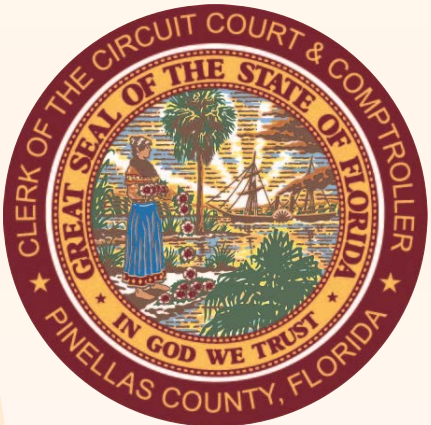


Presentation to the Pinellas County Board of County Commissioners

Investments
By

Clerk of the Circuit Court & Comptroller
Ken Burke, CPA

Tuesday, August 16, 2016



Myth 1

“a majority of our investment portfolio has traditionally been invested in certificates of deposit from banks, the State Board of Administration overnight fund and these very highly conservative investments to achieve the goals of the policy, and each of those entities, of course, have their own financial advisors, financial advisory services available.” (May 17th, BCC Budget Information Session)

REALITY:

In the past 12 years, we have not held a certificate of deposit (CD) in our investment portfolio.

In November 2007, I withdrew all but a minimal balance in the SBA. Within a week, the SBA froze any withdrawals and created two classes of funds - one of which remained restricted for years. Since that time, we have not placed any investments with the SBA.

We do invest in Local Government Pools where there are financial advisors to those funds.

Myth 2

“ ... we really don't invest that is of any risk whatsoever.” (August 4th, 2016, BCC Budget Workshop)

REALITY:

There are two main types of risks that relate to our portfolio:

Credit Risk – minimal risk.

Market or Interest Rate Risk – this is the risk we do have and the reason we are requesting the assistance of a financial advisor.

Myth 3

“We have a relationship with a bank, and they could certainly advise us. We also have – what’s the name of the financial advising company that we have on retainer?” (August 4th, 2016 Budget Workshop)

REALITY:

Our banking services contract has no provision for the bank to provide investment advisory services.

Marianne Edmonds of Public Trust Advisors Group “PRAG” is the Financial Advisor for debt matters. In a letter dated August 10, 2016 she stated “our core business does not include providing portfolio management services, asset allocation or direction with regard to specific investments.”

What Type of Investments Does Pinellas County Have?

	Average Balance			
	Oct 2014 to Sept 2015		Oct 2015 to June 2016	
Bank Accounts	179,529,663	24.23%	200,453,805	23.59%
Local Gov Investment Pools (Non-bank)	28,617,539	3.86%	60,238,183	7.08%
US Government Securities (Non-bank)	532,884,823	71.91%	589,165,514	69.33%
TOTAL	741,032,025	100%	849,857,502	100%

Investment Interest Income

Average Balance Interest Income

Oct 2014 to Sept 2015

Bank Accounts	179,529,663	24.23%	324,411	9.21%
Local Gov Investment Pools (Non-bank)	28,617,539	3.86%	38,048	1.08%
US Government Securities (Non-bank)	532,884,823	71.91%	3,160,636	89.71%
TOTAL	741,032,025	100%	3,523,095	100%

Average Balance Interest Income

Oct 2015 to June 2016

Bank Accounts	200,453,805	23.59%	473,640	11.01%
Local Gov Investment Pools (Non-bank)	60,238,183	7.08%	185,753	4.32%
US Government Securities (Non-bank)	589,165,514	69.33%	3,642,916	84.67%
TOTAL	849,857,502	100%	4,302,309	100%

Yields (Interest Rates Earned)

Composite Yields:

	<u>Oct 2014 to Sept 2015</u>	<u>Oct 2015 to June 2016</u>
Bank Accounts	0.18%	0.31%
Local Gov Investment Pools	0.12%	0.41%
US Gov Securities	0.59%	0.82%

Work Involved in Purchasing US Treasury and US Federal Agency Securities

Potential Investment Income Lost

What if we invested strictly in Money Market Funds and Local Government Investment Pools that don't require the expertise and person hours needed to invest in US Government Securities?

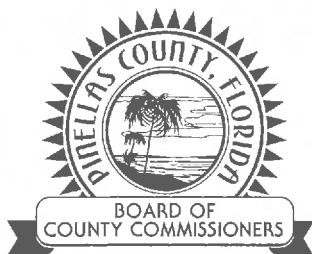
Interest Earned:

Oct 2014 to Sept 2015	Pro Forma	Actual	Difference
Bank Accounts	1,283,604	324,411	959,193
Local Gov Investment Pools	38,048	38,048	0
US Gov Securities	<u>0</u>	<u>3,160,636</u>	<u>(3,160,636)</u>
TOTAL	1,321,652	3,523,095	(2,201,443)

Interest Earned:

Oct 2015 to June 2016 (9 Months Period)	Pro Forma	Actual	Difference
Bank Accounts	473,640	473,640	0
Local Gov Investment Pools	1,997,437	185,753	1,811,684
US Gov Securities	<u>0</u>	<u>3,642,916</u>	<u>(3,642,916)</u>
TOTAL	2,471,077	4,302,309	(1,831,232)

Annualized for Oct 2015 to Sept 2016	3,294,769	5,736,412	(2,441,643)
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BOARD OF COUNTY COMMISSIONERS


PINELLAS COUNTY, FLORIDA

P.O. BOX 2438
Clearwater, FL 33757
Telephone: (727) 464-8300
FAX: (727) 464-8370

KEN BURKE

CLERK OF BOARD OF COUNTY COMMISSIONERS
CLERK OF WATER AND NAVIGATION CONTROL AUTHORITY
COUNTY AUDITOR AND TREASURER

TO: Distribution List (Attached)

FROM: Fred Dean, CPA 
Director, Finance Division

SUBJECT: Request for Competitive Offers

DATE: July 13, 2016

Pinellas County is requesting competitive offerings on funds available for investment. Details are as follows:

Security: **U.S. Agency or U.S. Government-sponsored enterprises (GSEs), Callable Only, Minimum AA rated**

Face Amount: **Up to \$20 million, Delivery vs. Payment**

Offers Received: **July 14, 2016 (Thursday, 11:00 AM EST)**
(Date/Time) Offer must remain open for minimum 15 minutes

Settlement: **On or before July 21, 2016**

Maturity: **July, August, October or November 2018**

Response: **All offerings must be submitted by email to Brokers@pinellascounty.org. Please provide the following Bloomberg information in the email: a trade ticket, security description (DES), call schedule, and an option adjusted spread (OAS1) analysis using a volatility of 14.00. Please feel free to add additional description that will assist our evaluation.**

PLEASE SUBMIT YOUR SINGLE BEST OFFER.

Award: Award will be primarily based on OAS1 (with volatility of 14.00) and maturity suitability; yield and total return profile may also be considered. Tie offers will be decided by coin flip. We reserve the right to reject all offerings at our discretion, especially if market conditions are uncertain.

Thank you for your participation in this process.

Distribution List
July 13, 2016

Great Pacific Securities
Kris Mills
(800) 284-4804
FAX (714) 619-3019
Email: krism@bloomberg.net
kmills@greatpac.com
andy-kris@bloomberg.net

PNC Capital Markets
Thomas Jacobson
(800) 821-9211
Direct (317) 686-3594
FAX (317) 686-3707
Email: thomas.jacobson@pnc.com

Raymond James
Jim Canale
(800) 476-6864
Direct (727)-567-2960
Email: jim.canale@raymondjames.com

UBS Securities, LLC
John Doke
(800) 273-2557
FAX (214) 965-6177
Email: doke@bloomberg.net

Oppenheimer
Alan Schnall
(561) 367-4825
(888) 999-3660
FAX (561) 416-8671
Email: aschnall2@bloomberg.net

Investment Bid Sheet

7/14/2016

11:00 AM

Brokers/	Agency Name	Coupon	YTM	YTNC	Rating	Maturity Date	Callable	Settlement By	Price	Principal	OAS1
----------	-------------	--------	-----	------	--------	---------------	----------	---------------	-------	-----------	------

Requirements:

*July, August,
October or
November 2018* *No minimum
call date* **7/21/2016**

Great Pacific Securities Kris Mills (800) 284-4804 FAX (714) 619-3019											
PNC Capital Markets Thomas Jacobson (800) 821-9211 or (317) 686-3594 FAX (317) 686-3707											
Raymond James Jim Canale (800) 476-6864 or (727) 567-2960											
UBS Securities, LLC John Doke (800) 273-2557 FAX (214) 965-6177											
Oppenheimer Alan Schnall (561) 367-4825 or (888) 999-3660 FAX (561) 416-8671											

Broker List

8/10/2016

8/17/2016 3:17 PM

	BROKERAGE:	BROKER:
1	Great Pacific Securities	Kris Mills
2	Mesirow	Glenn Edmonds
3	PNC Capital Markets	Thomas Jacobson
4	Raymond James	Jim Canale
5	Jefferies Fixed Income	Scott Lewis
6	UBS Securities, LLC	John Doke
7	Oppenheimer	Alan Schnall
8	Fifth Third Securities, Inc.	Travis Gleason
9	Vining Sparks	Darylne Haba
10	Cantor Fitzgerald	Ben Finkelstein

1 <GO> to send to VCON & MSG, View other options under Settings

FNMA 0.85 07/13/18 Corp	1) Send (VCON)	Sell Ticket
07/14/2016 10:47	Trade Date 07/14/16	97) Settings

Trade Information

Trader	TOM JACOBSON	CUSIP	3135G0L43
At	PNC BANK NATIONAL ASSOCIATION	ISIN	US3135G0L432

9) SELL	20000	M	of FNMA 0.85 07/13/18	Issuer	FANNIE MAE
Price	99.854000	Yield	0.924044	Dated	07/13/16
			to Worst	07/13/18	@ 100
Settlement	07/15/16	(T+1 for calendar 'US')			

Notes

Trade Numbers

View Amounts in USD

Principal		USD	19,970,800.00
Accrued	(2 days)		944.44
Total		USD	19,971,744.44

SN 557571 EDT GMT-4:00 G617-1856-3 14-Jul-2016 10:49:25

FNMA 0.85 07/13/18 \$199.860 - .005 25.8 bp vs T 0.625 06/30/2018

As of 13 Jul Vol 16.9MM Source TRAC

FNMA 0.85 07/13/18 Corp 97) Settings

Page 1/11 Security Description: Bond

Data not provided by Bloomberg

94) Notes*

95) Buy

96) Sell

25) Bond Description 26) Issuer Description

Pages	Issuer Information	Identifiers
11) Bond Info	Name FANNIE MAE	ID Number LW7025841
12) Addtl Info	Industry Government Agencies	CUSIP 3135G0L43
13) Covenants	Security Information	ISIN US3135G0L432
14) Guarantors	Mkt Iss Global	Bond Ratings
15) Bond Ratings	Country US Currency USD	Moody's Aaa
16) Identifiers	Rank Unsecured Series	S&P AA+
17) Exchanges	Coupon 0.850000 Type Fixed	Composite AA+
18) Inv Parties	Cpn Freq S/A	Issuance & Trading
19) Fees, Restrict	Day Cnt 30/360 Iss Price 100.00000	Amt Issued/Outstanding
20) Schedules	Maturity 07/13/2018	USD 500,000.00 (M)/
21) Coupons	CALL 01/13/17@100.00	USD 500,000.00 (M)
Quick Links	Iss Sprd	Min Piece/Increment
32) ALLQ Pricing	Calc Type (1) STREET CONVENTION	1,000.00 / 1,000.00
33) QRD Quote Recap	Announcement Date 07/01/2016	Par Amount 1,000.00
34) TDH Trade Hist	Interest Accrual Date 07/13/2016	Book Runner JOINT LEADS
35) CACS Corp Action	1st Settle Date 07/13/2016	Reporting TRACE
36) CF Prospectus	1st Coupon Date 01/13/2017	
37) CN Sec News	Security created by firm NOMURA SECURITIES INTERNATIONAL, INC	
38) HDS Holders		
39) VPRD Underly Info		
66) Send Bond		

SN 557571 EDT GMT-4:00 G617-1856-3 14-Jul-2016 10:49:34

FNMA 0.85 07/13/18 \$199.860 - .005 25.8 bp vs T 0.625 06/30/2018

As of 13 Jul Vol 16.9MM Source TRAC

FNMA 0.85 07/13/18 Corp 97) Settings

Page 10/11

Security Description: Bond

Data not provided by Bloomberg

94) Notes*

95) Buy

96) Sell

25) Bond Description 26) Issuer Description

Pages	Schedules	
11) Bond Info	Call Schedule	
12) Addtl Info	Discrete Call minimum 10 days notice	
13) Covenants	May be called in full or part	
14) Guarantors	Last Call Date 04/13/2018	
15) Bond Ratings		
16) Identifiers		
17) Exchanges	Call Frequency Quarterly	
18) Inv Parties	Callable only on date(s) shown	
19) Fees, Restrict		
20) Schedules	Date	Price
21) Coupons	01/13/2017	100.000
Quick Links	04/13/2017	100.000
32) ALLQ Pricing	07/13/2017	100.000
33) QRD Quote Recap	10/13/2017	100.000
34) TDH Trade Hist	01/13/2018	100.000
35) CACS Corp Action	04/13/2018	100.000
36) CF Prospectus		
37) CN Sec News		
38) HDS Holders		
39) VPRD Underly Info		
66) Send Bond		

SN 557571 EDT GMT-4:00 G617-1856-3 14-Jul-2016 10:49:40

OAS1

OPTION-ADJUSTED SPREAD ANALYSIS

FANNIE MAE FNMA 0.85 07/18 / (/) TRAC

Calculate Price **OAS (bp)** Volatility
 (P,0,V) (P) 24.38 V) 1.000
 Cusip / ID: 3135G0L43 Option Px Value: -0.00
 Settle 7/15/2016 Bench settle 7/15/2016 Vega: 0.00
 Spread 24.38bp vs 7.25% @ 1.000 (1.000) Shift 1.000(bps)

2) Customize
 Curve 1.000 Semi
 Const. Mty Tsy Cu
 Dated 7/15/2016
 Settle 7/15/2016

{NUM}<GO> for:

			OAS	Option	To Call on	To	3m	Yield Spread
			Method	Free	1/13/2017	Mty		
1/13/17	100.00	Yld		0.924				
4/13/17	100.00	Sprd		24.3				
7/13/17	100.00	M Dur	1.40		0.49	1.97		
10/13/17	100.00	Risk	1.40		0.49	1.97		
1/13/18	100.00	Cnvx	-2.24		0.00	0.05		
4/13/18	100.00							
		Model	<input checked="" type="checkbox"/>	Lognormal				
		Exercise Premium						

88) REFRESH

SN 557571 EDT GMT-4:00 G617-1856-3 14-Jul-2016 10:51:26

SXT

1 <GO> to send to VCON & MSG, View other options under Settings

FHLMC 1.2 11/16/18 Corp 1) Send (VCON)

Sell Ticket

07/14/2016 10:54 Trade Date 07/14/16

97) Settings

Trade Information

Trader KRISTAIN MILLS

CUSIP 3134G9GQ4

At GREAT PACIFIC SECURITIES

ISIN US3134G9GQ43

9) SELL

16110M of FHLMC 1.2 11/16/18

Issuer FREDDIE MAC

Dated 05/16/16

Price 100.058000 Yield 0.525114 to Worst 08/16/16 @ 100

Settlement 07/15/16 (T+1 for calendar 'US')

Ratings S&P AA+ Moody's Aaa Fitch AAA R&I N.A.

Notes

Trade Numbers

View Amounts in USD

Principal USD 16,119,343.80

Accrued (59 days) 31,683.00

Total USD 16,151,026.80

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2016 Bloomberg Finance L.P.
SN 679566 EDT GMT-4:00 G687-5750-0 14-Jul-2016 10:54:34

FHLMC 1.2 11/16/18 \$100.090 +.095 -- bp vs N.A.
 As of 27 Jun Vol 15.0MM Source TRAC

FHLMC 1.2 11/16/18 Corp	97) Settings	Page 1/11	Security Description: Bond
Data not provided by Bloomb...	94) Notes	95) Buy	96) Sell

25) Bond Description 26) Issuer Description

Pages	Issuer Information	Identifiers
11) Bond Info	Name FREDDIE MAC	ID Number JK9591088
12) Addtl Info	Industry Government Agencies	CUSIP 3134G9GQ4
13) Covenants	Security Information	ISIN US3134G9GQ43
14) Guarantors	Mkt Iss Global	Bond Ratings
15) Bond Ratings	Country US Currency USD	Moody's Aaa
16) Identifiers	Rank Unsecured Series	S&P AA+
17) Exchanges	Coupon 1.200000 Type Fixed	Fitch AAA
18) Inv Parties	Cpn Freq S/A	Composite AA+
19) Fees, Restrict	Day Cnt 30/360 Iss Price 100.00000	Issuance & Trading
20) Schedules	Maturity 11/16/2018	Amt Issued/Outstanding
21) Coupons	CALL 08/16/16@100.00	USD 250,000.00 (M) /
Quick Links	Iss Sprd	USD 250,000.00 (M)
32) ALLQ Pricing	Calc Type (1) STREET CONVENTION	Min Piece/Increment
33) QRD Quote Recap	Announcement Date 04/28/2016	1,000.00 / 1,000.00
34) TDH Trade Hist	Interest Accrual Date 05/16/2016	Par Amount 1,000.00
35) CACS Corp Action	1st Settle Date 05/16/2016	Book Runner GS-sole
36) CF Prospectus	1st Coupon Date 11/16/2016	Reporting TRACE
37) CN Sec News	Security created by firm GOLDMAN, SACHS & CO.	
38) HDS Holders		
39) VPR Underly Info		
66) Send Bond		

FHLMC 1.2 11/16/18 \$↑100.090 +.095 -- bp vs N.A.
 As of 27 Jun Vol 15.0MM Source TRAC

FHLMC 1.2 11/16/18 Corp 97) Settings Page 10/11 Security Description: Bond
 Data not provided by Bloomb... 94) Notes 95) Buy 96) Sell

25) Bond Description 26) Issuer Description

Pages	Schedules	
11) Bond Info	Call Schedule	
12) Addtl Info	Discrete Call minimum 5 business days notice	
13) Covenants	Last Call Date 08/16/2018	
14) Guarantors	Call Frequency Quarterly	
15) Bond Ratings	Callable only on date(s) shown	
16) Identifiers		
17) Exchanges		
18) Inv Parties		
19) Fees, Restrict		
20) Schedules		
21) Coupons		
Quick Links		
32) ALLQ Pricing		
33) QRD Quote Recap		
34) TDH Trade Hist		
35) CACS Corp Action		
36) CF Prospectus		
37) CN Sec News		
38) HDS Holders		
39) VPR Underly Info		
66) Send Bond		
	Date	Price
	08/16/2016	100.000
	11/16/2016	100.000
	02/16/2017	100.000
	05/16/2017	100.000
	08/16/2017	100.000
	11/16/2017	100.000
	02/16/2018	100.000
	05/16/2018	100.000
	08/16/2018	100.000

OAS1

OPTION-ADJUSTED SPREAD ANALYSIS

FREDDIE MAC FHLMC 1.2 18-16 / (/) TRAC

Calculate	Price	OAS (bp)	Volatility
(P,0,V) <input type="checkbox"/> P) <input checked="" type="checkbox"/>	100.0580	0) +21.71	V) 14.00
Cusip / ID# 3134G9GQ4 Option Px Value: -0.54			
Settle	7/15/2016	Bench settle	7/15/2016 Vega: 0.00
Spread	87.4bp vs 3MO	B 0 10/13/16 Govt	@0.295 (0.300)

2) Customize
Curve I111 Semi
US On/Off The Run
Dated 7/14/2016
Settle 7/15/2016
N None
Shift +0(bps)

{NUM}<GO> for:
 3) Call Schedule
 8/16/16 100.00
 11/16/16 100.00
 2/16/17 100.00
 5/16/17 100.00
 8/16/17 100.00
 11/16/17 100.00
 2/16/18 100.00
 5/16/18 100.00
 8/16/18 100.00

	OAS Method	Option Free	To Call on 8/16/2016	To Mty
Yld		0.940	0.525	1.175
Sprd		21.7	22.5	45.1
M Dur	0.63		0.09	2.29
Risk	0.63		0.09	2.30
Cnvx	-2.35		0.00	0.06

Model	<input type="checkbox"/> L=Lognormal
Exercise Premium	0.00

Yield Spread	
3m	0.300
6m	0.396
1y	0.504
2y	0.677
3y	0.813
4y	0.980
5y	1.086
7y	1.349
10y	1.527
20y	1.796
30y	2.250

88) REFRESH

SXT

1 <GO> to send to VCON & MSG, View other options under Settings

FHLMC 1.05 07/27/18 Corp 1) Send (VCON) Sell Ticket
07/14/2016 09:52 Trade Date 07/14/16 Print Version 97) Settings

Trade Information

Trader JOHN DOKE
At UBS FINANCIAL SERVICES INC. CUSIP 3134G9Q67
NYSE SYMB N.A.
20000M of FHLMC 1.05 07/27/18 Issuer FREDDIE MAC
Dated 07/27/16
Price 100.000000 Yield 1.050000 to Worst 10/27/16 @ 100
Settlement 07/27/16 (T+9 for calendar 'US')

Notes MOCK TRADE TOCKET. APPROX. OAS OF 36.91
JOHN DOKE UBS 800-273-2557

Trade Numbers
View Amounts in USD

Principal USD 20,000,000.00
Accrued (0 days) 0.00
Total USD 20,000,000.00

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2016 Bloomberg Finance L.P.
SN 626977 CDT GMT-5:00 G404-4611-3 14-Jul-2016 09:54:05

FHLMC 1.05 07/27/18 \$100.000 +.000 37.9 bp vs T 0.625 06/30/2018

As of 13 Jul Vol 107.8MM Source TRAC

FHLMC 1.05 07/27/18 Corp 97 Settings Page 1/11 Security Description: Bond

Data not provided by Bloomberg

94 Notes

95 B.V.

25 Bond Description	20 Issuer Description	
Pages	Issuer Information	Identifiers
11) Bond Info	Name FREDDIE MAC	ID Number LW8758895
12) Addtl Info	Industry Government Agencies	CUSIP 3134G9Q67
13) Covenants	Security Information	ISIN US3134G9Q672
14) Guarantors	Mkt Iss Global	Bond Ratings
15) Bond Ratings	Country US Currency USD	Moody's Aaa
16) Identifiers	Rank Unsecured Series	S&P AA+
17) Exchanges	Coupon 1.050000 Type Fixed	Fitch AAA
18) Inv Parties	Cpn Freq S/A	Composite AA+
19) Fees, Restrict	Day Cnt 30/360 Iss Price 100.00000	Issuance & Trading
20) Schedules	Maturity 07/27/2018	Amt Issued/Outstanding
21) Coupons	CALL 10/27/16@100.00	USD 2,000,000.00 (M) /
Quick Links	Iss Sprd	USD 2,000,000.00 (M)
32) ALLQ Pricing	Calc Type (1)STREET CONVENTION	Min Piece/Increment
33) QRD Quote Recap	Announcement Date 07/12/2016	1,000.00 / 1,000.00
34) TDH Trade Hist	Interest Accrual Date 07/27/2016	Par Amount 1,000.00
35) CACSCorp Action	1st Settle Date 07/27/2016	Book Runner BCLY,CITI,NOM
36) CF Prospectus	1st Coupon Date 01/27/2017	Reporting TRACE
37) CN Sec News	Security created by firm CITIGROUP GLOBAL MARKETS INC.	
38) HDS Holders		
39) VPR Underly Info		
66) Send Bond		

Australia 61 2 9777 8600 Brazil 5511 2395 9000 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2016 Bloomberg Finance L.P.
 SN 626977 CDT GMT-5:00 6404-4611-3 14-Jul-2016 09:52:55

OAS1

OPTION-ADJUSTED SPREAD ANALYSIS

FREDDIE MAC FHLMC 1.05 18-16 / (/) TRAC

Calculate Price OAS (bp) Volatility
(P,O,V) ☒ P) 100.0000 0) +36.91 V) 14.00

Cusip / ID# 3134G9Q67 Option Px Value: -0.01

Settle 7/27/2016 Bench settle 7/15/2016 Vega: 0.00

Spread 54.6bp vs 1Y B 0 06/22/17 Govt @0.495 (0.504)

{NUM}<GO> for:

3) Call Schedule

10/27/16 100.00

1/27/17 100.00

4/27/17 100.00

7/27/17 100.00

10/27/17 100.00

1/27/18 100.00

4/27/18 100.00

	OAS	Option	To Call on	To
	Method	Free	10/27/2016	Mty
Yld		1.045	1.050	1.050
Sprd		36.8	74.9	37.3
M Dur	1.13		0.25	1.97
Risk	1.13		0.25	1.97
Cnvx	-3.26		0.00	0.05

Model ☒ L=Lognormal

Exercise Premium 0.00

2) Customize

Curve 1111 Semi

US On/Off The Run

Dated 7/14/2016

Settle 7/27/2016

N None

Shift +0(bps)

Yield Spread

3m	0.300
6m	0.396
1y	0.504
2y	0.677
3y	0.816
4y	0.976
5y	1.084
7y	1.349
10y	1.525
20y	1.796
30y	2.249

88) REFRESH