$4-5 billion of taxable bonds over the next 0-12 months at the market rate assumptions provided.

Over the following 12-24 month period, FHCF could sell an additional \$3-4 billion of tax-exempt bonds and \$3-4 billion of taxable bonds. This would provide FHCF a total post-event market capacity of \$8-10 billion tax-exempt and \$7-9 billion taxable, for a total of \$15-19 billion.

In order to accomplish an issuance of maximum size, FHCF would likely want to access both the tax-exempt and taxable markets across one or more offerings. Although the post-event bonds would qualify for tax-exemption, the taxable markets may provide additional depth of institutional buyers. By issuing taxable bonds in addition to tax-exempt bonds, FHCF would access certain investors that do not typically participate in tax-exempt offerings, and are not able to use the tax-exemption of municipal bonds. FHCF would likely see a significant increase in capacity by offering both a tax-exempt and taxable series as part of the same issuance, with the ultimate goal being to maximize the tax-exempt issuance. The capacity estimates above do consider the capacity overlap from investors that participate in both the tax-exempt and taxable markets, while prioritizing tax-exempt capacity over taxable.

On the following pages, please find J.P. Morgan's estimated 30-year tax-exempt and taxable scales assuming market conditions as of the close of business Wednesday, October 2<sup>nd</sup>. The scales assume FHCF's current underlying ratings of Aa3/AA/AA.

Indicative Post-Event Market Capacity as of October 2, 2019			
Time Period	Tax-exempt	Taxable	Total
0 - 12 Months	\$5-6 billion	\$4-5 billion	\$9-11 billion
12 - 24 Months	\$3-4 billion	\$3-4 billion	\$6-8 billion
<b>Total</b>	<b>\$8-10 billion</b>	<b>\$7-9 billion</b>	<b>\$15-19 billion</b>

# J.P.Morgan

## Florida Hurricane Catastrophe Fund - Tax-exempt Scale

Year	Maturity	Sinker/Term	Int. MMD	Spread	Coupon	Stated Yield
1	7/1/2020		1.23%	15	5.00%	1.38%
2	7/1/2021		1.21%	18	5.00%	1.39%
3	7/1/2022		1.20%	20	5.00%	1.40%
4	7/1/2023		1.20%	22	5.00%	1.42%
5	7/1/2024		1.20%	24	5.00%	1.44%
6	7/1/2025		1.20%	26	5.00%	1.46%
7	7/1/2026		1.24%	28	5.00%	1.52%
8	7/1/2027		1.27%	30	5.00%	1.57%
9	7/1/2028		1.32%	32	5.00%	1.64%
10	7/1/2029		1.37%	35	5.00%	1.72%
11	7/1/2030		1.42%	38	5.00%	1.80%
12	7/1/2031		1.47%	40	5.00%	1.87%
13	7/1/2032		1.51%	43	5.00%	1.94%
14	7/1/2033		1.55%	43	5.00%	1.98%
15	7/1/2034		1.59%	43	5.00%	2.02%
16	7/1/2035		1.63%	43	5.00%	2.06%
17	7/1/2036		1.67%	43	5.00%	2.10%
18	7/1/2037		1.71%	43	5.00%	2.14%
19	7/1/2038		1.75%	43	5.00%	2.18%
20	7/1/2039		1.79%	43	5.00%	2.22%
21	7/1/2040	*	1.82%			
22	7/1/2041	*	1.85%			
23	7/1/2042	*	1.88%			
24	7/1/2043	*	1.91%			
25	7/1/2044	T	1.92%	45	5.00%	2.37%
26	7/1/2045	*	1.93%			
27	7/1/2046	*	1.94%			
28	7/1/2047	*	1.95%			
29	7/1/2048	*	1.96%			
30	7/1/2049	T	1.97%	45	5.00%	2.42%

*Assumes MMD as of close of business October 2, 2019 and an optional redemption date of 7/1/2029 at par.*

# J.P.Morgan

## Florida Hurricane Catastrophe Fund - Taxable Scale

Year	Maturity	Sinker/Term	UST	Spread	Coupon	Stated Yield
1	7/1/2020		1.72%	40	2.12%	2.12%
2	7/1/2021		1.48%	50	1.98%	1.98%
3	7/1/2022		1.43%	60	2.03%	2.03%
4	7/1/2023		1.43%	70	2.13%	2.13%
5	7/1/2024		1.43%	80	2.23%	2.23%
6	7/1/2025		1.52%	85	2.37%	2.37%
7	7/1/2026		1.52%	90	2.42%	2.42%
8	7/1/2027		1.60%	100	2.60%	2.60%
9	7/1/2028		1.60%	105	2.65%	2.65%
10	7/1/2029		1.60%	110	2.70%	2.70%
11	7/1/2030		1.60%	115	2.75%	2.75%
12	7/1/2031		1.60%	120	2.80%	2.80%
13	7/1/2032		1.60%	125	2.85%	2.85%
14	7/1/2033		1.60%	130	2.90%	2.90%
15	7/1/2034		1.60%	135	2.95%	2.95%
16	7/1/2035	*	2.09%			
17	7/1/2036	*	2.09%			
18	7/1/2037	*	2.09%			
19	7/1/2038	*	2.09%			
20	7/1/2039	T	2.09%	125	3.34%	3.34%
21	7/1/2040	*	2.09%			
22	7/1/2041	*	2.09%			
23	7/1/2042	*	2.09%			
24	7/1/2043	*	2.09%			
25	7/1/2044	*	2.09%			
26	7/1/2045	*	2.09%			
27	7/1/2046	*	2.09%			
28	7/1/2047	*	2.09%			
29	7/1/2048	*	2.09%			
30	7/1/2049	T	2.09%	140	3.49%	3.49%

*Assumes UST rates as of close of business October 2, 2019, and a make-whole call.*

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**To:** Florida Hurricane Catastrophe Fund

**Date:** October 4, 2019

**From:** Morgan Stanley

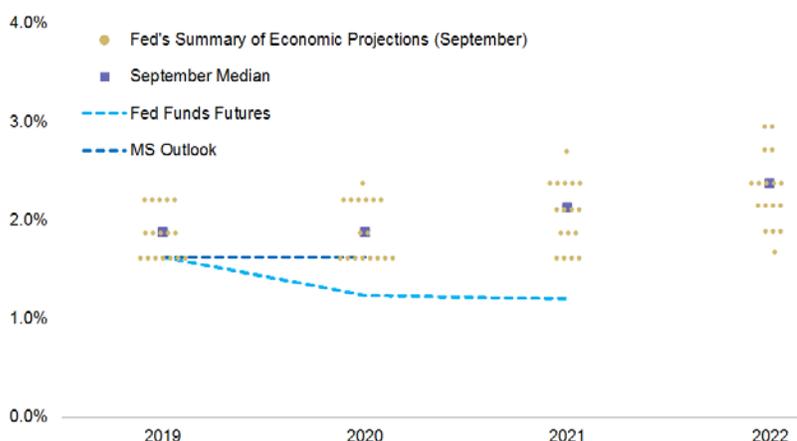
**Subject:** Semi-Annual Bonding Capacity Analysis – October 2019 Semi-Annual Bonding Capacity

Morgan Stanley is pleased to provide to the Florida Hurricane Catastrophe Fund (“FHCF”) our Firm’s Semi-Annual Bonding Capacity Analysis.

### TREASURY MARKET UPDATE

Since the beginning of the year, 5-year and 10-year treasury yields have declined in response to indicators of global economic slowdown by 107 and 106 basis points, respectively. As of October 2<sup>nd</sup>, 2019, the 5-year UST yield is 1.43% and the 10-year UST yield is 1.60%. On the long end of the curve, the 30-year UST yield is 2.09%, which represents a decline of 89 basis points since the start of the year and is just off August’s all-time low of 1.94%. Morgan Stanley’s base case forecast for the 10-year UST yield is 1.70% through the second quarter of 2020, a modest increase from current rates.

Interest Rate Outlook  
September FOMC Dot Plot vs. Morgan Stanley Expectations

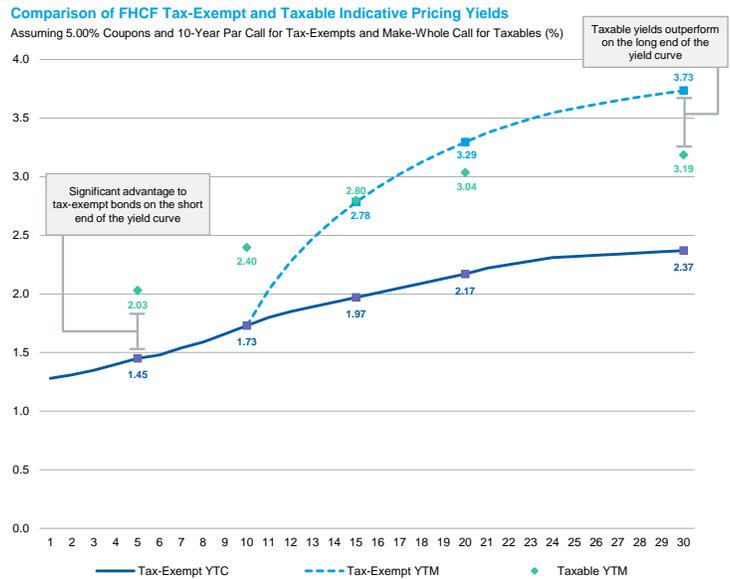


**Rate Cut Expectations.** The Federal Reserve cut the target range for the federal funds rate for the second time this year at the September FOMC meeting, lowering it by 25 basis points to 1.75-2.00%. The press conference after the meeting suggested a balanced approach to fiscal policy going forward, with 7 committee members expecting 1 more rate cut this year and 5 expecting no change. As reported by Bloomberg, the broader market is currently pricing in a 40% probability of a rate cut at the October FOMC meeting. Morgan Stanley expects another 25 basis points cut at the October FOMC meeting in the midst of a weakening global economic outlook.

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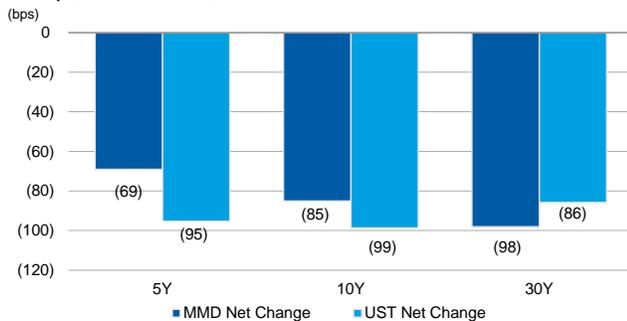
## MUNICIPAL MARKET HIGHLIGHTS

As mentioned previously, both tax-exempt and taxable yields reached record lows in August, with 30-year MMD hitting its lowest level since MMD's inception in 1981 at 1.83%. Since then, rates have remained near historical lows and have traded in a relatively tight band. These absolute lows, as well as relatively high MMD/UST ratios, have led to issuers taking advantage of absolute low rates to issue taxable bonds in the form of advance refundings of their tax-exempt debt for savings. As the adjacent graph shows, while tax-exempt bonds outperform taxable bonds on the short end of the yield curve, this dynamic reverses on the long end when comparing rates on a yield-to-maturity basis. After 15 years, taxable yields show significant outperformance, reaching an approximately 54 bps advantage in year 30. Even factoring in the cost of a 10-year par call, which is priced at a premium of approximately +20 bps in the current market over make-whole call bonds, taxables would outperform by over 30 bps. This favorable taxable dynamic and ensuing conversion from tax-exempt debt to taxable debt is expected to continue through the end of the year with the forward municipal calendar building for taxable issuance.



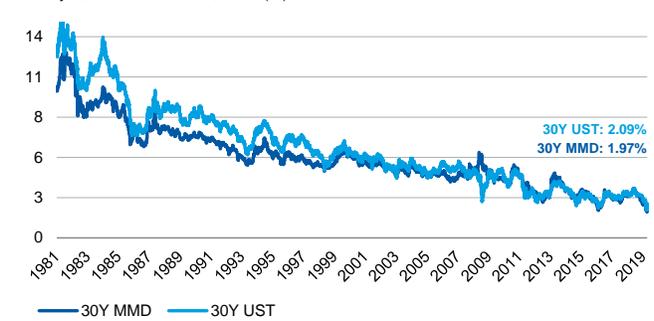
## MMD Rates Have Outperformed UST in 30Y YTD

January 2, 2019 – October 2, 2019



## 30Y MMD and 30Y UST Yield Just Off All-Time Lows

January 1, 1981 – October 2, 2019 (%)



MMD	5Y	10Y	30Y	UST	5Y	10Y	30Y	MMD/UST Ratios	5Y	10Y	30Y
<b>Current:</b>	1.20%	1.38%	1.97%	<b>Current:</b>	1.43%	1.60%	2.09%	<b>Current:</b>	84%	86%	94%
2019 YTD Low:	0.96%	1.21%	1.83%	2019 YTD Low:	1.37%	1.47%	1.94%	2019 YTD Low:	60%	71%	84%
2019 YTD High:	1.92%	2.27%	3.11%	2019 YTD High:	2.62%	2.78%	3.12%	2019 YTD High:	79%	86%	102%
Historical Low:	0.62%	1.21%	1.83%	Historical Low:	0.54%	1.36%	1.94%	Historical Low:	59%	71%	84%

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**Municipal Bond Fund Net Inflows.** For the week of October 2, 2019, Lipper reported \$884 million of net inflows into municipal bond funds, comprised of \$558 million long term inflows, \$228 million of intermediate inflows, and \$97 million of short term inflows. Fund flows now total over \$68.5 billion year to date, the largest the industry has ever experienced.

**Lower Issuance Volume in 2019.** Since the start of 2019, there has been \$274.5 billion of new tax-exempt and taxable municipal issuance. Although issuance has accelerated in the 3<sup>rd</sup> quarter of 2019, it remains below 2017 levels. Year-to-date, issuance is up 9% vs. 2018, but down 5% vs. this time in 2017. Volume in the 3<sup>rd</sup> quarter of 2019 exceeded total volume in 3Q 2017 by 12% and 4<sup>th</sup> quarter issuance is expected to remain elevated, fueled in part by large amounts of taxable borrowings.

## **PRICING VIEWS**

Current 30-year UST yields are 49 basis points lower than where they were at the time of our last bonding capacity analysis in May 2019. Similar to UST yields, current 30-year MMD yields have declined 59 basis points since the May 2019. On the following pages, we have provided our estimate of current pricing levels and bonding capacity over a 0-12 month and 12-24 month period.

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1. Please provide a 30-year tax-exempt scale for the FHCF using the MMD at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with 5.0% coupons throughout when writing the scale. Base the scale on an uninsured financing given the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s / S&P / Fitch).

FHCF Pricing Views: 30-Year Tax-Exempt Scale						
Year	Maturity	MMD (10/02/2019) <sup>(1)</sup>	Spread (bps)	Coupon	Yield	
1	2020	1.230%	5	5.000%	1.280%	
2	2021	1.210%	10	5.000%	1.310%	
3	2022	1.200%	15	5.000%	1.350%	
4	2023	1.200%	20	5.000%	1.400%	
5	2024	1.200%	25	5.000%	1.450%	
6	2025	1.200%	28	5.000%	1.480%	
7	2026	1.240%	30	5.000%	1.540%	
8	2027	1.270%	32	5.000%	1.590%	
9	2028	1.320%	34	5.000%	1.660%	
10	2029	1.370%	36	5.000%	1.730%	
11	2030	1.420%	38	5.000%	1.800%	
12	2031	1.470%	38	5.000%	1.850%	
13	2032	1.510%	38	5.000%	1.890%	
14	2033	1.550%	38	5.000%	1.930%	
15	2034	1.590%	38	5.000%	1.970%	
16	2035	1.630%	38	5.000%	2.010%	
17	2036	1.670%	38	5.000%	2.050%	
18	2037	1.710%	38	5.000%	2.090%	
19	2038	1.750%	38	5.000%	2.130%	
20	2039	1.790%	38	5.000%	2.170%	
21	2040					
22	2041					
23	2042					
24	2043					
25	2044	1.920%	40	5.000%	2.320%	
26	2045					
27	2046					
28	2047					
29	2048					
30	2049	1.970%	40	5.000%	2.370%	

**Notes:**

Based on July Interpolated MMD<sup>(1)</sup>

2. Please provide a 30-year taxable scale using the Treasury curve at the close of business Wednesday, October 2nd. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with par-ish coupons throughout when writing the scale. Again, base the scale on an uninsured financing given again the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s / S&P / Fitch).

FHCF Pricing Views: 30-Year Taxable Scale					
Year	Maturity	UST (10/02/2019)	Spread (bps)	Coupon	Yield
1	2020	1.483%	25	1.733%	1.733%
2	2021	1.483%	35	1.833%	1.833%
3	2022	1.437%	45	1.887%	1.887%
4	2023	1.432%	45	1.882%	1.882%
5	2024	1.432%	60	2.032%	2.032%
6	2025	1.523%	60	2.123%	2.123%
7	2026	1.523%	70	2.223%	2.223%
8	2027	1.598%	70	2.298%	2.298%
9	2028	1.598%	75	2.348%	2.348%
10	2029	1.598%	80	2.398%	2.398%
11	2030	1.598%	90	2.498%	2.498%
12	2031	1.598%	100	2.598%	2.598%
13	2032	1.598%	110	2.698%	2.698%
14	2033	1.598%	115	2.748%	2.748%
15	2034	1.598%	120	2.798%	2.798%
16	2035				
17	2036				
18	2037				
19	2038				
20	2039	2.086%	95	3.036%	3.036%
21	2040				
22	2041				
23	2042				
24	2043				
25	2044				
26	2045				
27	2046				
28	2047				
29	2048				
30	2049	2.086%	110	3.186%	3.186%

3. Please provide us with your firm’s opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 and 12-24 months at rates that are at or above the current “market” scale, as needed. In addition, please include and describe briefly in your response if there is any overlap in tax-exempt / taxable capacity.

<b>FHCF Post-Event Market Capacity (\$ in Billions)</b>			
<b>Time Period</b>	<b>Tax-Exempt</b>	<b>Taxable</b>	<b>Total</b>
0-12 Months	4.0 to 5.0	5.0 to 5.5	9.0 to 10.5
12-24 Months	4.0 to 5.0	5.0 to 6.0	9.0 to 11.0
<b>Total</b>	<b>8.0 to 10.0</b>	<b>10.0 to 11.5</b>	<b>18.0 to 21.5</b>

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To: Florida Hurricane Catastrophe Fund  
From: Wells Fargo Securities  
Date: October 4, 2019  
Re: Florida Hurricane Catastrophe Fund Bonding Capacity Analysis for October 2019

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Wells Fargo Securities (“Wells Fargo”) is pleased to provide the Florida Hurricane Catastrophe Fund (“FHCF”) with our estimate of FHCF bonding capacity for October 2019. On the following pages please find our estimate of current market tax-exempt and taxable scales and spreads along with our estimate of bonding capacity for the 0-12 and 12-24 month time periods assuming unconstrained spreads. Feel free to contact any of the Wells Fargo team if we can provide additional information or address any questions regarding these estimates.

Wells Fargo continues to believe that conditions in the municipal market are favorable for the issuance of FHCF bonds, and our current capacity estimates of \$14.0 billion to \$20.0 billion in combined tax-exempt and taxable bonds over a 24-month time horizon remain unchanged from our previous estimates provided in May 2019. As in our previous bonding capacity estimates, the market scales that we have provided for taxable and tax-exempt FHCF bonds, based on market conditions as of October 2, 2019, both assume a \$3 billion issuance amortized in discrete \$100 million amounts over 30 years. We believe this level of issuance falls within the market’s current capacity for FHCF’s debt.

**Wells Fargo has executed more than \$1.4 billion of secondary market trades in FHCF bonds since the beginning of 2016, and our estimates for taxable spreads in this memorandum are informed by our trading activities supporting FHCF’s bonds in the secondary market.**

The municipal market has experienced a fall in rates since our last bond capacity estimate in May 2019 with spot rates along the ‘AAA’ MMD<sup>1</sup> yield curve decreasing on average by 55 basis points as of October 2, 2019 market close. The Federal Reserve has decreased its benchmark interest rate to 1.75%-2.00% since the May 2019 meeting where the Federal Reserve kept its benchmark rate unchanged. Overall, tax-exempt and taxable yields have decreased since our last bonding capacity analysis, as the 3-year and the 30-year benchmark ‘AAA’ MMD yields have decreased by 40 basis points and 62 basis points to 1.20% and 1.97%, respectively, while the 5-year benchmark ‘AAA’ MMD yield has declined by 46 basis points to 1.20%, and the 5-year and 30-year US Treasuries have decreased by 77 and 81 basis points to 1.559% and 2.127%, respectively. This time last year, municipal issuance was down significantly, due to elimination of tax-exempt advance refundings, but the market has recently taken a positive turn due to the overall decrease in municipal borrowing rates. As of September 27, 2019, new municipal issuance volume in 2019 is up 9.0% from the same period a year ago.<sup>2</sup> Investors are continuing to put cash to work (over \$69.0 billion of net municipal bond fund inflows year-to-date)<sup>3</sup> These factors (smaller supply and decreased absolute rates), in conjunction with overall geo-political concerns, provide for a positive market tone for high-grade issuers like FHCF.

Wells Fargo appreciates the opportunity to present our analysis of FHCF’s current bonding capacity. As detailed in our response, should the need arise, we expect that current market conditions should allow FHCF to execute one or more transactions in an aggregate amount equal to or greater than the potential capital market funding needs for the current contract year. We will continue to monitor market conditions on FHCF’s behalf and keep you informed of market developments that may affect FHCF’s future bonding capacity.

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<sup>1</sup> Thomson Reuters Municipal Market Data (“MMD”)

<sup>2</sup> Source: Bond Buyer, Thomson Reuters SDC

<sup>3</sup> Source: Lipper, as of October 2, 2019.



1. Please provide a 30-year tax-exempt scale for the FHCF using the MMD at the close of business Wednesday, October 2<sup>nd</sup>. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with 5.0% coupons throughout when writing the scale. Base the scale on an uninsured financing given the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s / S&P / Fitch).

Florida Hurricane Catastrophe Fund Tax-Exempt Scale Rates as of October 2, 2019						
Maturity	MMD	Spread (bps)	Coupon	Yield	Price	Yield to Maturity
7/1/2020	1.23%	10	5.000%	1.330%	102.375	-
7/1/2021	1.21%	15	5.000%	1.360%	105.927	-
7/1/2022	1.20%	20	5.000%	1.400%	109.340	-
7/1/2023	1.20%	25	5.000%	1.450%	112.583	-
7/1/2024	1.20%	30	5.000%	1.500%	115.670	-
7/1/2025	1.20%	33	5.000%	1.530%	118.720	-
7/1/2026	1.24%	35	5.000%	1.590%	121.444	-
7/1/2027	1.27%	38	5.000%	1.650%	123.989	-
7/1/2028	1.32%	40	5.000%	1.720%	126.263	-
7/1/2029	1.37%	43	5.000%	1.800%	128.235	-
7/1/2030	1.42%	43	5.000%	1.850%	127.726	2.084%
7/1/2031	1.47%	43	5.000%	1.900%	127.219	2.320%
7/1/2032	1.51%	43	5.000%	1.940%	126.816	2.512%
7/1/2033	1.55%	43	5.000%	1.980%	126.413	2.677%
7/1/2034	1.59%	43	5.000%	2.020%	126.013	2.820%
7/1/2035	1.63%	43	5.000%	2.060%	125.613	2.945%
7/1/2036	1.67%	43	5.000%	2.100%	125.216	3.056%
7/1/2037	1.71%	43	5.000%	2.140%	124.819	3.155%
7/1/2038	1.75%	43	5.000%	2.180%	124.425	3.244%
7/1/2039	1.79%	43	5.000%	2.220%	124.032	3.324%
7/1/2040	1.82%	43	5.000%	2.250%	123.738	3.392%
7/1/2041						
7/1/2042						
7/1/2043						
7/1/2044	1.92%	45	5.000%	2.370%	122.570	3.610%
7/1/2045						
7/1/2046						
7/1/2047						
7/1/2048						
7/1/2049	1.97%	45	5.000%	2.420%	122.087	3.758%

Please note that the tax-exempt scale shown above assumes that the bonds would be issued with a 10-year par call provision. Bond prices shown in the table above assume an November 6, 2019 dated date.

2. Please provide a 30-year taxable scale using the Treasury curve at the close of business Wednesday, October 2<sup>nd</sup>. This scale should be the one that you believe reflects a “market” scale given the FHCF’s credit with no capacity constraints. Please use serial bonds and 20, 25, and/or 30-year term bonds, as needed, over a 30-year amortization period (7/1/20 - 7/1/49) with par-ish coupons throughout when writing the scale. Again, base the scale on an uninsured financing given again the FHCF’s current underlying ratings of Aa3/AA/AA (Moody’s/S&P/Fitch).

Florida Hurricane Catastrophe Fund						
Taxable Scale						
Rates as of October 2, 2019						
Maturity	UST	Spread (bps)	Coupon	Yield	Price	Yield to Maturity
7/1/2020	1.628%	45	2.078%	2.078%	100.000	-
7/1/2021	1.628%	45	2.078%	2.078%	100.000	-
7/1/2022	1.571%	55	2.121%	2.121%	100.000	-
7/1/2023	1.559%	65	2.209%	2.209%	100.000	-
7/1/2024	1.559%	75	2.309%	2.309%	100.000	-
7/1/2025	1.627%	80	2.427%	2.427%	100.000	-
7/1/2026	1.627%	90	2.527%	2.527%	100.000	-
7/1/2027	1.689%	90	2.589%	2.589%	100.000	-
7/1/2028	1.689%	95	2.639%	2.639%	100.000	-
7/1/2029	1.689%	100	2.689%	2.689%	100.000	-
7/1/2030	1.689%	105	2.739%	2.739%	100.000	-
7/1/2031	1.689%	110	2.789%	2.789%	100.000	-
7/1/2032	1.689%	115	2.839%	2.839%	100.000	-
7/1/2033	1.689%	120	2.889%	2.889%	100.000	-
7/1/2034	1.689%	125	2.939%	2.939%	100.000	-
7/1/2035						
7/1/2036						
7/1/2037						
7/1/2038						
7/1/2039	2.127%	110	3.227%	3.227%	100.000	-
7/1/2040						
7/1/2041						
7/1/2042						
7/1/2043						
7/1/2044						
7/1/2045						
7/1/2046						
7/1/2047						
7/1/2048						
7/1/2049	2.127%	125	3.377%	3.377%	100.000	-

Please note that the taxable scale shown above assumes the bonds would be issued with a make-whole call provision.

3. Please provide us with your firm’s opinion on the potential tax-exempt and/or taxable post-event market capacity over the next 0-12 and 12-24 months at rates that are at or above the current “market” scale, as needed. In addition, please include and describe briefly in your response if there is any overlap in tax-exempt/ taxable capacity.

FHCF Post-Event Market Capacity			
Time Period	Tax-Exempt	Taxable	Total
0-12 Months	\$6.0 - \$8.0 billion	\$3.0 - \$4.0 billion	\$9.0 - \$12.0 billion
12-24 Months	\$3.0 - \$5.0 billion	\$2.0 - \$3.0 billion	\$5.0 - \$8.0 billion

The capacity estimates shown in the table above assume FHCF would issue debt at higher interest rates than the current “market” tax-exempt and taxable scales that we have provided in our response to questions 1 and 2. Also, please note that there is an overlap between the buyers of taxable and tax-exempt FHCF bonds and the capacity estimates provided in the table above take that overlap into consideration.

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**Disclosures (Continued):**

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While certain transactions described in the Materials may be used for hedging purposes to reduce or eliminate certain risks associated with your assets or liabilities, the effectiveness of hedging may depend upon holding these transactions to maturity and not reducing or disposing of all or any portion of the asset or liability during the term of the hedge. If a swap transaction is terminated early, or if you reduce or dispose of all or a portion of the underlying asset or liability before the transaction matures (such as prepaying a floating rate loan you hedge with a swap), then depending on the nature of the transaction, its characteristics and your position in it (e.g., buyer, seller, counterparty, etc.), you may incur a substantial loss or you may receive little or no hedging benefit from any upfront or periodic payments or exchanges or any other costs incurred in purchasing, selling, acquiring, maintaining or disposing of the transaction. You may also incur a substantial loss if you enter into a swap transaction in anticipation of hedging an asset or liability that does not materialize. You should understand that significant potential amounts could become payable by you for modifying a swap transaction, terminating it early or transferring your position in the transaction to another person or entity, or in connection with the exercise of any option or other rights under the transaction or governing documents, depending upon then existing market conditions. You should also consider that prepaying your loan or disposing of an asset or other liability does not relieve you of your obligations under a swap transaction, which may be terminated early only in accordance with the terms of the swap trading relationship documentation (such as an ISDA Master Agreement) or other transaction documents, or otherwise by mutual agreement. Such termination may require payment by you of an early termination amount, which amount may be substantial. Whether you use a swap transaction for hedging or another purpose, you should satisfy yourself that you understand these and other risks relative to the benefits you are seeking to achieve and that the transaction and risks are suitable for you. These risks are discussed in greater detail in disclosures provided to you through the following website: [www.wellsfargo.com/swapdisclosures](http://www.wellsfargo.com/swapdisclosures)

### Independent Obligation

To the extent any swap transaction described in the Materials may be used to hedge against increases in the interest expense of a loan or other financing, the swap transaction would be a separate and independent obligation and would not be contingent on whether or not any loan or other financing closes, is outstanding, or is repaid, in whole or in part, at any time, subject to any contractual requirement to terminate and settle the transaction early upon prepayment of the loan or financing or for other financing-related events. In addition, if you provide any existing or future collateral or other credit support to secure the transaction and any loan or other financing, then you would be entitled to the release of such collateral or credit support only if certain conditions contained in the related collateral agreement or credit support document are completely satisfied for both the transaction and any such loan or financing, or we otherwise reach agreement with you on alternative collateral, credit support or other arrangements.

### Unmatched Terms & Conventions

If the principal amount or duration of a loan or financing differs from that of a transaction used to hedge such loan or financing, you may be exposed to risk of loss from such over-hedging or under-hedging. If any other economic terms or characteristics of a loan or financing differ from those of the related hedge, then in addition to any losses that you could incur from such differences, the hedge may create unanticipated accounting exposure or tax liability for you. To the extent fair value accounting applies to the hedge, you may have to reflect unrealized gains and losses (i.e., the so-called "mark-to-market" value of the hedge) over the life of the hedge on your balance sheet and/or income statement. If hedge accounting applies, any ineffectiveness in the hedge resulting from such differences may likewise need to be taken into account and reflected in your financial results. These swap valuation considerations may also be important to you for tax purposes, including any tax laws that may require unrealized gains or losses on swaps to be taken into account in determining your income tax liability.

Conventions used in the loan or other financing and swap markets may differ, and we are under no obligation to ensure that any swap we offer is a perfect hedge for your financing even if we provide you with both products. For example, if the method for determining a loan's floating rate differs from that for a swap's floating rate, the loan floating rate payments could diverge from those of the swap. Such divergence may occur by convention or as the result of contractual differences, such as in the definition of or the reset timing (e.g., 1-month or 3-month) for the London Interbank Offered Rate (LIBOR), the dates or times at which LIBOR is set, the number of days in the payment periods, any applicable fallback floating rate, or the floating rate rounding convention.

### Negative Interest Rates

Express wording in swap transactions is required to place a 0% floor on LIBOR or other floating benchmark rate of the swap transaction, and no such 0% floor is included in an interest rate swap or other swap transaction unless mutually agreed between the parties as reflected in the swap confirmation. Absent such floor, if a Floating Amount is negative under an interest rate swap, the Floating Rate Payer does not make such payment. Instead, the Fixed Rate Payer pays the absolute value of the negative Floating Amount in addition to the Fixed Amount. See §6.4 of the 2006 ISDA Definitions, as amended. If you wish to acquire a swap with a 0% floor, this may increase the price of your swap as reflected in a higher Fixed Rate. For further information on negative interest rates, including their effect on swaps and the loans they are hedging, see Negative Interest Rates at: [www.wellsfargo.com/swapdisclosures](http://www.wellsfargo.com/swapdisclosures).

### Projections, Forecasts & Other Data

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### Applicability of Certain Regulations

WFBNA is a “swap dealer” as defined in the Commodity Exchange Act (“CEA”), and one or more transactions described in the Materials are “swaps” as defined in the CEA and regulations of the Commodity Futures Trading Commission (“CFTC”) or “security based swaps” as defined in the CEA and the Securities Exchange Act of 1934 and regulations of the U.S. Securities and Exchange Commission (“SEC”). From time to time, we may furnish you with certain information or request that you furnish us with certain information or representations or take other action we consider necessary or appropriate to comply with applicable legal or regulatory requirements, including the requirement that, in order to enter into a swap with us, you must be an Eligible Contract Participant (as defined in 17 C.F.R. §1.3(m)). Nothing herein or in the Materials constitutes legal advice or purports to be a complete statement of regulations applicable to swaps, matters which you should address with your own legal advisors. For purposes of CFTC Regulations 1.71 and 23.605, please note that the Materials are a “solicitation” of a swap and not a “research report” as defined therein. To the extent the Materials include a scenario analysis, such inclusion shall not supersede your right under CFTC Regulation 23.431(b) to request and consult in the design of a scenario analysis. Nothing in the Materials should be construed as a recommendation or opinion with respect to any swap or trading strategy involving a swap for purposes of CFTC Regulations Part 23 or the CEA. The Materials do not take into account your particular investment objectives, financial condition or needs and are not intended to serve as a basis for entering into a swap or to suggest, through opinion, recommendation, or otherwise, that you should enter into a particular swap or trading strategy involving a swap. You should consult with your own advisors for opinions on whether to enter into any swap or trading strategy involving a swap.

In certain cases, the transactions described in the Materials may be subject to regulations that have not yet been proposed, adopted in final form or become effective, and some or all of such regulations may have a direct or indirect impact on the substantive terms set forth hereunder. Accordingly, the parties acknowledge partial and/or incomplete information with respect to the requirements of such regulations, but acknowledge that to the extent any term contemplated hereunder is in violation of or subject to any current or future regulation, as amended from time to time, we reserve the right to amend the terms contemplated hereby or cease to offer the transaction described herein.

### Wells Fargo as a Counterparty

Transactions described in the Materials are not bank deposits or FDIC insured, may expose you to the credit risk of WFBNA and therefore involve risk of loss to you apart from the market risk associated with the underlying rate, price or other economic measure on which the transaction is based. Financial information WFBNA is available at:

[https://www.wellsfargo.com/invest\\_relations/investor\\_relations](https://www.wellsfargo.com/invest_relations/investor_relations)

### Additional Information

In addition to the information furnished above, you should not enter into any swap transaction described in the Materials without reviewing and understanding our “Disclosure of Material Information for Swaps” and accompanying documents available to you at:

[www.wellsfargo.com/swapdisclosures](http://www.wellsfargo.com/swapdisclosures)

### Updating the Materials

We reserve the right to amend, supplement or replace the Materials at any time, and your use of the Materials constitutes your agreement to update the Materials with any such amendments, supplements or replacements we furnish you.

### Confidentiality

The information in the Materials is confidential and may not be disclosed by you to anyone without our written consent, other than to your advisors, and judicial or other governmental authorities or regulators having jurisdiction over you (including, without limitation, federal, state or

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local tax authorities). Notwithstanding anything to the contrary contained in the Materials, all persons may disclose to any and all persons, without limitations of any kind, the U.S. federal, state or local tax treatment or tax structure of any transaction, any fact that may be relevant to understanding the U.S. federal, state or local tax treatment or tax structure of any transaction, and all materials of any kind (including opinions or other tax analyses) relating to such U.S. federal, state or local tax treatment or tax structure, other than the name of the parties or any other person named herein, or information that would permit identification of the parties or such other persons, and any pricing terms or nonpublic business or financial information that is unrelated to the U.S. federal, state or local tax treatment or tax structure of the transaction to the taxpayer and is not relevant to understanding the U.S. federal, state or local tax treatment or tax structure of the transaction to the taxpayer.

**Limitation of Liability**

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If you have any questions or concerns about the disclosures presented herein, you should make those questions or concerns known immediately to Wells Fargo.

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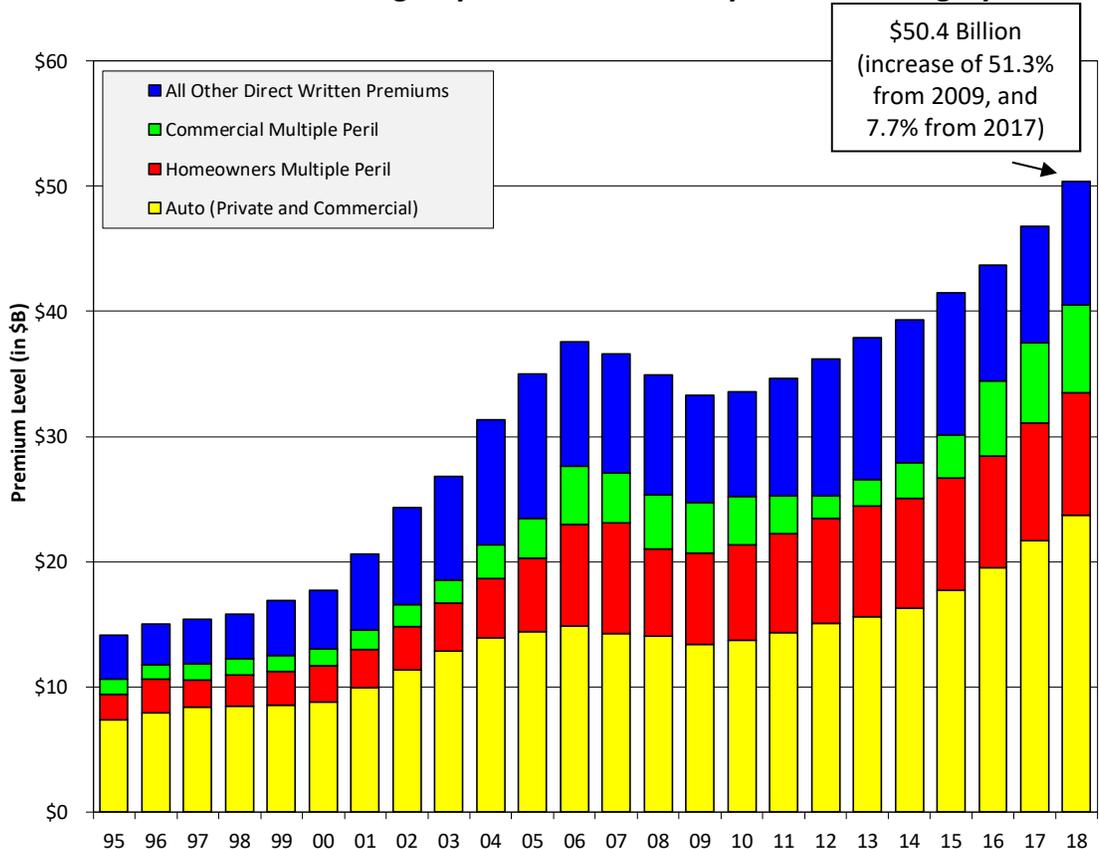


## Appendix B – The FHCF’s Emergency Assessment Base

According to Section 215.555(6)(b)1., Florida Statutes, “(i)f the board determines that the amount of revenue produced under subsection (5) is insufficient to fund the obligations, costs, and expenses of the fund and the corporation, including repayment of revenue bonds and that portion of the debt service coverage not met by reimbursement premiums, the board shall direct the Office of Insurance Regulation to levy, by order, an emergency assessment on direct premiums for all property and casualty lines of business in this state, including property and casualty business of surplus lines insurers regulated under part VIII of chapter 626, but not including any workers' compensation premiums or medical malpractice premiums. As used in this subsection, the term "property and casualty business" includes all lines of business identified on Form 2, Exhibit of Premiums and Losses, in the annual statement required of authorized insurers by s. 624.424 and any rule adopted under this section, except for those lines identified as accident and health insurance and except for policies written under the National Flood Insurance Program.”

In numerical terms, this gives the FHCF an ability to assess against a base which, as of the end of 2018 (the last official measurement date), totaled approximately \$50.4 billion. The chart below and table on the following page show the evolution of the FHCF’s assessment base over time, both by type of coverage and admitted market and surplus lines.

Historical FHCF Emergency Assessment Base by Premium Category





## Historical FHCF Emergency Assessment Base (\$MM)

### Admitted Market, Surplus Lines, and the dollar value of a 6% emergency assessment

Calendar Year	Admitted Lines DWP*	Surplus Lines and NIMA Clearinghouse DWP	Total Aggregate Premium	6% Emergency Assessment	% Premium Change from Prior Year
1995	\$13,783	-	\$13,783	-	
1996	\$14,994	-	\$14,994	-	8.79%
1997	\$15,402	-	\$15,402	-	2.72%
1998	\$15,817	-	\$15,817	-	2.70%
1999	\$16,036	-	\$16,036	-	1.38%
2000	\$16,780	-	\$16,780	-	4.64%
2001	\$19,195	-	\$19,195	-	14.39%
2002	\$22,150	-	\$22,150	-	15.39%
2003	\$24,411	\$2,435	\$26,845	\$1,611	21.20%
2004	\$28,649	\$2,695	\$31,344	\$1,881	16.76%
2005	\$31,714	\$3,275	\$34,989	\$2,099	11.63%
2006	\$33,346	\$4,208	\$37,554	\$2,253	7.33%
2007	\$32,545	\$4,101	\$36,646	\$2,199	-2.42%
2008	\$30,830	\$4,095	\$34,926	\$2,096	-4.69%
2009	\$29,454	\$3,859	\$33,313	\$1,999	-4.62%
2010	\$29,888	\$3,715	\$33,603	\$2,016	0.87%
2011	\$30,943	\$3,696	\$34,640	\$2,078	3.09%
2012	\$32,323	\$3,862	\$36,185	\$2,171	4.46%
2013	\$33,726	\$4,206	\$37,933	\$2,276	4.83%
2014	\$35,085	\$4,216	\$39,302	\$2,358	3.61%
2015	\$36,957	\$4,550	\$41,507	\$2,490	5.61%
2016	\$39,069	\$4,623	\$43,693	\$2,622	5.26%
2017	\$41,844	\$4,973	\$46,817	\$2,809	7.15%
2018	\$44,858	\$5,547	\$50,405	\$3,024	7.66%

Source: Office of Insurance Regulation (“OIR”) and Florida Surplus Lines Service Office (“FSLSO”)

DWP is as of 12/31 and is based on companies reporting to the OIR on behalf of the FHCF and is subject to change as company/agent adjustments are reported. In 2004, the Florida legislature excluded medical malpractice for 3 years and included surplus lines and has continued to exclude medical malpractice, which has been extended until June 2020.

2011-2016 DWP numbers have been adjusted to reflect unassessable premiums written in assessable lines of business. However, beginning in 2017, this allowed adjustment figure is unavailable. The average reduction to DWP related to these adjustments was approximately 0.90%.

Average direct written premium increase (geometric mean) from 2000-2018 is 6.21%.



2018 Admitted Market Lines Premiums (\$MM)

Line of Business	2018 Total Assessable Premium
Fire	\$715.8
Allied Lines	\$1,679.0
Multiple Peril Crop	\$104.8
Private crop	\$0.1
Farmowners Multiple Peril	\$22.6
Homeowners Multiple Peril	\$9,152.5
Commercial Multiple Peril (non-liability)	\$897.2
Commercial Multiple Peril (liability)	\$588.2
Mortgage Guaranty	\$352.1
Ocean Marine	\$349.7
Inland Marine	\$1,414.3
Financial Guaranty	\$4.2
Earthquake	\$4.4
Other liability - occurrence	\$3,636.4
Other liability - claims-made	\$650.0
Products Liability	\$118.0
Private Flood	\$56.0
Private passenger Auto No-Fault (PIP)	\$4,261.1
Other Private Passenger Auto Liability	\$10,269.2
Commercial Auto No-Fault (PIP)	\$96.5
Other Commercial Auto Liability	\$2,617.8
Private Passenger Auto Physical Damage	\$5,921.2
Commercial Auto Physical Damage	\$433.9
Aircraft (All Perils)	\$110.6
Fidelity	\$61.6
Surety	\$411.6
Burglary and Theft	\$19.0
Boiler and Machinery	\$60.8
Credit	\$100.6
Warranty	\$566.8
Aggregate Write-ins	\$182.0
<b>Totals</b>	<b>\$44,858.1</b>

Source: Florida Office of Insurance Regulation, Market Research Unit



## 2018 Surplus Lines Premiums (\$MM)

		2018 Surplus Lines Premiums (\$MM)			2018 Surplus Lines Premiums (\$MM)
Coverage Code			Coverage Code		
1000	Commercial Property	\$1,810.5	3006	Personal & Pleasure Boats & Yachts	\$20.1
1001	Builders Risk	\$66.2	3007	Ocean Marine Builder's Risk	\$0.6
1002	Business Income	\$2.1	3008	Longshoremen (Jones Act)	\$0.7
1003	Apartments (Commercial)	\$3.1	3010	Marine Operators Legal Liability - Non Taxable	\$0.0
1004	Boiler and Machinery	\$0.0	3011	Marine Liabilities Package - Non Taxable	\$0.0
1005	Commercial Package (Property & Casualty)	\$358.6	4000	Inland Marine (Commercial)	\$27.6
1006	Condominium Package (Commercial)	\$43.2	4001	Inland Marine (Personal)	\$12.7
1007	Crop Hail	\$0.0	4002	Motor Truck Cargo	\$28.3
1008	Difference In Conditions	\$8.3	4003	Jewelers Block	\$6.7
1009	Earthquake	\$0.3	4004	Furriers Block	\$0.0
1010	Flood	\$41.6	4005	Contractors Equipment	\$0.7
1011	Glass (Commercial)	\$0.0	4006	Electronic Data Processing	\$5.2
1012	Mortgagee Impairment	\$0.4	5000	Commercial General Liability	\$921.7
1013	Windstorm &/or Hail	\$79.2	5001	Commercial Umbrella Liability	\$57.9
1014	Mold Coverage - Commercial	\$1.6	5002	Directors & Officers Liability (Profit)	\$25.3
1015	Sinkhole Coverage - Commercial	\$0.0	5003	Directors & Officers Liability (Non-Profit)	\$5.5
1016	Excess Flood - Commercial	\$15.5	5004	Educator Legal Liability	\$1.3
1017	Collateral Protection	\$24.7	5005	Employment Practices Liability	\$11.3
1018	Fire	\$0.0	5006	Excess Commercial General Liability (Not Umbrel	\$215.9
1100	Bankers Blanket Bond	\$2.6	5007	Excess Personal Liability (Not Umbrella)	\$5.1
1101	Blanket Crime Policy	\$0.5	5008	Liquor Liability	\$4.4
1102	Employee Dishonesty	\$0.0	5009	Owners & Contractors Protective	\$7.7
1103	Identity Theft	\$0.0	5010	Personal Umbrella	\$7.3
1104	Deposit Forgery	\$0.0	5011	Personal Liability	\$20.0
1105	Miscellaneous Crime	\$0.9	5012	Pollution & Environment Liability	\$58.8
1200	Accident & Health	\$21.6	5013	Product & Completed Operations Liability	\$15.0
1201	Credit Insurance	\$4.5	5014	Public Officials Liability	\$3.1
1202	Animal Mortality	\$0.3	5015	Police Professional Liability	\$1.3
1203	Mortgage Guaranty	\$0.3	5016	Media Liability	\$1.6
1204	Worker's Compensation-Excess Only	\$10.8	5017	Railroad Protective Liability	\$3.2
1205	Product Recall	\$6.6	5018	Asbestos Removal & Abatement	\$0.0
1206	Kidnap/Ransom	\$0.1	5019	Guard Service Liability	\$1.0
1207	Surety	\$5.5	5020	Special Events Liability	\$6.5
1208	Weather Insurance	\$0.1	5021	Miscellaneous Liability	\$78.5
1209	Prize Indemnification	\$0.5	5022	Cyber Liability	\$51.4
1210	Travel Accident	\$0.0	6000	Hospital Professional Liability	\$14.9
1211	Terrorism	\$15.6	6001	Miscellaneous Medical Professionals	\$78.7
1212	Fidelity	\$1.3	6002	Nursing Home Professional Liability	\$10.5
2000	Homeowners-HO-1	\$0.7	6003	Physician/Surgeon	\$24.6
2001	Homeowners-HO-2	\$0.1	7000	Architects & Engineers Liability	\$26.7
2002	Homeowners-HO-3	\$452.3	7001	Insurance Agents & Brokers E&O	\$9.8
2003	Tenant Homeowners-HO-4	\$2.0	7002	Lawyers Professional Liability	\$41.8
2004	Homeowners-HO-5	\$65.5	7003	Miscellaneous E&O Liability	\$129.6
2005	Condo Unit-Owners HO-6	\$84.0	7004	Real Estate Agents E&O	\$3.0
2006	Homeowners-HO-8	\$27.7	7005	Software Design Computer E & S	\$5.2
2007	Dwelling Builders Risk	\$5.8	8000	Commercial Auto Liability	\$38.6
2008	Dwelling Flood	\$26.3	8001	Commercial Auto Excess Liability	\$14.3
2009	Dwelling Property	\$113.8	8002	Commercial Auto Physical Damage	\$45.7
2010	Farmowners Multi-Peril	\$1.7	8003	Dealers Open Lot	\$19.4
2011	Mobile Homeowners	\$17.9	8004	Garage Liability	\$32.5
2012	Windstorm	\$24.8	8005	Garage Keepers Legal	\$2.1
2013	Mold Coverage - Residential	\$0.0	8006	Private Passengers Auto-Physical Damage Only	\$0.1
2014	Sinkhole Coverage - Residential	\$0.0	8007	Personal Excess Auto Liability	\$0.3
2015	Excess Flood - Residential	\$23.3	9000	Commercial Aircraft Hull &/or Liability	\$13.1
3000	Marine Operators Legal Liability - Taxable	\$2.1	9001	Airport Liability	\$1.3
3001	Marine Liabilities Package - Taxable	\$8.3	9002	Aviation Cargo	\$0.2
3002	Ocean Marine-Hull &/or Protection & Indemni	\$13.9	9003	Aviation Product Liability	\$2.6
3003	Ocean Cargo Policy	\$28.2	9004	Hanger Keepers Legal Liability	\$0.0
3004	Ship Repairers Legal Liability	\$0.0	9005	Personal & Pleasure Aircraft	\$0.1
3005	Stevedores Legal Liability	\$0.0			
			<b>Totals</b>		<b>\$5,547</b>

Source: FSLSO

Based on policies with a submitted/pled/written date from 1/1/18 to 12/31/18.



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