



# NORTHERN CALIFORNIA POWER AGENCY

## AUGUST 2016 FINANCE COMMITTEE MATERIALS

August 10, 2016



## **GEOTHERMAL DIRECT PURCHASE REFUNDING UPDATE**

### **MARKET UPDATE**

## UPDATE ON REFUNDING ECONOMICS

- Since the date as of which the RFP offer rates were based, interest rates have fallen
  - BAML has made an offer of 1.68% as of 6/10
  - **Rates are lower an average of ~10 bps since then**
- Estimated present value savings as of 6/10 were ~\$1.1mm or ~6.9% of refunded par
- **Present value savings are expected to have improved by ~\$100,000 or 0.64% of refunded par to ~\$1.2 million of 7.5% of refunded par**
  - PV01 of ~\$10,000

Year	AAA MMD Movement			Today vs. 6/10	Today vs. 7/12
	6/10/2016 RFP Offer	7/12/2016 Last FC	8/8/2016 Today		
1	0.58%	0.52%	0.46%	-0.12%	-0.06%
2	0.68%	0.59%	0.52%	-0.16%	-0.07%
3	0.78%	0.66%	0.61%	-0.17%	-0.05%
4	0.89%	0.75%	0.74%	-0.15%	-0.01%
5	1.00%	0.86%	0.87%	-0.13%	0.01%
6	1.11%	1.01%	1.05%	-0.06%	0.04%
7	1.21%	1.11%	1.17%	-0.04%	0.06%
8	1.31%	1.20%	1.26%	-0.05%	0.06%
9	1.41%	1.29%	1.35%	-0.06%	0.06%
10	1.52%	1.38%	1.45%	-0.07%	0.07%
11	1.63%	1.48%	1.55%	-0.08%	0.07%
12	1.68%	1.52%	1.63%	-0.05%	0.11%
13	1.74%	1.57%	1.70%	-0.04%	0.13%
14	1.80%	1.62%	1.76%	-0.04%	0.14%
15	1.86%	1.67%	1.81%	-0.05%	0.14%
16	1.91%	1.72%	1.86%	-0.05%	0.14%
17	1.96%	1.77%	1.91%	-0.05%	0.14%
18	2.00%	1.82%	1.96%	-0.04%	0.14%
19	2.04%	1.86%	2.01%	-0.03%	0.15%
20	2.07%	1.90%	2.05%	-0.02%	0.15%
21	2.10%	1.92%	2.08%	-0.02%	0.16%
22	2.13%	1.94%	2.10%	-0.03%	0.16%
23	2.15%	1.95%	2.11%	-0.04%	0.16%
24	2.16%	1.96%	2.12%	-0.04%	0.16%
25	2.17%	1.97%	2.13%	-0.04%	0.16%
26	2.18%	1.98%	2.14%	-0.04%	0.16%
27	2.19%	1.99%	2.15%	-0.04%	0.16%
28	2.20%	2.00%	2.16%	-0.04%	0.16%
29	2.21%	2.01%	2.17%	-0.04%	0.16%
30	2.22%	2.02%	2.18%	-0.04%	0.16%

**Preliminary Financing Schedule**

*As of August 8<sup>th</sup>, 2016*

August							September							October						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
														30	31					

Week of	Activity	Responsible Parties
July 25 <sup>th</sup>	<ul style="list-style-type: none"> <li>July 26<sup>th</sup>: First draft of Bank documents distributed</li> </ul>	<ul style="list-style-type: none"> <li>BAML, CHAP</li> </ul>
August 1 <sup>st</sup>	<ul style="list-style-type: none"> <li>August 2<sup>nd</sup>: First draft of Legal documents distributed</li> <li>August 4<sup>th</sup>: Comments on Legal documents provided by Bank Counsel</li> </ul>	<ul style="list-style-type: none"> <li>OHS</li> <li>CHAP</li> </ul>
August 8 <sup>th</sup>	<ul style="list-style-type: none"> <li>August 10<sup>th</sup>: NCPA Finance Committee meeting</li> </ul>	<ul style="list-style-type: none"> <li>NCPA, OHS, PFM</li> </ul>
August 15 <sup>th</sup>	<ul style="list-style-type: none"> <li>August 17<sup>th</sup>: Consolidated comments on Bank documents provided</li> </ul>	<ul style="list-style-type: none"> <li>NCPA, OHS, PFM</li> </ul>
August 22 <sup>nd</sup>	<ul style="list-style-type: none"> <li>August 24<sup>th</sup>: Conference call to review comments and documents</li> </ul>	<ul style="list-style-type: none"> <li>All</li> </ul>
August 29 <sup>th</sup>	<ul style="list-style-type: none"> <li>August 31<sup>st</sup>: Revised draft of Legal and Bank documents distributed</li> </ul>	<ul style="list-style-type: none"> <li>OHS, CHAP, BAML</li> </ul>
September 5 <sup>th</sup>	<ul style="list-style-type: none"> <li>September 5<sup>th</sup>: Labor Day holiday</li> <li>September 7<sup>th</sup>: Conference call to review comments and documents</li> </ul>	<ul style="list-style-type: none"> <li>All</li> </ul>
September 12 <sup>th</sup>	<ul style="list-style-type: none"> <li>September 12<sup>th</sup>: Further revised draft of Legal and Bank documents distributed</li> <li>September 14<sup>th</sup>, 9:00 AM PT: Special NCPA Finance Committee meeting (w/ approval of refunding documents and orientation)</li> <li>September 14<sup>th</sup>: Conference call to finalize and sign-off on documents package for NCPA Commission meeting, if needed</li> <li>September 15<sup>th</sup>: Packets with near-final documents submitted for NCPA Commission meeting</li> </ul>	<ul style="list-style-type: none"> <li>OHS, CHAP, BAML</li> <li>All</li> <li>All</li> <li>NCPA</li> </ul>
September 19 <sup>th</sup>	<ul style="list-style-type: none"> <li>September 21<sup>st</sup> – 23<sup>rd</sup>: NCPA 2016 Annual Conference</li> <li>September 22<sup>nd</sup>: NCPA Commission meeting to approve documents and Direct Purchase</li> </ul>	<ul style="list-style-type: none"> <li>All</li> <li>NCPA</li> </ul>
September 26 <sup>th</sup>	<ul style="list-style-type: none"> <li>Provide final draft of documents</li> </ul>	<ul style="list-style-type: none"> <li>OHS, CHAP, BAML</li> </ul>
October 3 <sup>rd</sup> :	<ul style="list-style-type: none"> <li>October 5<sup>th</sup>: Pre-Closing</li> <li>October 6<sup>th</sup>: Closing</li> </ul>	<ul style="list-style-type: none"> <li>All</li> <li>All</li> </ul>



# Northern California Power Agency

## 2016 Geothermal Direct Purchase Refunding



### Preliminary Financing Schedule

*As of August 8<sup>th</sup>, 2016*

August							September							October						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13	4	5	6	7	8	9	10	2	3	4	5	6	7	8
14	15	16	17	18	19	20	11	12	13	14	15	16	17	9	10	11	12	13	14	15
21	22	23	24	25	26	27	18	19	20	21	22	23	24	16	17	18	19	20	21	22
28	29	30	31				25	26	27	28	29	30		23	24	25	26	27	28	29
														30	31					

Party	Working Group Member	Abbreviation
Issuer	Northern California Power Agency	NCPA
Bond Counsel	Orrick, Herrington & Sutcliffe	OHS
Financial Advisor	Public Financial Management	PFM
Bank	Bank of America Merrill Lynch	BAML
Bank Counsel	Chapman and Cutler	CHAP
Trustee	U.S. Bank	USB

## GEOTHERMAL DIRECT PURCHASE REFUNDING UPDATE

### MARKET UPDATE

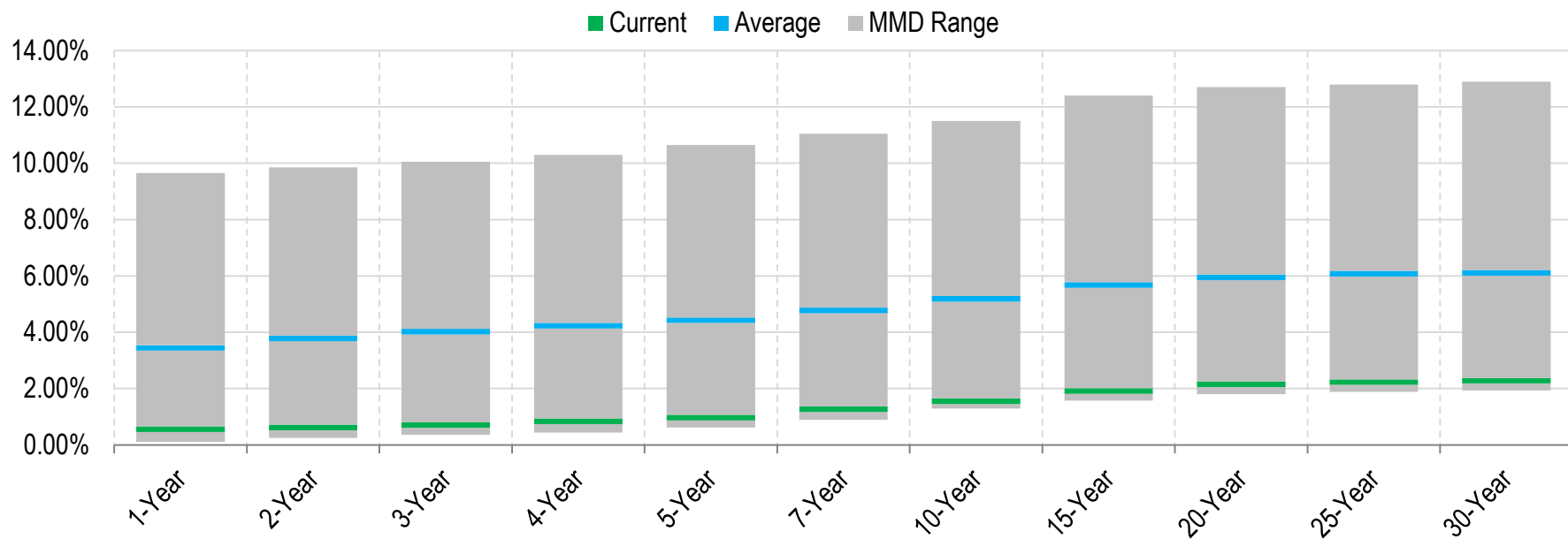
## CURRENT INTEREST RATE SNAPSHOT

August 8, 2016							
Year	Maturity	UST	AAA MMD	AA MMD	AA Spread	A MMD	A Spread
1-Year	2017	0.55%	0.46%	0.51%	0.05%	0.64%	0.18%
2-Year	2018	0.72%	0.52%	0.59%	0.07%	0.73%	0.21%
3-Year	2019	0.85%	0.61%	0.69%	0.08%	0.86%	0.25%
4-Year	2020	-	0.74%	0.84%	0.10%	1.06%	0.32%
5-Year	2021	1.14%	0.87%	0.98%	0.11%	1.23%	0.36%
6-Year	2022	-	1.05%	1.18%	0.13%	1.44%	0.39%
7-Year	2023	-	1.17%	1.33%	0.16%	1.59%	0.42%
8-Year	2024	-	1.26%	1.45%	0.19%	1.76%	0.50%
9-Year	2025	-	1.35%	1.56%	0.21%	1.87%	0.52%
10-Year	2026	1.58%	1.45%	1.67%	0.22%	1.97%	0.52%
11-Year	2027	-	1.55%	1.79%	0.24%	2.10%	0.55%
12-Year	2028	-	1.63%	1.88%	0.25%	2.20%	0.57%
13-Year	2029	-	1.70%	1.95%	0.25%	2.27%	0.57%
14-Year	2030	-	1.76%	2.01%	0.25%	2.33%	0.57%
15-Year	2031	1.94%	1.81%	2.06%	0.25%	2.38%	0.57%
16-Year	2032	-	1.86%	2.11%	0.25%	2.43%	0.57%
17-Year	2033	-	1.91%	2.16%	0.25%	2.48%	0.57%
18-Year	2034	-	1.96%	2.21%	0.25%	2.53%	0.57%
19-Year	2035	-	2.01%	2.26%	0.25%	2.57%	0.56%
20-Year	2036	2.15%	2.05%	2.29%	0.24%	2.60%	0.55%
21-Year	2037	-	2.08%	2.32%	0.24%	2.62%	0.54%
22-Year	2038	-	2.10%	2.34%	0.24%	2.63%	0.53%
23-Year	2039	-	2.11%	2.35%	0.24%	2.64%	0.53%
24-Year	2040	-	2.12%	2.36%	0.24%	2.65%	0.53%
25-Year	2041	-	2.13%	2.37%	0.24%	2.66%	0.53%
26-Year	2042	-	2.14%	2.38%	0.24%	2.67%	0.53%
27-Year	2043	-	2.15%	2.39%	0.24%	2.68%	0.53%
28-Year	2044	-	2.16%	2.40%	0.24%	2.69%	0.53%
29-Year	2045	-	2.17%	2.41%	0.24%	2.70%	0.53%
30-Year	2046	2.30%	2.18%	2.42%	0.24%	2.71%	0.53%

## AAA MMD RATE POSITION SINCE INCEPTION

- Benchmark tax-exempt rates remain well below their long-term averages across the yield curve*

AAA MMD Rate Position  
(June 1, 1981, Inception to August 8, 2016)



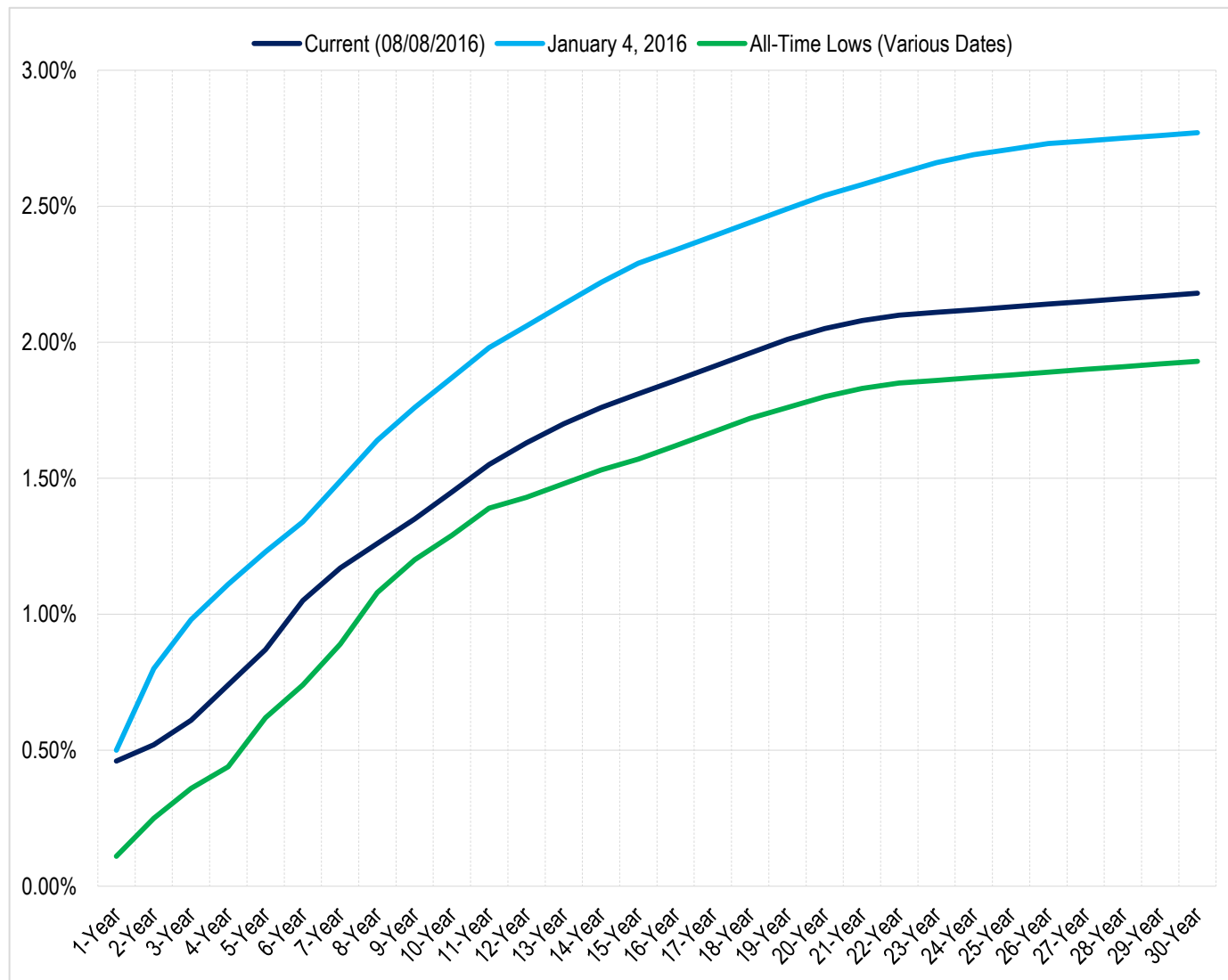
Summary of August 8, 2016 vs. Historical (since Inception) MMD Rates

Statistic	1-Year	2-Year	3-Year	4-Year	5-Year	7-Year	10-Year	15-Year	20-Year	25-Year	30-Year
August 8, 2016	0.46%	0.52%	0.61%	0.74%	0.87%	1.17%	1.45%	1.81%	2.05%	2.13%	2.18%
Average since Inception	3.14%	3.48%	3.72%	3.93%	4.13%	4.48%	4.88%	5.38%	5.65%	5.78%	5.81%
Spread to Average	-2.68%	-2.96%	-3.11%	-3.19%	-3.26%	-3.31%	-3.43%	-3.57%	-3.60%	-3.65%	-3.63%
Minimum	0.11%	0.25%	0.36%	0.44%	0.62%	0.89%	1.29%	1.57%	1.80%	1.88%	1.93%
Spread to Minimum	0.35%	0.27%	0.25%	0.30%	0.25%	0.28%	0.16%	0.24%	0.25%	0.25%	0.25%
Maximum	9.65%	9.85%	10.05%	10.30%	10.65%	11.05%	11.50%	12.40%	12.70%	12.80%	12.90%



## RECENT AAA MMD YIELD CURVE MOVEMENT

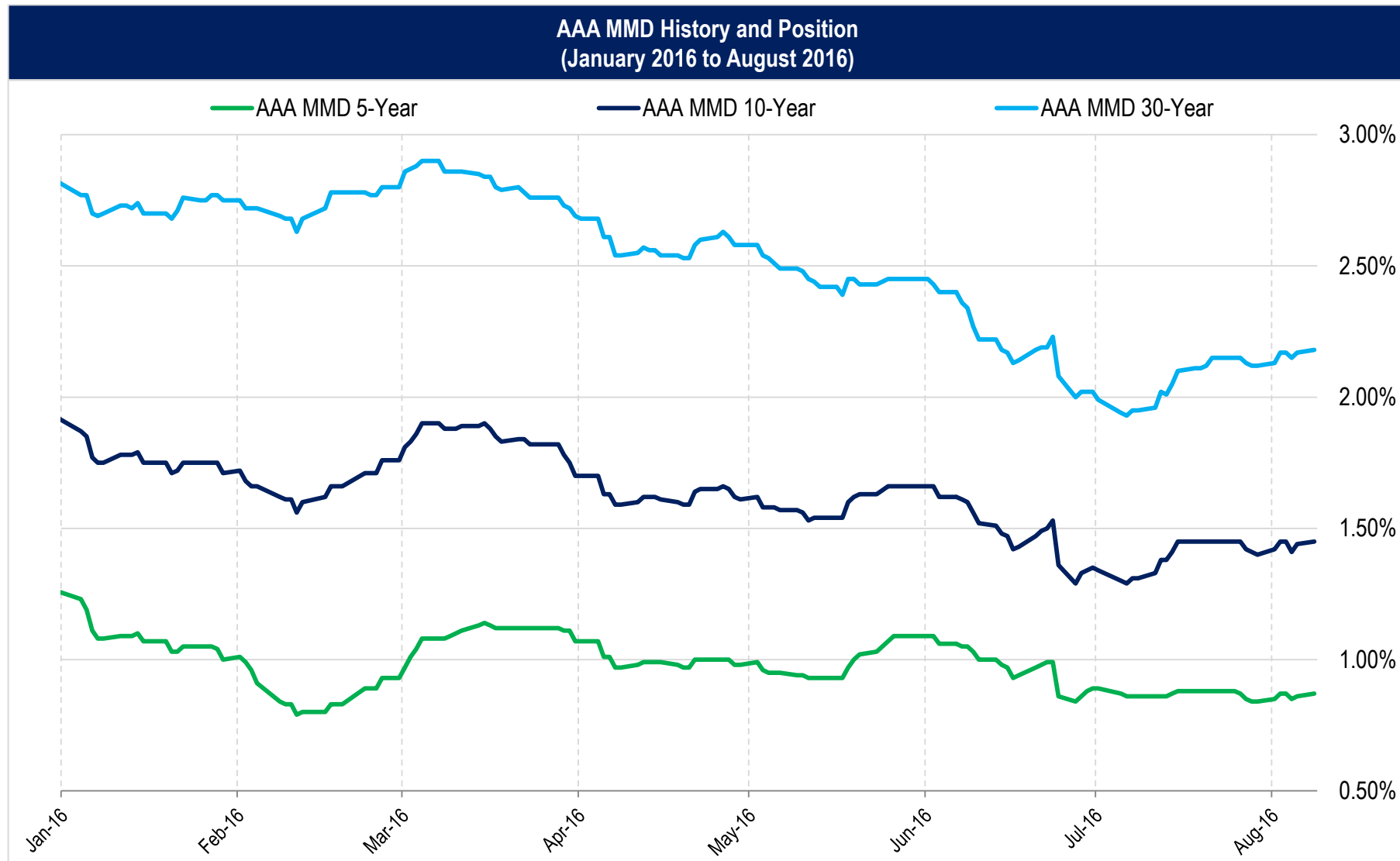
AAA MMD Yield Curve Movement



Maturity	Δ Since 01/04/16	Δ Since All-Time Lows
1-Year	-0.04%	0.35%
2-Year	-0.28%	0.27%
3-Year	-0.37%	0.25%
4-Year	-0.37%	0.30%
5-Year	-0.36%	0.25%
6-Year	-0.29%	0.31%
7-Year	-0.32%	0.28%
8-Year	-0.38%	0.18%
9-Year	-0.41%	0.15%
10-Year	-0.42%	0.16%
11-Year	-0.43%	0.16%
12-Year	-0.43%	0.20%
13-Year	-0.44%	0.22%
14-Year	-0.46%	0.23%
15-Year	-0.48%	0.24%
16-Year	-0.48%	0.24%
17-Year	-0.48%	0.24%
18-Year	-0.48%	0.24%
19-Year	-0.48%	0.25%
20-Year	-0.49%	0.25%
21-Year	-0.50%	0.25%
22-Year	-0.52%	0.25%
23-Year	-0.55%	0.25%
24-Year	-0.57%	0.25%
25-Year	-0.58%	0.25%
26-Year	-0.59%	0.25%
27-Year	-0.59%	0.25%
28-Year	-0.59%	0.25%
29-Year	-0.59%	0.25%
30-Year	-0.59%	0.25%

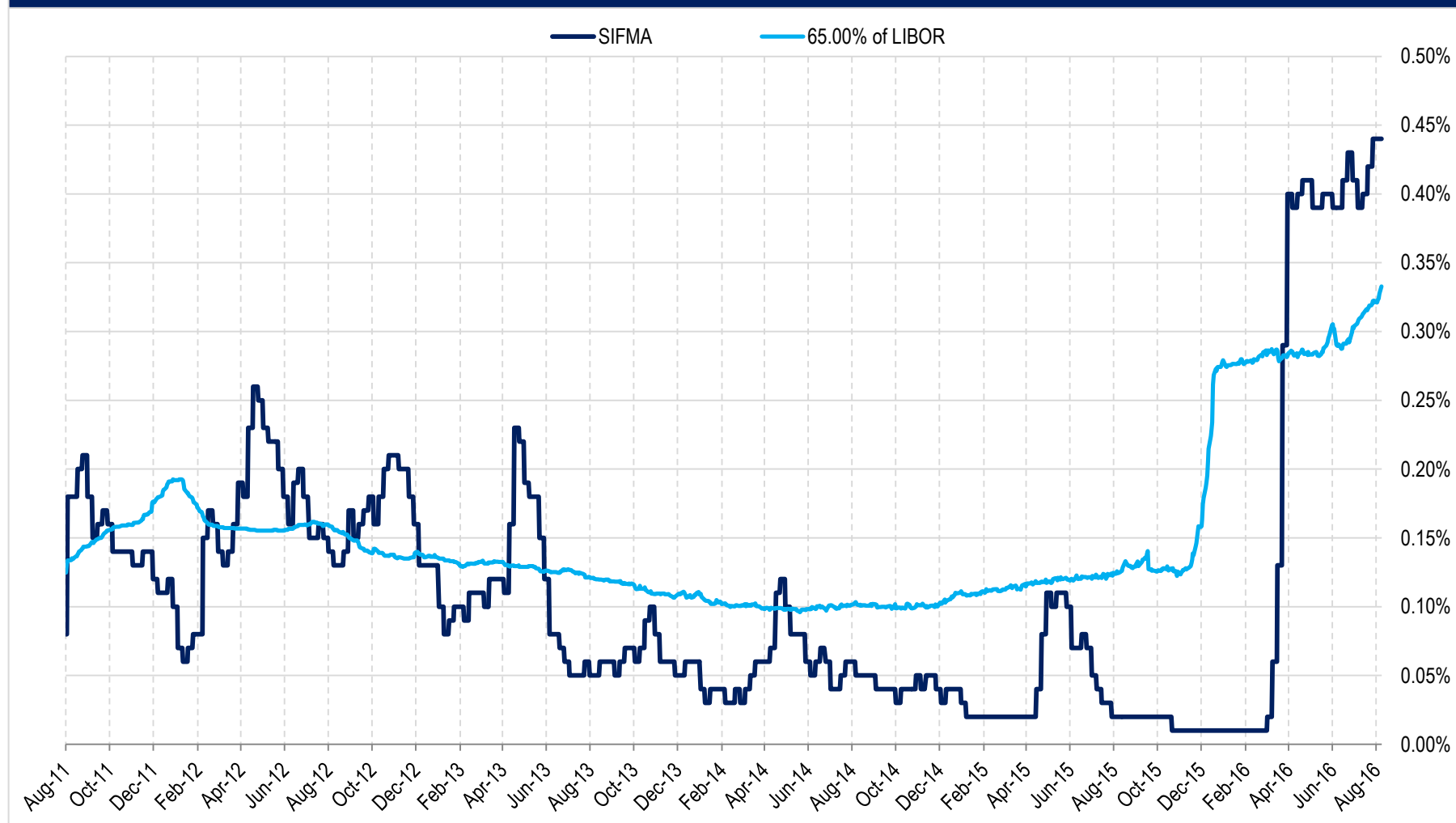
## BENCHMARK RATE TAX-EXEMPT INTEREST RATE PROGRESSION

- *Long-Term AAA MMD rates have given back some of their “post-Brexit” gains*



## SHORT-TERM INTEREST RATE PROGRESSION

- SIFMA remains at the elevated—when compared to their near-zero levels—0.40% - 0.45% range*

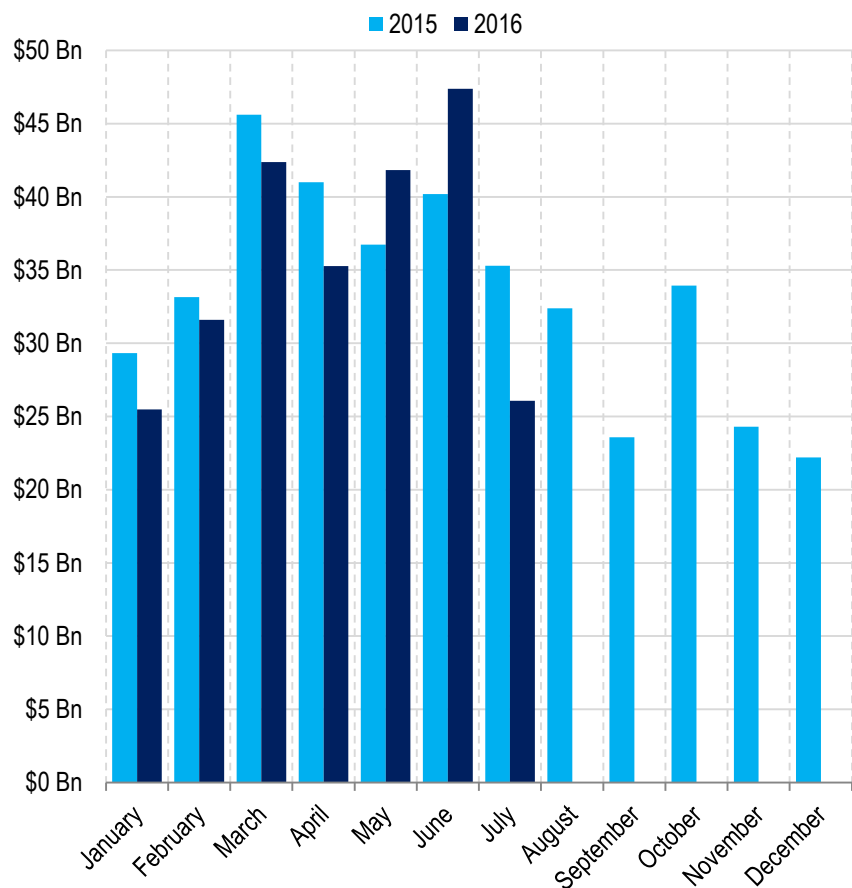
SIFMA & LIBOR Rate History and Position  
(August 2011 to August 2016)

# MUNICIPAL MARKET SUPPLY

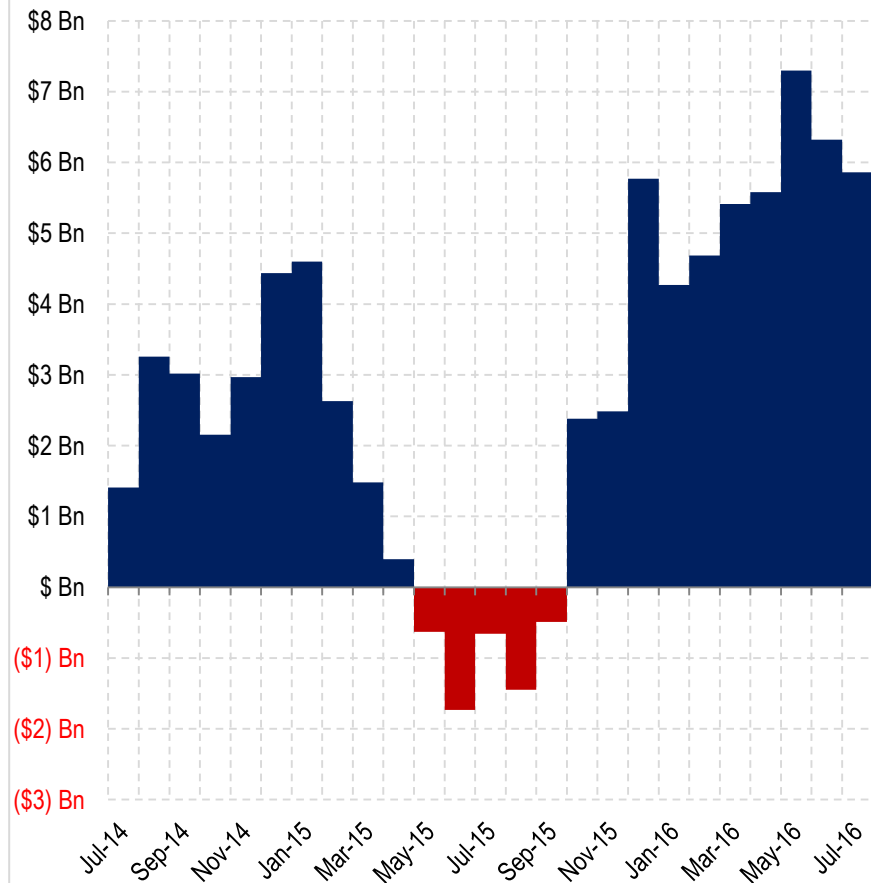
- July saw limited issuance, particularly when compared to 2015. Muni fund flows have remained positive bolstering the demand side of the equation*

## Recent Issuance Volume and Municipal Fund Flows

Overall Municipal Market Volume



Municipal Fund Flows



# Monthly Market Review

July 2016

## Economic Highlights

- The volatile effects of “Brexit” — Britain’s surprising vote to leave the European Union (EU) in late June — quickly dissipated as investors concluded that any negative consequences will take up to two years to play out. The result was a strong recovery in global equity markets, driving the S&P 500 Index to new all-time highs in July. Global sovereign bond yields pared declines, but remained below pre-Brexit levels as central banks around the world remained accommodative.
- The U.S. economy grew at an annual rate of just 1.2% in the second quarter, according to the Commerce Department’s advance estimate. That reading was far below the median forecast of 2.5% growth. Personal consumption in the second quarter contributed the most to growth since 2014, confirming the strength seen in retail sales. But inventories, business investment, investment in housing, and state and local government spending all detracted from growth. As part of the annual update to the gross domestic product (GDP) data series, first quarter growth was revised down to a mere 0.8%.
- June’s nonfarm payrolls rebounded strongly from May’s near-zero level as employers added 287,000 jobs, exceeding nearly all expectations. The unemployment rate ticked higher to 4.9% as labor force participation rose.
- The housing market continued to strengthen across all sectors. Existing home sales rose to the highest level since early 2007, as low borrowing costs enticed buyers. New home sales told the same story, rising to the highest annual rate since 2008.

## Bond Markets

- 10-year and 30-year U.S. Treasury yields fell to record lows during the month, as uncertain global economic growth prospects, persistently low inflation expectations, and negative yields abroad combined to create strong demand. Short- and intermediate-term Treasury yields moved higher, as market volatility resulting from Brexit faded. Lower long-term yields combined with higher short-term yields resulted in the flattest yield curve since late 2007. Short-duration Treasury bond indices posted negative returns for the month, while returns on indices with durations greater than five years were strongly positive.
- Federal agency yield spreads were modestly lower as agency yields moved in tandem with those of comparable-maturity Treasuries. As a result, most agency indexes slightly outperformed those of similar-duration Treasuries.
- Investment-grade corporate yield spreads tightened over the month as post-Brexit volatility abated and second quarter corporate earnings season kicked off with mildly positive results. Corporate bonds again outperformed comparable maturity Treasuries, adding to their 2016 results.

- Asset-backed securities (ABS) and mortgage-backed securities (MBS) outperformed comparable Treasury securities in July as the rebound in interest rates helped to alleviate the risk of prepayments.
- Money market securities — those with maturities of one year or less — continued to offer very attractive yields versus short-term Treasuries and agencies. Looming money market fund reform in October remains the main driver of yield spreads in the sector.

## Municipal Bond Market

- Municipal new issuance decreased 26.8% in July versus a year earlier, with long-term bond sales of \$26.1 billion versus \$35.6 billion the same month last year. New money issuance and refundings were down 17.4% and 27.7% respectively, with year to date long-term sales down 4.7% to \$250 billion from \$262.4 billion the same period last year, according to the Thomson Reuters Municipal Market Monitor (TM3 data).
- Municipal bond inflows increased slightly through the first three weeks of July to \$4.3 billion from \$4.0 billion in the same period last month. The weekly average for the first three weeks of July was \$1.4 billion versus \$1.3 billion in the same period in June, according to Investment Company Institute (ICI) data.
- The TM3 Municipal Market Index (MMD) curve experienced a decrease on the front end of the curve in July, with the intermediate and long end increasing. The two-year maturity fell 6 basis points (bps), and the five-year dropped 4 bps. The intermediate term saw a slight increase of 3 bps, while the 10-year experienced a 6 bps increase. The 30-year climbed 10 bps, according to TM3 data.
- The 10-year MMD Single-A General Obligation (GO) Index credit spreads decreased 1 bp to 52 bps in July, compared to 53 bps in June. The 10-year double-A GO Index credit spreads dropped 2 bps to 22 bps from 24 bps last month, according to TM3 data.
- Municipal/Treasury ratios declined on the front end of the yield curve in July. The two-year decreased significantly to 78.0% from 98.3% last month, while the five-year decreased to 81.4% from 88.2% the previous month. The intermediate term rose slightly to 85.9% from 84.8% last month. The long-end experienced an increase, with the 10-year moving to 96.1% from 91.0% the previous month and the 30-year climbing to 97.0% from 87.7% last month, according to TM3 data.
- The Federal Open Market Committee once again left rates unchanged in July, leaving investors to speculate whether they will raise rates at all this year.



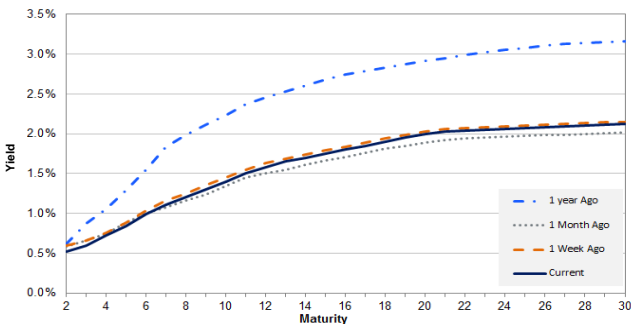
**The PFM Group**  
Financial & Investment Advisors

MMD Spot Rates				
	Current 7/29/2016	1 Week Ago 7/22/2016	1 Month Ago 6/29/2016	1 Year Ago 7/29/2015
2 year	0.52	0.59	0.58	0.62
5 Year	0.84	0.88	0.88	1.29
7 Year	1.11	1.16	1.08	1.84
10 Year	1.40	1.45	1.34	2.23
30 Year	2.12	2.15	2.02	3.16

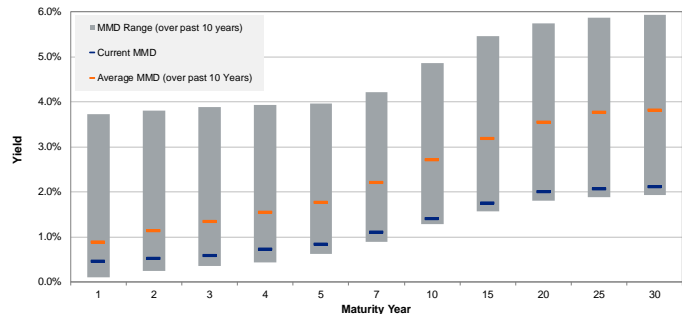
Change in Spot Rate (basis points)			
	1 Week Ago 7/22/2016	1 Month Ago 6/29/2016	1 Year Ago 7/29/2015
2 year	-7	-6	-10
5 Year	-4	-4	-45
7 Year	-5	3	-73
10 Year	-5	6	-83
30 Year	-3	10	-104

Market Rates			
Term	MMD AAA GO	U.S. Treasury	SIFMA Swap Curve
2 year	0.52%	0.69%	0.39%
3 year	0.59%	0.79%	0.60%
5 year	0.84%	1.08%	1.00%
7 year	1.11%	1.35%	1.32%
10 year	1.40%	1.52%	1.59%
30 year	2.12%	2.27%	2.36%

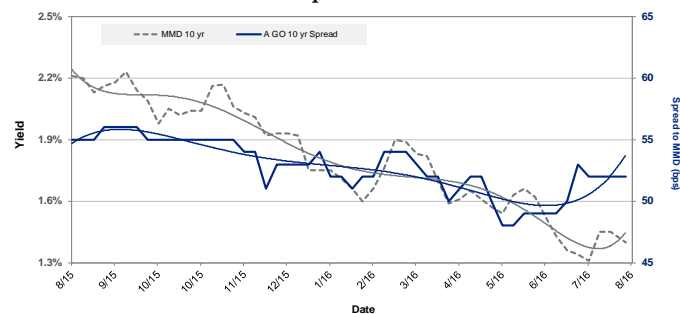
MMD AAA G.O. Curve



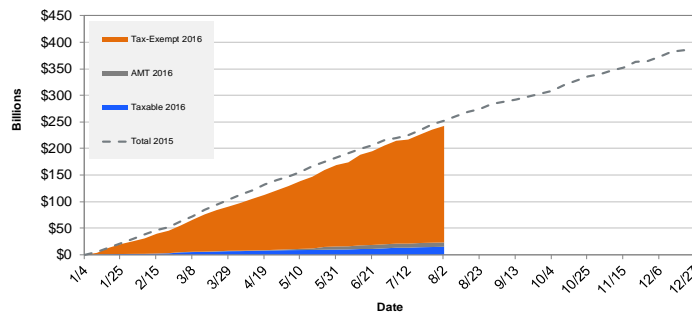
MMD Rates Over Time



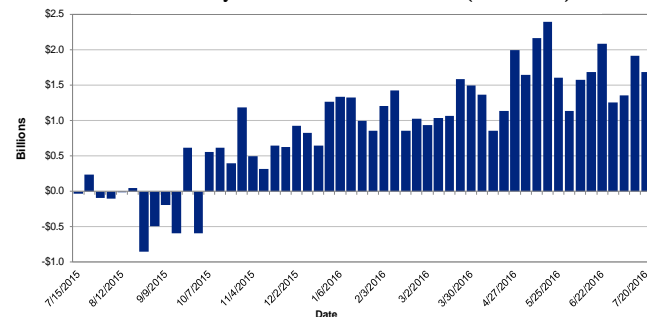
Rate and Spread Movement



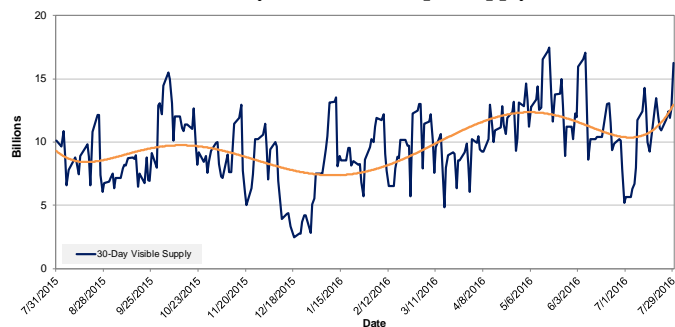
2016 Cumulative Issuance



Weekly Mutual Fund Inflows (Outflows)



30-Day Visible Municipal Supply



Economic Calendar								
Date	Time	Statistic	Date	Time	Statistic	Date	Time	Statistic
08/01/16	9:45 AM	Industrial Production	08/10/16	7:00 AM	MBA Mortgage Applications	08/18/16	8:30 AM	Jobless Claims
08/01/16	10:00 AM	ISM Manufacturing Index	08/11/16	8:30 AM	Jobless Claims	08/23/16	10:00 AM	New Home Sales
08/01/16	10:00 AM	Construction Spending	08/11/16	8:30 AM	Productivity and Costs	08/24/16	7:00 AM	MBA Mortgage Applications
08/02/16		Vehicle Sales	08/12/16	8:30 AM	Retail Sales	08/24/16	9:00 AM	House Price Index
08/02/16	8:30 AM	Personal Income	08/12/16	8:30 AM	Producer Price Index	08/24/16	9:45 AM	Industrial Production
08/02/16	9:45 AM	ISM Manufacturing Index	08/12/16	10:00 AM	U. of Michigan Confidence	08/24/16	10:00 AM	Existing Home Sales
08/03/16	7:00 AM	MBA Mortgage Applications	08/15/16	10:00 AM	House Price Index	08/25/16	8:30 AM	Jobless Claims
08/03/16	8:15 AM	Employment Situation	08/16/16	8:30 AM	Personal Income	08/25/16	8:30 AM	Durable Goods Orders
08/03/16	10:00 AM	Services Index	08/16/16	8:30 AM	Housing Starts	08/26/16	8:30 AM	GDP
08/04/16	8:30 AM	Jobless Claims	08/16/16	8:30 AM	Consumer Price Index	08/26/16	9:45 AM	Services Index
08/04/16	10:00 AM	Durable Goods Orders	08/16/16	8:30 AM	Building Permits	08/26/16	10:00 AM	U. of Michigan Confidence
08/05/16	8:30 AM	Employment Situation	08/16/16	9:15 AM	Industrial Production	08/29/16	8:30 AM	Personal Income
08/05/16	8:30 AM	Personal Income	08/17/16	7:00 AM	MBA Mortgage Applications	08/30/16	9:00 AM	S&P/CaseShiller Home Price Ind
08/08/16	8:00 AM	MBA Mortgage Foreclosures	08/17/16	2:00 PM	FOMC Meeting Minutes Released	08/31/16	7:00 AM	MBA Mortgage Applications
08/09/16	8:30 AM	Productivity and Costs	08/18/16	8:30 AM	Philadelphia Fed Business Outlook	08/31/16	10:00 AM	Pending Home Sales

Sources: Bloomberg, Thomson Reuters, and ICI. Unless otherwise noted, all data is presented as of 7/31/16.

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# Monthly Market Review

July 2016

## Economic Highlights

- The volatile effects of “Brexit” — Britain’s surprising vote to leave the European Union (EU) in late June — quickly dissipated as investors concluded that any negative consequences will take up to two years to play out. The result was a strong recovery in global equity markets, driving the S&P 500 Index to new all-time highs in July. Global sovereign bond yields pared declines, but remained below pre-Brexit levels as central banks around the world remained accommodative.
- The U.S. economy grew at an annual rate of just 1.2% in the second quarter, according to the Commerce Department’s advance estimate. That reading was far below the median forecast of 2.5% growth. Personal consumption in the second quarter contributed the most to growth since 2014, confirming the strength seen in retail sales. But inventories, business investment, investment in housing, and state and local government spending all detracted from growth. As part of the annual update to the gross domestic product (GDP) data series, first quarter growth was revised down to a mere 0.8%.
- June’s nonfarm payrolls rebounded strongly from May’s near-zero level as employers added 287,000 jobs, exceeding nearly all expectations. The unemployment rate ticked higher to 4.9% as labor force participation rose.
- The housing market continued to strengthen across all sectors. Existing home sales rose to the highest level since early 2007, as low borrowing costs enticed buyers. New home sales told the same story, rising to the highest annual rate since 2008.

## Bond Markets

- 10-year and 30-year U.S. Treasury yields fell to record lows during the month, as uncertain global economic growth prospects, persistently low inflation expectations, and negative yields abroad combined to create strong demand. Short- and intermediate-term Treasury yields moved higher, as market volatility resulting from Brexit faded. Lower long-term yields combined with higher short-term yields resulted in the flattest yield curve since late 2007. Short-duration Treasury bond indices posted negative returns for the month, while returns on indices with durations greater than five years were strongly positive.
- Federal agency yield spreads were modestly lower as agency yields moved in tandem with those of comparable-maturity Treasuries. As a result, most agency indexes slightly outperformed those of similar-duration Treasuries.
- Investment-grade corporate yield spreads tightened over the month as post-Brexit volatility abated and second quarter corporate earnings season kicked off with mildly positive results. Corporate bonds again outperformed comparable maturity Treasuries.

- Asset-backed securities (ABS) and mortgage-backed securities (MBS) outperformed comparable Treasury securities in July as the rebound in interest rates helped to alleviate the risk of prepayments.
- Money market securities — those with maturities of one year or less — continued to offer very attractive yields versus short-term Treasuries and agencies. Looming money market fund reform in October remains the main driver of yield spreads in the sector.

## Equity Markets

- Broad domestic equity indexes ended July significantly higher as the S&P 500 posted its best monthly return since March, rising more than 3.5%. Equities were driven to new all-time highs with the S&P 500 closing the month with a string of new record high closes during seven of the final 15 trading days.
- Equity markets throughout the world followed suit as every major international equity index rose during the month. European equities, represented by the STOXX 600 Index, gained 4.5% (USD) for the month despite remaining negative year-to-date. In Asia, increasing expectations of stimulus from the Bank of Japan pushed Japanese equity markets higher as the Nikkei 225 Index rose 7.3% (USD) on the month.

## PFMAM Outlook

- The post-Brexit storm reinforced the central view on interest rates in the U.S. — they will be lower for longer. Growth, already lagging the historic pace of recent business cycles, will be weighed down by European uncertainty; inflation will be moderated by weaker global demand and commodity excesses and central bank activism — with consequent negative interest rates in Japan and much of Europe — will limit any rises in U.S. rates for an indefinite period.
- We continue to recommend that portfolios be positioned close to benchmark durations. This should provide latitude to add investments that are in issues and sectors that offer value over government securities and protect portfolios from unpredictable interest rate and financial marketplace volatility.
- The return potential for investment-grade corporate bonds has lessened as spreads tightened to or below their pre-Brexit levels. We continue to recommend allocation to the sector but note that tight spreads in some industrial issuers may not align with fundamental valuations. Value exists in financial issuers as regulators push banks to fortify their balance sheets, while issuers exposed to a potential economic slowdown in Europe should be approached with caution.
- The opportunities created in the money market sector have grown as a result of the looming implementation of money market fund reform in October.



**PFM Asset Management LLC**

## U.S. Treasury Yields

Duration	Jul 31, 2015	Jun 30, 2016	Jul 31, 2016	Monthly Change
3 Month	0.06%	0.26%	0.26%	0.00%
6 Month	0.15%	0.35%	0.37%	0.02%
2 Year	0.66%	0.58%	0.66%	0.08%
5 Year	1.53%	1.00%	1.03%	0.03%
10 Year	2.18%	1.47%	1.45%	-0.02%
30 Year	2.91%	2.29%	2.18%	-0.11%

## Spot Prices and Benchmark Rates

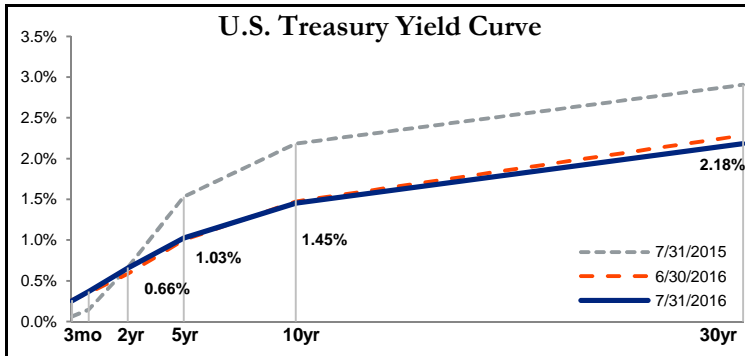
Duration	Jul 31, 2015	Jun 30, 2016	Jul 31, 2016	Monthly Change
1 Month LIBOR	0.19%	0.47%	0.50%	0.03%
3 Month LIBOR	0.31%	0.65%	0.76%	0.11%
Effective Fed Funds Rate	0.08%	0.30%	0.30%	0.00%
Fed Funds Target Rate	0.25%	0.50%	0.50%	0.00%
Gold (\$/oz)	\$1,095	\$1,321	\$1,349	\$28
Crude Oil \$/Barrel	\$47.12	\$48.33	\$41.60	-\$6.73
US Dollars per euro	\$1.10	\$1.11	\$1.12	\$0.01

## Yields by Sector and Maturity as of July 31, 2016

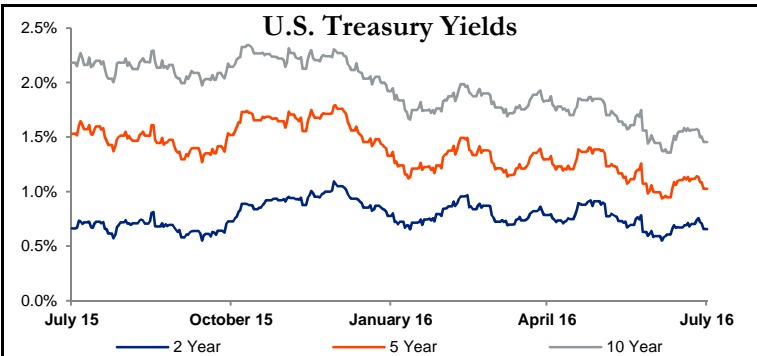
Duration	U.S. Treasury	Federal Agency	Corporates-A Industrials	Municipals
3 Month	0.26%	0.31%	0.75%	-
6 Month	0.37%	0.41%	0.79%	-
2 Year	0.66%	0.78%	1.08%	0.61%
5 Year	1.03%	1.19%	1.67%	1.03%
10 Year	1.45%	1.82%	2.42%	1.78%
30 Year	2.18%	2.45%	3.48%	3.80%

## July's Economic Indicators

Indicator Name	Release Date	For	Consensus	Prior
Change in Nonfarm Payroll:	Jul 08	Jun	287k	11k
Retail Sales Advance MoM	Jul 15	Jun	0.60%	0.20%
CPI Ex Food & Energy YoY	Jul 15	Jun	2.30%	2.20%
Existing Home Sales	Jul 21	Jun	5.57m	5.51m
New Home Sales	Jul 26	Jun	592k	572k
FOMC Rate Decision	Jul 27	27-Jul	0.50%	0.50%
GDP Annualized QoQ	Jul 29	2Q (1st est.)	1.2%	0.8%



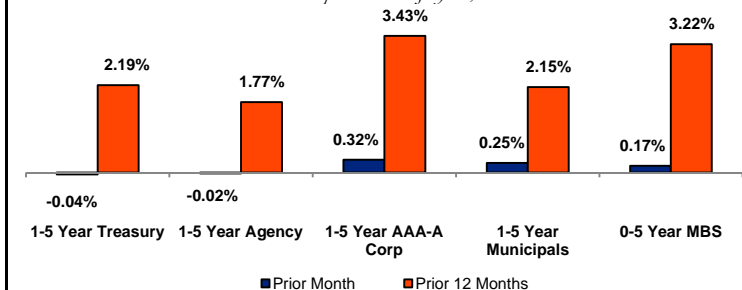
The Treasury curve flattened further over the month as yields on the short-end of the curve rose as Brexit fears abated, while long-end yields declined.



Year-to-date, Treasury yields remained significantly lower, with the yield on the 10- and 30-year Treasury falling to record lows during the month.

## BofA ML Fixed Income Index Returns

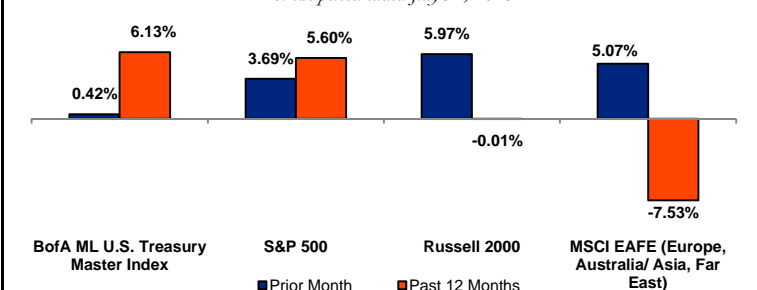
For the period ended July 31, 2016



Fixed income indexes posted modest returns over the month led by corporates, as spreads tightened, and MBS, as prepayment risk declined.

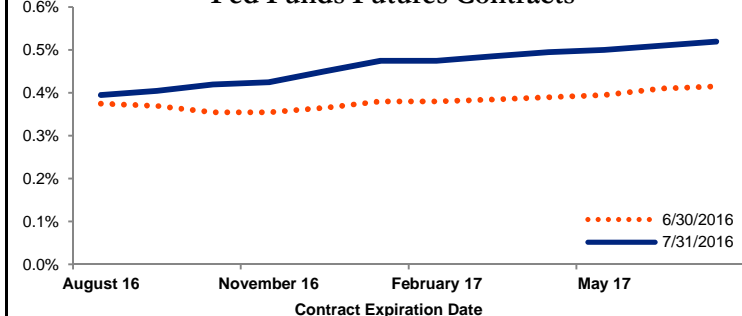
## Total Return of Major Indices

For the period ended July 31, 2016



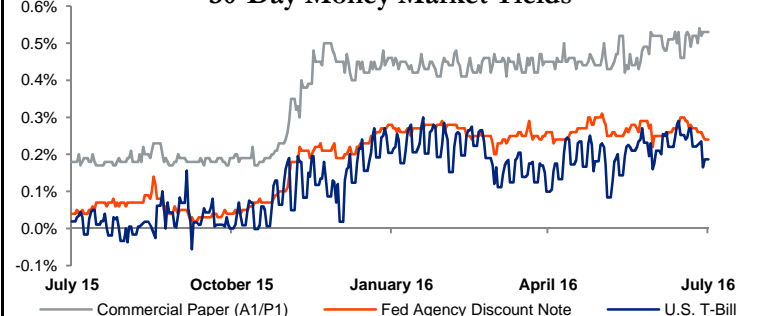
Equities significantly outperformed fixed income indexes as central banks assured investors that accommodative policy would be made available as needed.

## Fed Funds Futures Contracts



The expectation for a rate hike in 2016 rebounded slightly as downside effects resulting from Brexit will take up to two years to materialize.

## 30-Day Money Market Yields



Yields on CP and CDs continued to offer significant added yield to comparable Treasuries and federal agencies ahead of money market fund reform in October.

Source: Bloomberg. Data as of July 31, 2016 unless otherwise noted.

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