CDIAC: Accessing the Market

Debt Structuring

October 23, 2013

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Siebert Brandford Shank

"Neither a borrower nor a lender be; For loan oft loses both itself and friend, And borrowing dulls the edge of husbandry" - Shakespeare

Overview of Presentation

A - Current Market Dynamics

B - New Money – Financing Overview

C - Complex Structures

Debt Service Constraints, CABs, Medium Term Notes, Forwards, Swaps

D - Variable Rate vs. Fixed Rate

A detailed overview of debt mix theory and new trends in variable rate market

"Neither a borrower nor a lender be; For loan oft loses both itself and friend, And borrowing dulls the edge of husbandry" - Shakespeare

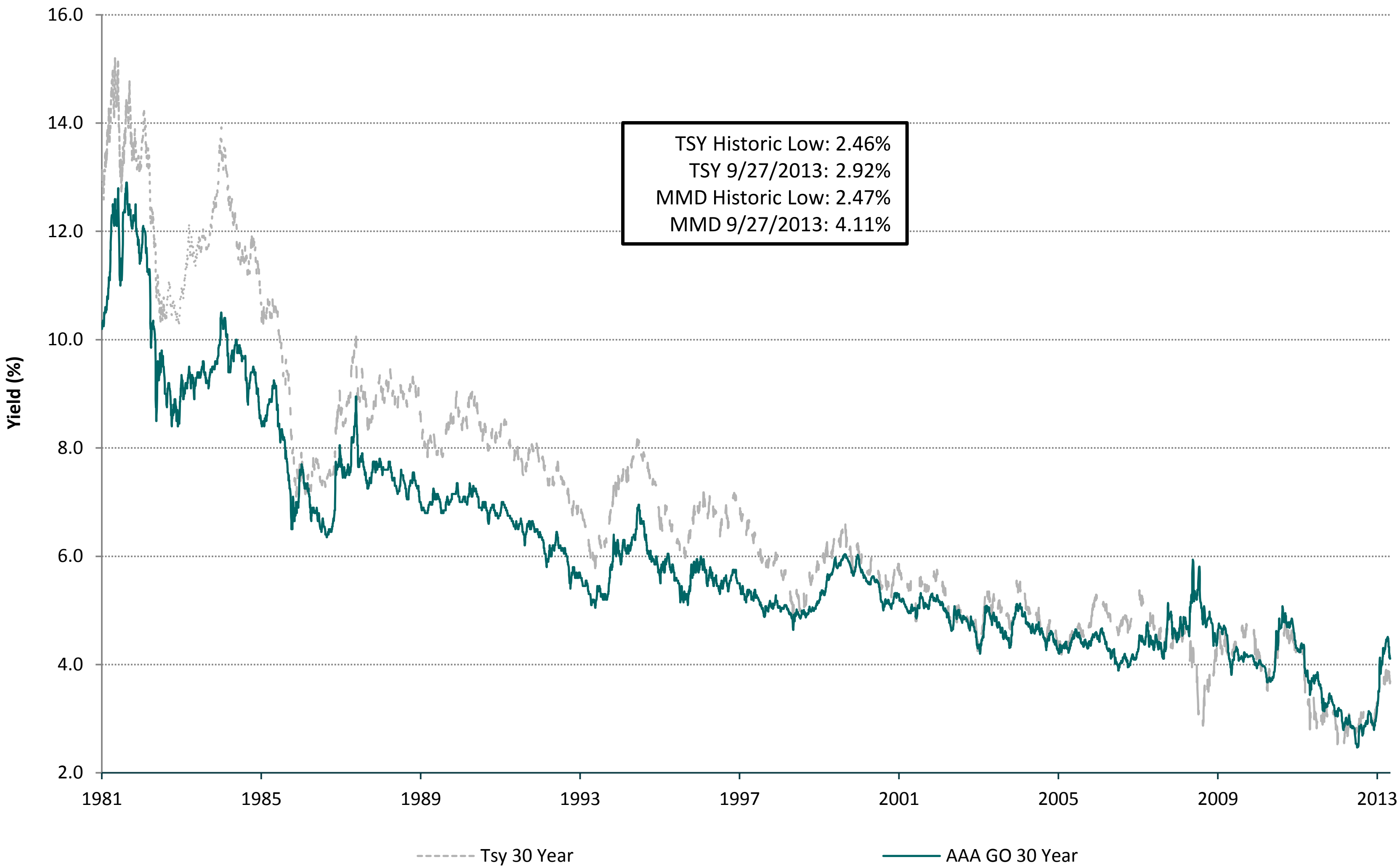
“If I knew where interest rates were going, do you think I’d be doing THIS for a living?” - Senior Bond Trader

MARKET OVERVIEW

HISTORICAL TREASURY AND MUNI RATES – LAST 30+ YEARS

- Currently market rates are near historic lows, creating refunding opportunities

Historical Tax Exempt and Treasury Yields (1981 – 2013)

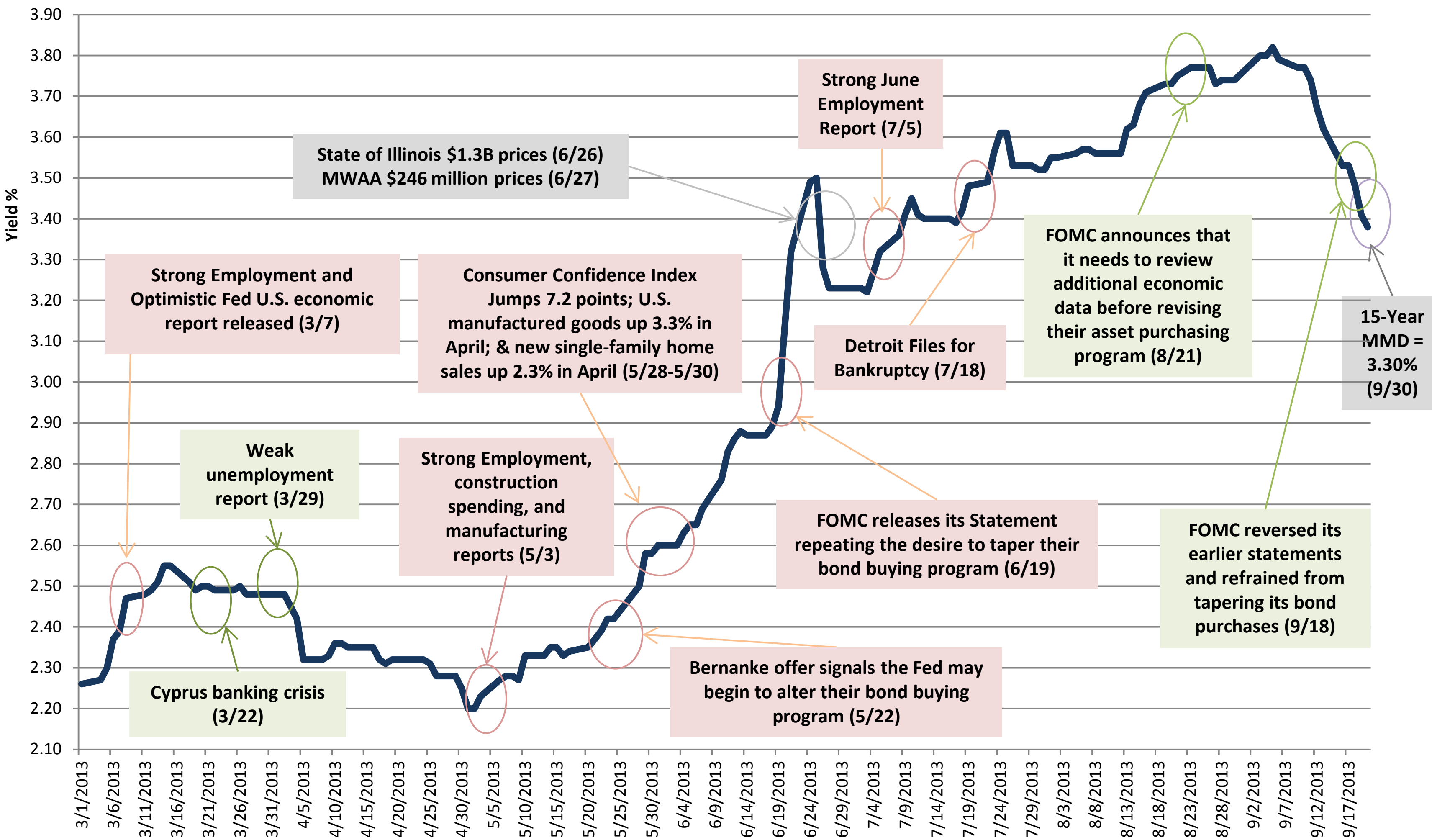


Source: Thomson Municipal Market Data

RECENT MARKET MOVEMENT

- Over the past three months, economic indicators have begun to show a sustained economic turnaround
- In anticipation of a new era of higher interest rates, the 15-year MMD rate has risen 110 bps since May 1, 2013
- Despite this increase, the 15-year MMD has seen a 50 bp decline thus far during the month of September

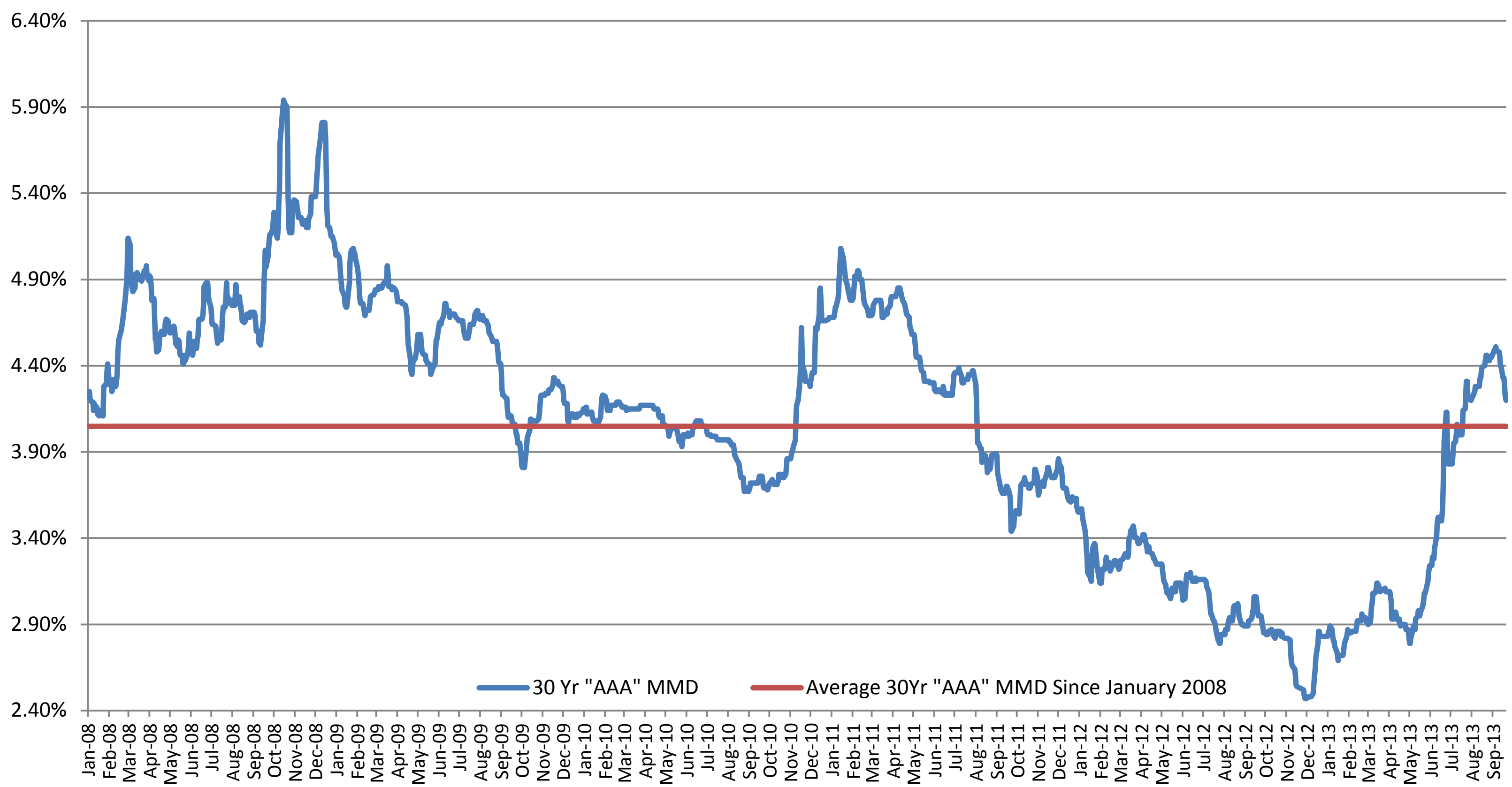
15-Year MMD Movement Since March 1, 2013



HISTORICAL 30-YEAR MMD

- Last week, 30-year MMD decreased by 6 bps and remains slightly above its 5-year average (current level of 4.11%)
  - Current 30-year MMD is 164 bps above its all time low (4.20% versus 2.47%)
  - Municipal yields recently experienced significant decreases as a result of the FOMC's decision not to begin tapering its bond purchasing program

30 Year "AAA" MMD Yield Curve

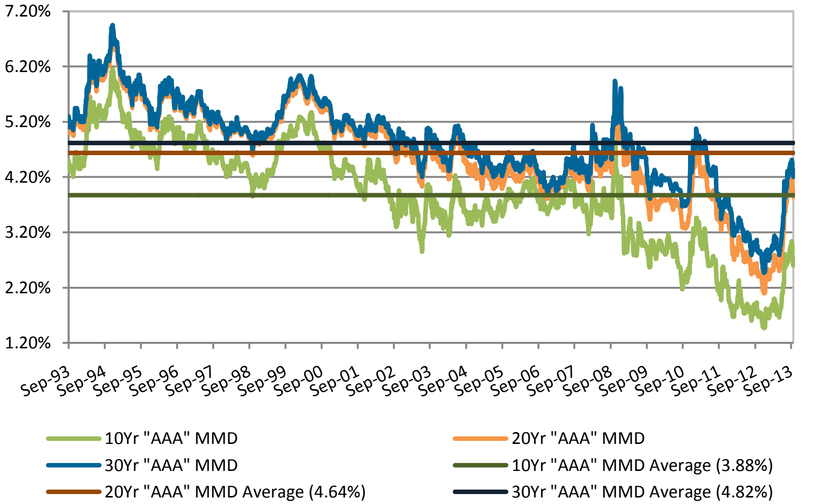


Current Municipal Market Yield Curve Dynamics

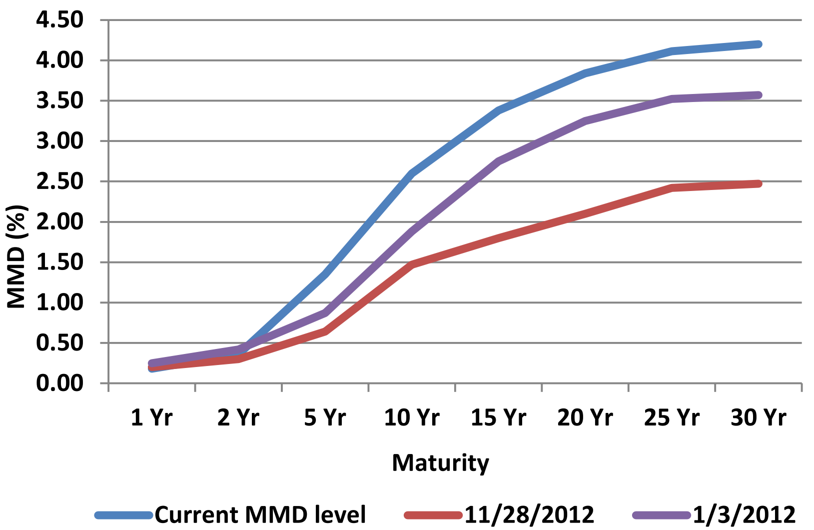
Historical MMD Lows

Maturity	Historical MMD Low	Date of Low	MMD Levels 9/30/2013	Difference (bps)
1 –Year	0.18	2/2/2012	0.18	-
2 –Year	0.26	2/17/2012	0.36	+ 10
5 –Year	0.62	9/27/2012	1.32	+ 73
10 –Year	1.47	11/29/2012	2.54	+ 107
15 -Year	1.8	11/29/2012	3.30	+ 150
20 -Year	2.1	11/29/2012	3.75	+ 165
25 -Year	2.42	11/29/2012	4.03	+ 161
30 -Year	2.47	11/29/2012	4.11	+ 164

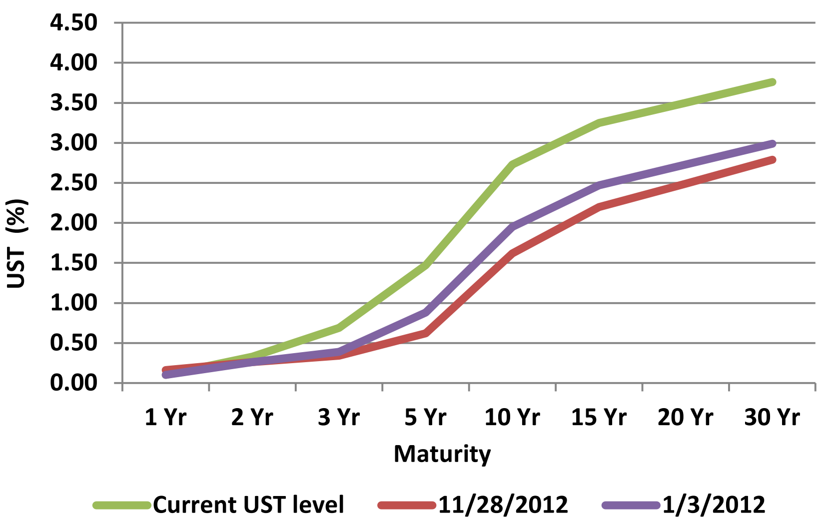
AAA MMD Since 1993



Recent MMD Levels



Recent UST Levels

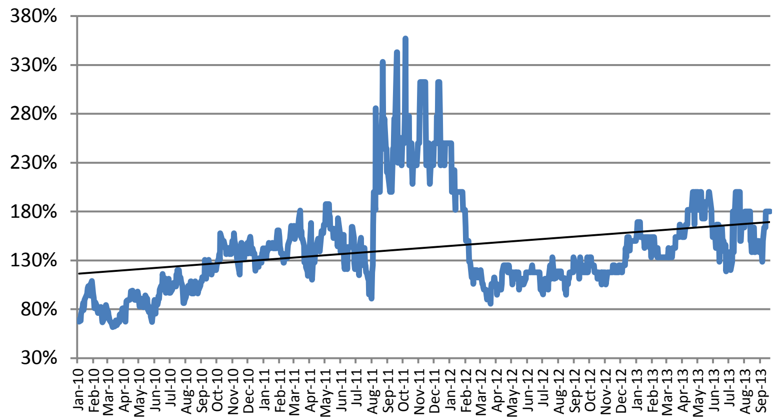


MMD VERSUS UST

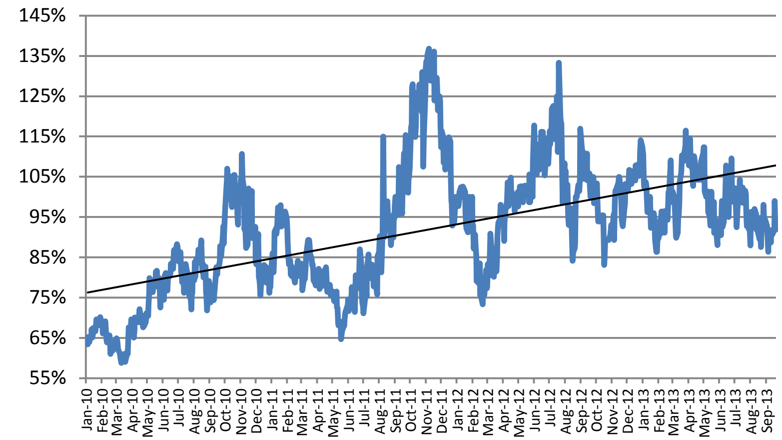
- Last week, ratios decreased beyond the five-year maturity as decreases in municipal yields outpaced decreases in Treasury yields
  - The five-year ratio remains at somewhat unfavorable levels

Ratios of MMD Yields Versus US Treasury Yields

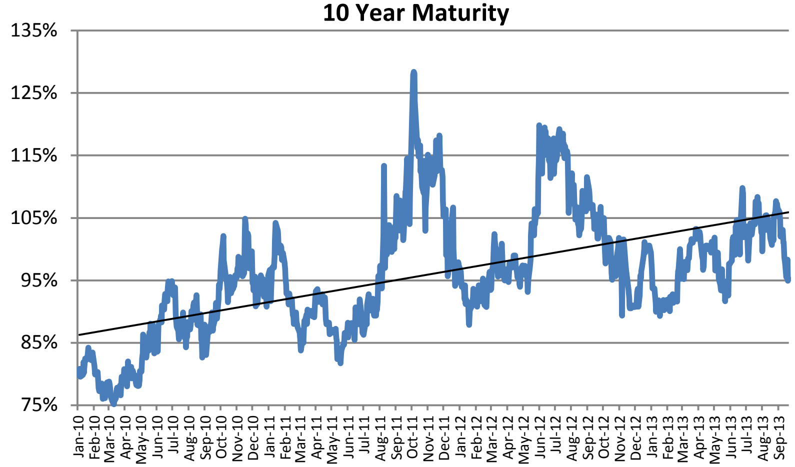
1 Year Maturity



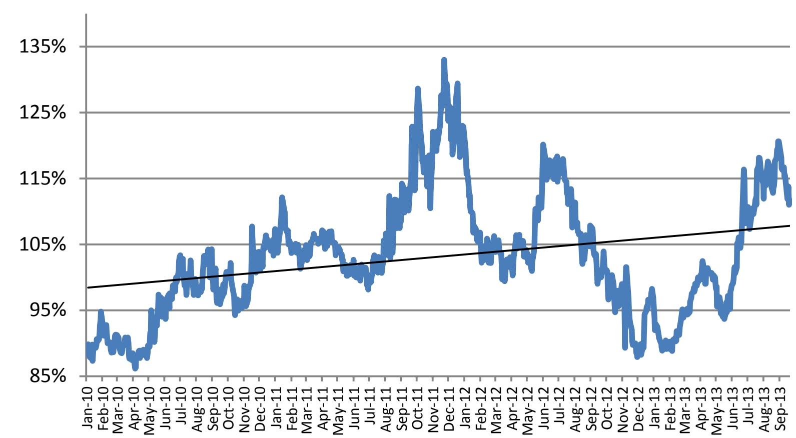
5 Year Maturity



10 Year Maturity



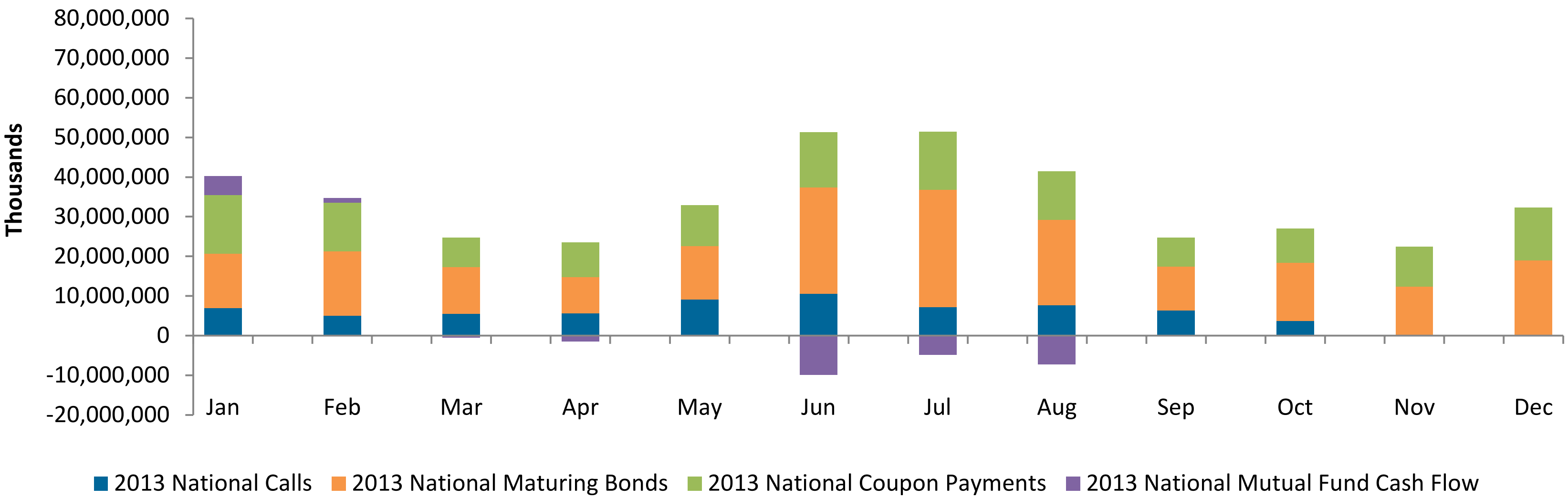
30 Year Maturity



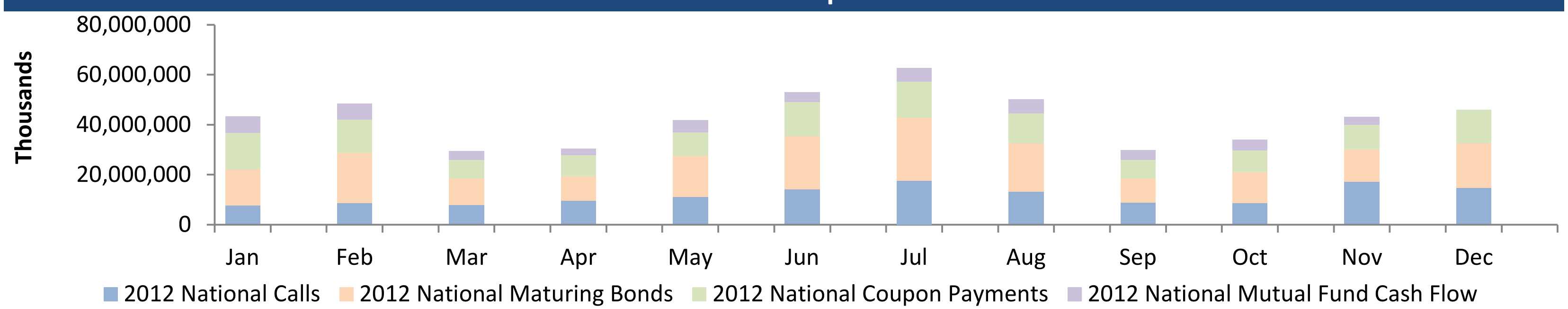
MUNICIPAL CASH FLOWS

- In 2012, cash returning to investors from calls, maturing bonds, and coupon payments totaled more than $462 billion, while thus far in 2013 it currently totals approximately $401 billion
- In addition, the months of June, July, and August experienced significant municipal bond fund outflows of $21.9 billion, creating additional selling pressure on the municipal bond funds

2013 National Municipal Cash Flows



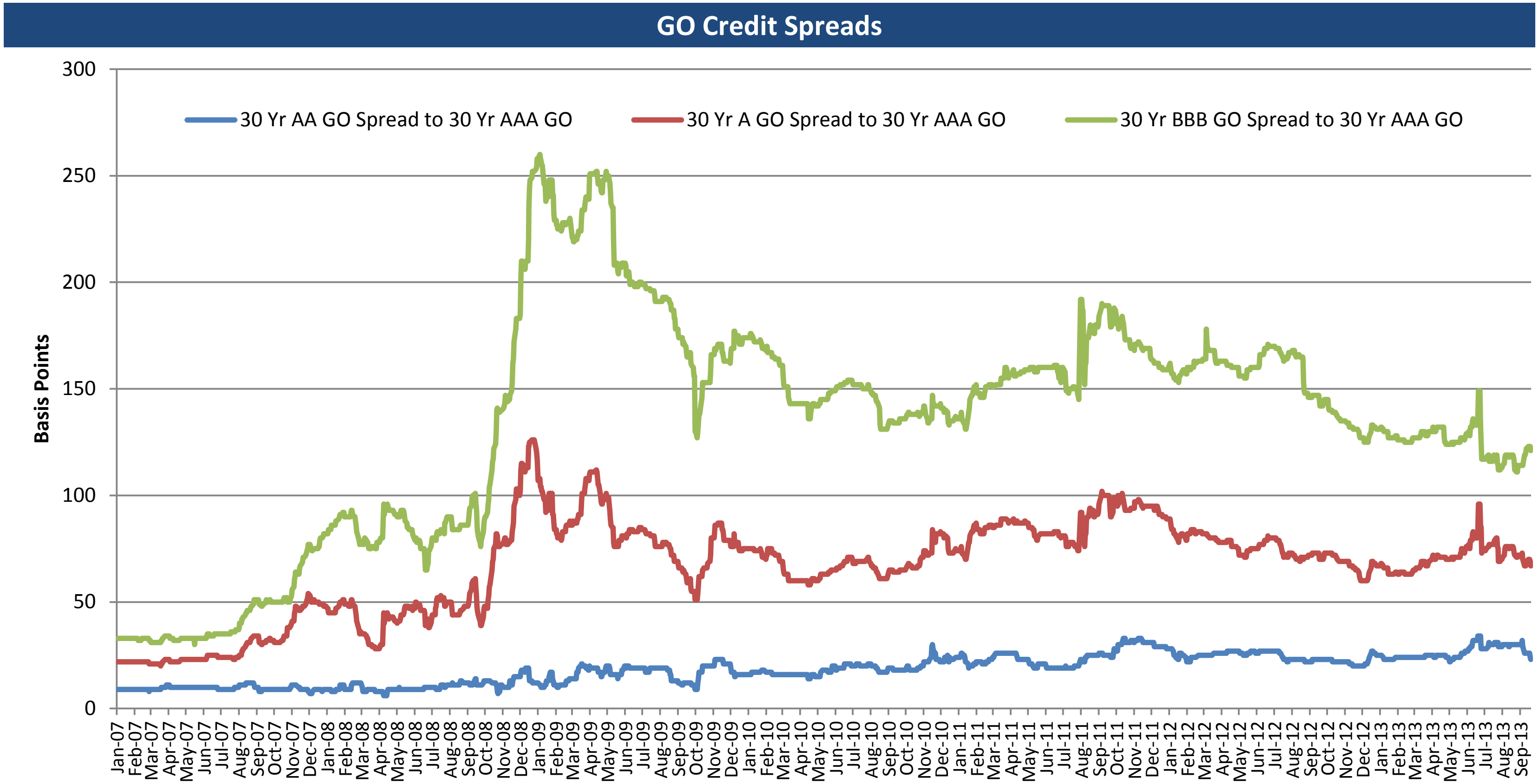
2012 National Municipal Cash Flows



Note: Values for September 2013 and beyond do not reflect calls that have not yet been announced

Credit Spreads

- As the municipal market has settled after experiencing significant volatility, credit spreads have tightened significantly over the past few weeks
  - We have seen a slight tightening in the AA-category as well as more pronounced tightening in the A and BBB categories
  - While credit spreads have tightened, primary market pricing spreads have widened relative to historical pricing spreads due to continued bond fund redemptions



NOTABLE 2011 ALASKA PRICING SPREADS – IMPORTANCE OF CREDIT

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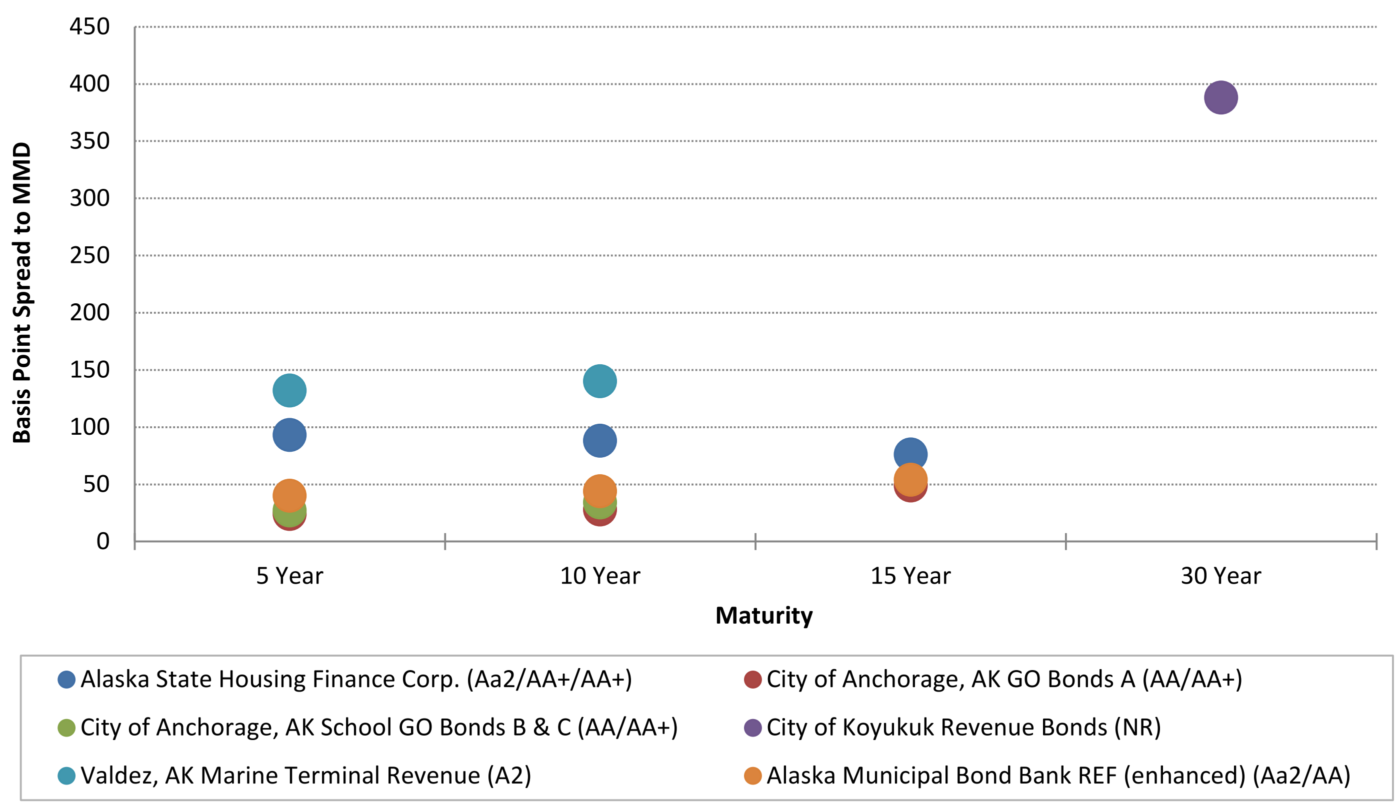
Sale Date	Issuer	Par ($ mm)	Spread to MMD (bps) 5 Year	10 Year	15 Year	30 Year
2/4/2011	Alaska State Housing Finance Corp. (Aa2/AA+/AA+)	$105.19	93	88	76	
5/25/2011	City of Anchorage, AK GO Bonds A (AA/AA+)	$28.39	24	28	49	
5/25/2011	City of Anchorage, AK School GO Bonds B & C (AA/AA+)	$33.25	27	34		
6/5/2011	City of Koyukuk Revenue Bonds (NR)	$71.72				388
6/7/2011	Valdez, AK Marine Terminal Revenue (A2)	$346.39	132	140		
8/25/2011	Alaska Municipal Bond Bank REF (enhanced) (Aa2/AA)	$78.12	40	44	54	



Interpreting the "Scale"

Preliminary Subject to Change							
Issuer:	**MWD**						
Description:	**Water Revenue Bonds**						
Series:	**2013**						
Par Amount:	**$250,000,000***						
Senior Manager:	**Siebert Brandford Shank**						
Ratings:	**Aa1/AAA/AA+**						
Bond Insurer:	**None**						
Call Date:	**10 Year Par Call**						
Maturity	**Par ($000s)***	**Coupon (%)**	**YTC**	**Price**	**YTM**	**Kick**	**Spread to MMD (bp)**
1/1/2014	4,215,000	4.00	0.75	105.91			7
1/1/2015	4,385,000	3.00	1.08	105.34			8
1/1/2016	4,515,000	4.00	1.43	109.55			10
1/1/2017	4,695,000	3.00	1.68	106.10			12
1/1/2018	4,840,000	4.00	1.95	111.25			14
1/1/2019	5,030,000	5.00	2.25	117.33			16
1/1/2020	5,285,000	5.00	2.53	117.45			20
1/1/2021	5,545,000	5.00	2.70	117.96			25
1/1/2022	5,825,000	5.00	2.87	118.13			30
1/1/2023	6,115,000	5.00	3.03	117.36	3.10	7	33
1/1/2024	6,420,000	5.00	3.18	115.92	3.36	18	35
1/1/2025	6,745,000	5.00	3.29	114.87	3.55	26	35
1/1/2026	7,080,000	5.00	3.39	113.93	3.70	31	35
1/1/2027	7,435,000	5.00	3.49	113.00	3.84	35	35
1/1/2028	7,805,000	5.00	3.59	112.08	3.97	38	35
1/1/2029	8,195,000	5.00	3.68	111.26	4.07	39	35
1/1/2030	8,605,000	5.00	3.75	110.62	4.15	40	35
1/1/2031	9,035,000	5.00	3.82	109.99	4.23	41	35
1/1/2036	52,430,000	5.00	3.96	108.74	4.40	44	32
1/1/2042	82,370,000	5.00	3.99	108.48	4.48	49	30
						Weighted Average	**29 bp**

Why pay today what you can pay for tomorrow?

STRUCTURING A NEW MONEY ISSUANCE

Structuring a New Money Issuance

Key Considerations in Structuring a New Money Issuance

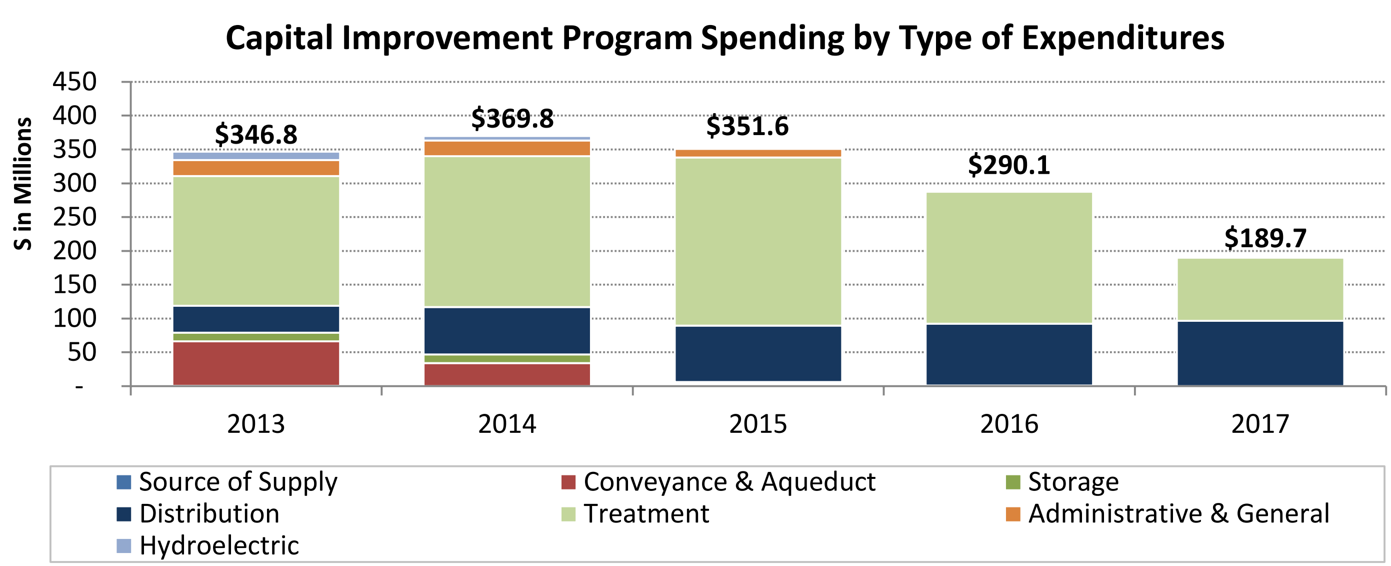
- How much will the project cost?
- How long is the life of the asset? Who should bear the cost?
- What is the ideal term of the bonds?
- What is the credit structure? Will a DSRF be needed?
- Where are the revenues to pay back the bonds? Is there a specific constraint?
- Will monies for interest be available immediately?
- Is call optionality desired?

5-YEAR CAPITAL IMPROVEMENT PLAN

- The District anticipates spending nearly $1.8 billion in capital expenditures over the next five years:

FY	2012	2013	2014	2015	2016	2017	Total
CIP ($ in MM)	236.00	346.84	369.83	351.58	290.09	189.71	1,784.05
Bond Funded	250.00	100.00	250.00	230.00	175.00	220.00	1,175.00
% of Requirement	85%	29%	68%	65%	60%	116%	66%

- Approximately, 66% of the 5-Year CIP is expected to be funded from bond proceeds.



Source: Official Statement, MWD 2011 Water Revenue Bonds Series C – Appendix A

Overview of Sources, Uses, and Key Funds

- Par Amount
- Premium/Discount
- Costs of Issuance

- Project Fund/Construction Fund
- Debt Service Fund
- Capitalized Interest Fund
- Debt Service Reserve Fund

- Investing Fund Accounts (GICs, etc)

SOURCES AND USES OF FUNDS

Municipality of ABC
Series 2012 Bonds

Dated Date	05/15/2012
Delivery Date	05/15/2012

Sources:		
Bond Proceeds:		
Par Amount		96,370,000.00
Premium		19,652,399.80
		116,022,399.80

Uses:		
Project Fund Deposits:		
Project Fund		100,000,000.00
Other Fund Deposits:		
Capitalized Interest Fund		8,718,897.78
Debt Service Reserve Fund		6,434,450.00
		15,153,347.78
Delivery Date Expenses:		
Cost of Issuance		355,000.00
Underwriter's Discount		513,323.05
		868,323.05
Other Uses of Funds:		
Rounding Amount		728.97
		116,022,399.80

Overview of Key Statistics

Yields

- Arbitrage Yield
- TIC
- All in TIC

Debt Service Statistics

- Total Interest
- Total Debt Service
- Average Annual Debt Service

Key Dates

- Pricing Date
- Delivery Date
- Dated Date
- Last Maturity

Key Expenses

- Cost of Issuance
- Takedown

BOND SUMMARY STATISTICS

Municipality of ABC
Series 2012 Bonds

Dated Date	05/15/2012
Delivery Date	05/15/2012
Last Maturity	04/01/2042
Arbitrage Yield	2.424732%
True Interest Cost (TIC)	3.460823%
Net Interest Cost (NIC)	3.923985%
All-In TIC	3.484749%
Average Coupon	4.948582%
Average Life (years)	19.383
Duration of Issue (years)	13.096
Par Amount	96,370,000.00
Bond Proceeds	116,022,399.80
Total Interest	92,437,597.78
Net Interest	73,298,521.03
Total Debt Service	188,807,597.78
Maximum Annual Debt Service	6,434,450.00
Average Annual Debt Service	6,319,332.02

Bond Component	Par Value	Price	Average Coupon	Average Life
Serial Bond	46,705,000.00	123.696	4.837%	12.583
Term 2038	26,860,000.00	118.487	5.000%	23.520
Term 2042	22,805,000.00	115.872	5.000%	28.439
	96,370,000.00			19.383

	TIC	All-In TIC	Arbitrage Yield
Par Value	96,370,000.00	96,370,000.00	96,370,000.00
+ Accrued Interest			
+ Premium (Discount)	19,652,399.80	19,652,399.80	19,652,399.80
- Underwriter's Discount	-513,323.05	-513,323.05	
- Cost of Issuance Expense		-355,000.00	
- Other Amounts			
Target Value	115,509,076.75	115,154,076.75	116,022,399.80
Target Date	05/15/2012	05/15/2012	05/15/2012
Yield	3.460823%	3.484749%	2.424732%

Key Page: “Bond Pricing”

- Serial Bonds vs. Term Bonds
- Coupons and Yields
- Takedown
- Yield to Call vs. Yield to Maturity

BOND PRICING

Municipality of ABC
Series 2012 Bonds

Bond Component	Maturity Date	Amount	Rate	Yield	Price		Yield to Maturity	Premium (-Discount)	Takedown
Serial Bond:									
	04/01/2015	1,785,000	3.000%	0.450%	107.282			129,983.70	2.500
	04/01/2016	1,840,000	3.000%	0.640%	109.024			166,041.60	2.500
	04/01/2017	1,900,000	4.000%	0.760%	115.485			294,215.00	2.500
	04/01/2018	1,975,000	4.000%	0.880%	117.833			352,201.75	2.500
	04/01/2019	2,050,000	4.000%	1.000%	119.890			407,745.00	3.750
	04/01/2020	2,135,000	4.000%	1.120%	121.656			462,355.60	3.750
	04/01/2021	2,220,000	4.000%	1.240%	123.133			513,552.60	3.750
	04/01/2022	2,310,000	5.000%	1.360%	133.536			774,681.60	3.750
	04/01/2023	2,425,000	5.000%	1.480%	132.235	C	1.735%	781,698.75	3.750
	04/01/2024	2,545,000	5.000%	1.600%	130.949	C	2.051%	787,652.05	3.750
	04/01/2025	2,675,000	5.000%	1.720%	129.677	C	2.321%	793,859.75	5.000
	04/01/2026	2,805,000	5.000%	1.840%	128.420	C	2.555%	797,181.00	5.000
	04/01/2027	2,945,000	5.000%	1.960%	127.177	C	2.760%	800,362.65	5.000
	04/01/2028	3,095,000	5.000%	2.080%	125.949	C	2.942%	803,121.55	5.000
	04/01/2029	3,250,000	5.000%	2.200%	124.734	C	3.106%	803,855.00	5.000
	04/01/2030	3,410,000	5.000%	2.320%	123.534	C	3.253%	802,509.40	5.000
	04/01/2031	3,580,000	5.000%	2.440%	122.347	C	3.388%	800,022.60	5.000
	04/01/2032	3,760,000	5.000%	2.560%	121.174	C	3.511%	796,142.40	5.000
		46,705,000						11,067,182.00	
Term 2038:									
	04/01/2038	26,860,000	5.000%	2.840%	118.487	C	3.863%	4,965,608.20	5.000
Term 2042:									
	04/01/2042	22,805,000	5.000%	3.120%	115.872	C	4.076%	3,619,609.60	5.000
		96,370,000						19,652,399.80	

Shaping Debt Service

- Level Debt Service
- Deferred Debt Service
- Wrapped Debt Service
- “Barbell” Debt Service

NET DEBT SERVICE

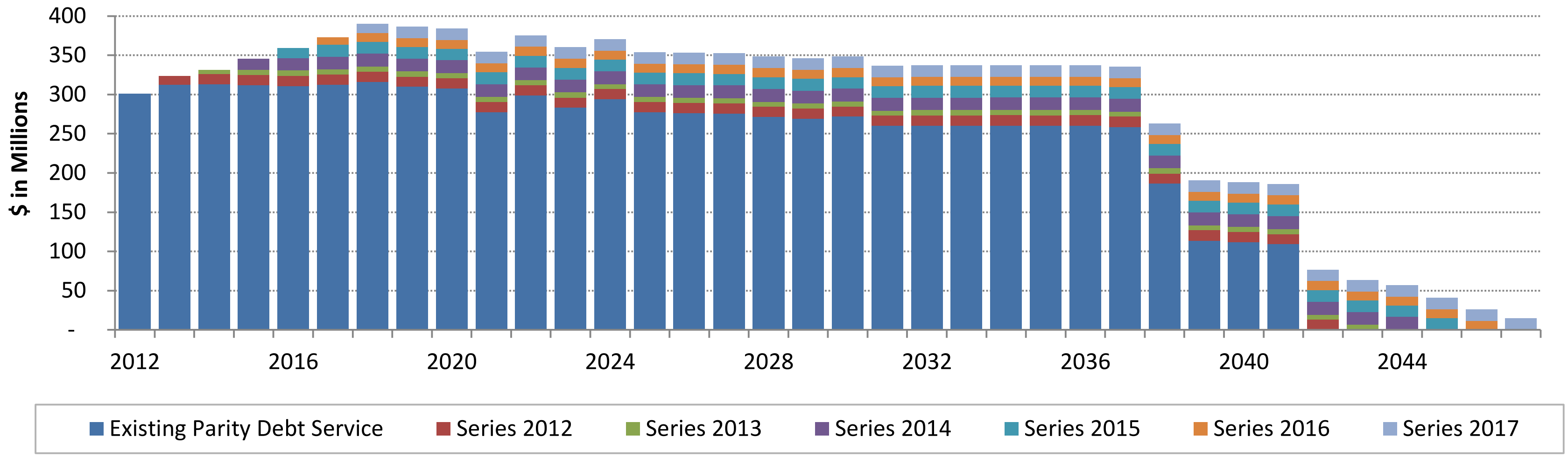
Municipality of ABC
Series 2012 Bonds

Period Ending	Principal	Interest	Total Debt Service	Capitalized Interest Fund	Net Debt Service
04/01/2013		4,075,697.78	4,075,697.78	4,075,697.78	
04/01/2014		4,643,200.00	4,643,200.00	4,643,200.00	
04/01/2015	1,785,000	4,643,200.00	6,428,200.00		6,428,200
04/01/2016	1,840,000	4,589,650.00	6,429,650.00		6,429,650
04/01/2017	1,900,000	4,534,450.00	6,434,450.00		6,434,450
04/01/2018	1,975,000	4,458,450.00	6,433,450.00		6,433,450
04/01/2019	2,050,000	4,379,450.00	6,429,450.00		6,429,450
04/01/2020	2,135,000	4,297,450.00	6,432,450.00		6,432,450
04/01/2021	2,220,000	4,212,050.00	6,432,050.00		6,432,050
04/01/2022	2,310,000	4,123,250.00	6,433,250.00		6,433,250
04/01/2023	2,425,000	4,007,750.00	6,432,750.00		6,432,750
04/01/2024	2,545,000	3,886,500.00	6,431,500.00		6,431,500
04/01/2025	2,675,000	3,759,250.00	6,434,250.00		6,434,250
04/01/2026	2,805,000	3,625,500.00	6,430,500.00		6,430,500
04/01/2027	2,945,000	3,485,250.00	6,430,250.00		6,430,250
04/01/2028	3,095,000	3,338,000.00	6,433,000.00		6,433,000
04/01/2029	3,250,000	3,183,250.00	6,433,250.00		6,433,250
04/01/2030	3,410,000	3,020,750.00	6,430,750.00		6,430,750
04/01/2031	3,580,000	2,850,250.00	6,430,250.00		6,430,250
04/01/2032	3,760,000	2,671,250.00	6,431,250.00		6,431,250
04/01/2033	3,950,000	2,483,250.00	6,433,250.00		6,433,250
04/01/2034	4,145,000	2,285,750.00	6,430,750.00		6,430,750
04/01/2035	4,355,000	2,078,500.00	6,433,500.00		6,433,500
04/01/2036	4,570,000	1,860,750.00	6,430,750.00		6,430,750
04/01/2037	4,800,000	1,632,250.00	6,432,250.00		6,432,250
04/01/2038	5,040,000	1,392,250.00	6,432,250.00		6,432,250
04/01/2039	5,290,000	1,140,250.00	6,430,250.00		6,430,250
04/01/2040	5,555,000	875,750.00	6,430,750.00		6,430,750
04/01/2041	5,835,000	598,000.00	6,433,000.00		6,433,000
04/01/2042	6,125,000	306,250.00	6,431,250.00		6,431,250
	96,370,000	92,437,597.78	188,807,597.78	8,718,897.78	180,088,700

Preliminary Estimate of Annual Debt Service Costs

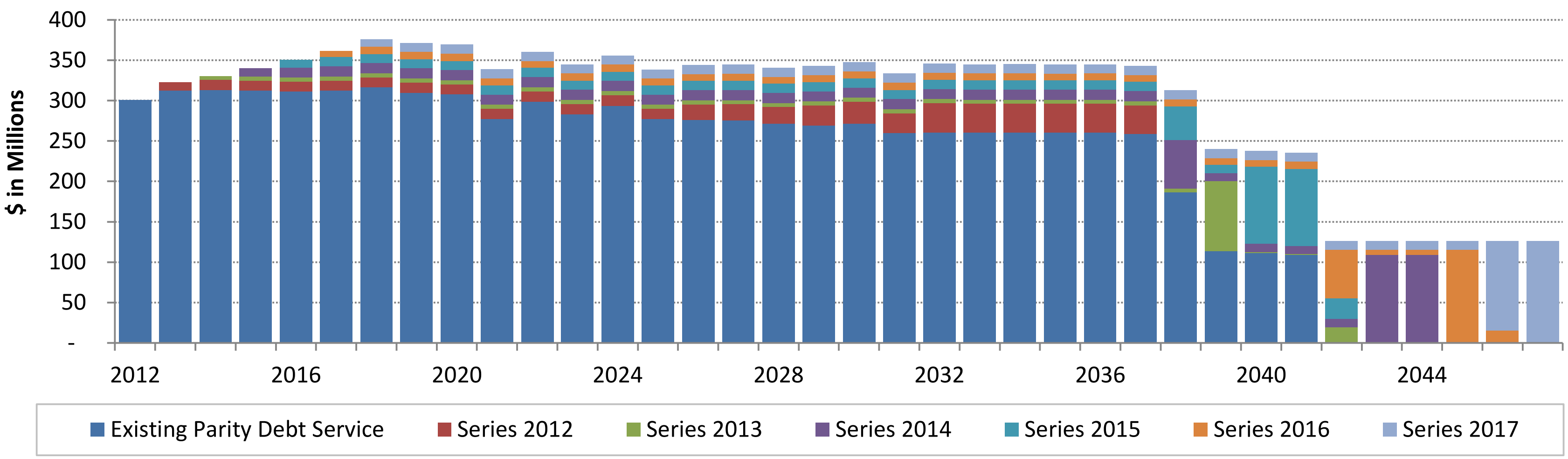
FY 2012 - 17 Capital Improvement Program (1)

(Annual Debt Service Cost Estimates) - Level Debt Service)



FY 2012 - 17 Capital Improvement Program (1)

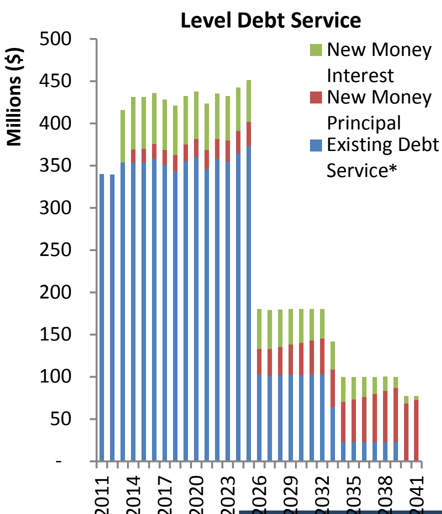
(Annual Debt Service Cost Estimates) - Wrap Debt Service

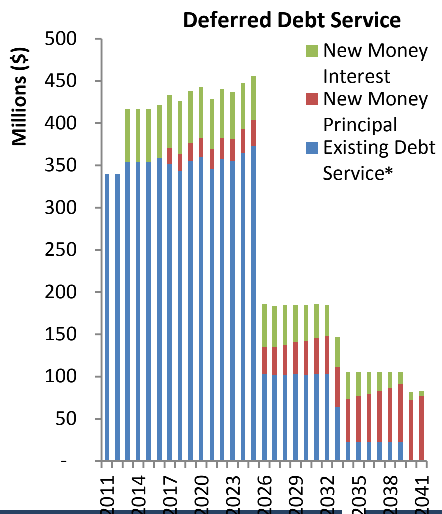


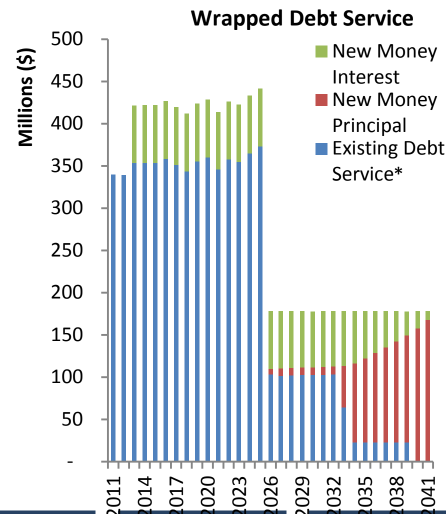
(1) All financing scenarios assume Target Par Amount @ 5% over 30-Years, $500,000 for COI and $5.00 / per bond for Underwriter's Discount per issuance.

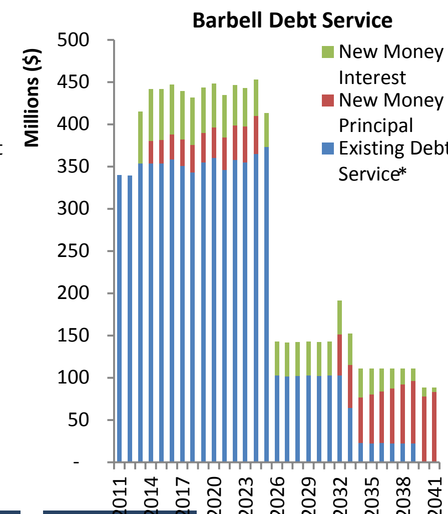
New Money Issuance with Fixed Rate Bonds – 2013 Senior Lien Financing

- Currently $800 million of new money needs in 2013 and 2014
- Siebert Brandford Shank analyzed the following four fixed rate alternatives for the financing:
  - Scenario 1: Level Debt Service
  - Scenario 2: Deferred Level Debt Service
  - Scenario 3: Wrap Debt Service with Final Maturity 2041
  - Scenario 4: Barbell Debt Service with Final Maturity 2041









	Level	Deferred	Wrap	Barbell
Par Amount ($)	1,023,440,000	1,035,350,000	1,092,070,000	1,027,385,000
Project Fund Deposit ($) (1)	792,402,222	792,402,222	792,402,222	792,402,222
Debt Service Reserve Fund Deposit ($) (2)	77,337,025	82,186,913	105,725,047	88,219,425
Capitalized Interest Fund Deposit ($) (2)	137,302,628	140,100,231	151,476,861	136,683,772
Maturity Structure	2014-2041	2017-2041	2026-2041	2014-2024 & 2032-2041
Average Life (years)	20.388	21.201	26.491	19.690
All-In-TIC	6.257%	6.306%	6.552%	6.198%
Aggregate Maximum Annual Debt Service	450,880,628	455,732,916	441,652,091	530,359,504
Maximum Annual Debt Service ($)	77,337,025	82,186,913	177,966,250	88,219,425
Average Annual Debt Service	76,174,069	78,853,489	95,782,080	75,066,057
NPV of Net Debt Service($)(3)	1,053,561,828	1,071,834,798	1,169,336,099	1,052,608,152
NPV Debt Service (Dis)Savings vs. Level Debt ($) (3)	N/A	-18,272,970	-115,774,271	953,676
NPV Debt Service (Dis)Savings vs. Level Debt (%) (3)	N/A	-1.734%	-10.99%	0.09%

(1) New money net funded @ 0.85% reinvestment rate
(2) Deposit based on lesser of MADs, 125% of average annual debt service and 10% of par
(3) Net funded @ 0.85% reinvestment rate, assuming interest is capitalized through 11/15/2013
(4) Discounted to respective delivery date @ 5%

*Existing debt service as taken from the Series 2011A Official Statement

Occam's Razor: "Entia non sunt multiplicanda praeter necessitatem" – or, the simpler solution is always better!

When Occam's Razor fails….

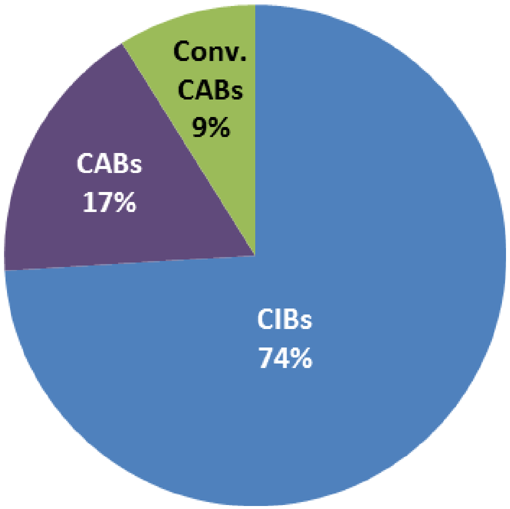
ESOTERIC FINANCING ALTERNATIVES

Esoteric Strategies: Section Overview

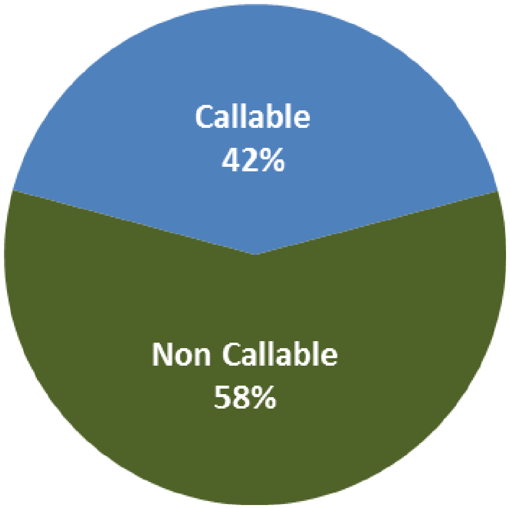
- Shaping around a Debt Service Constraint/Coverage
- CABs and Convertible CABs
- Medium Term Notes
- The Swap Market

OVERVIEW OF CURRENT DEBT PROFILE

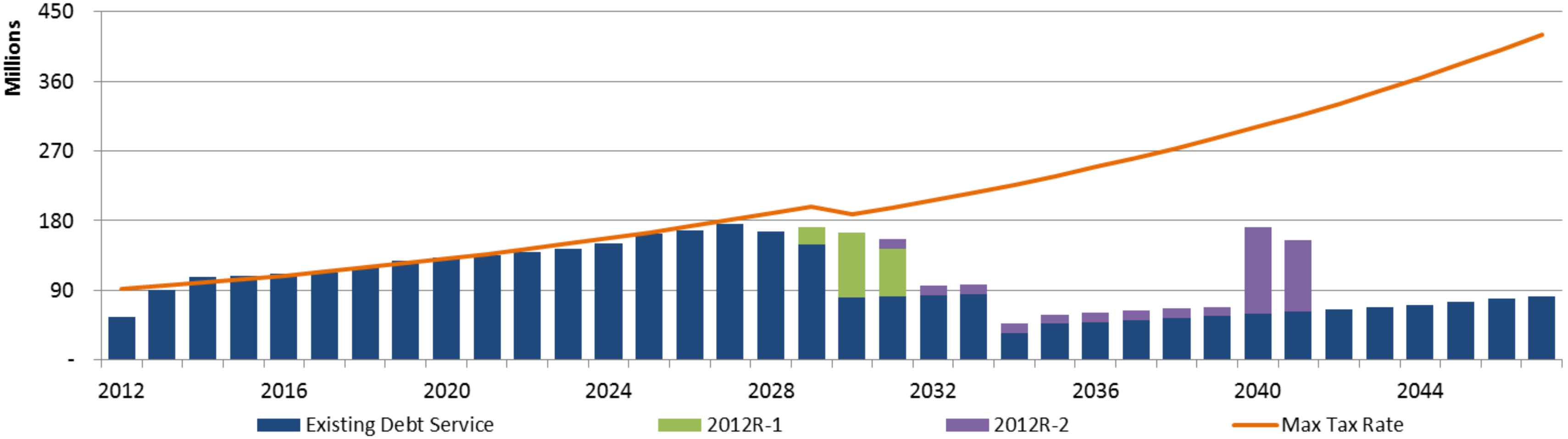
Type of Debt (1)



Callable vs. Non Callable (1)



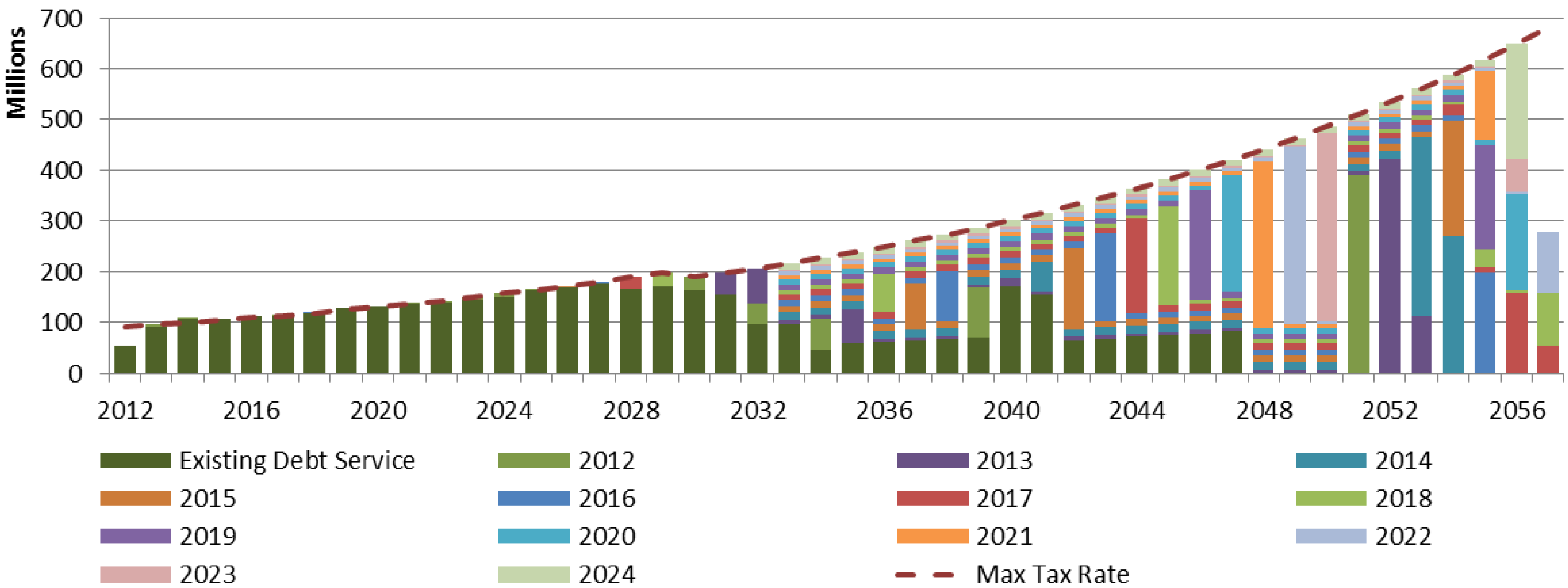
Current Debt Profile vs. Revenues Generated From Max Tax Rates



(1) CABs & Convertible CABs valued at initial amount

SHAPING AROUND A STRICT REVENUE CONSTRAINT

- Utilize linear optimization procedures to minimize aggregate debt service while staying within the tax constraint



2012	2013	2014	2015	2016	2017	2018
149,993,648	131,625,853	131,626,292	131,627,015	131,627,348	131,625,870	131,625,696

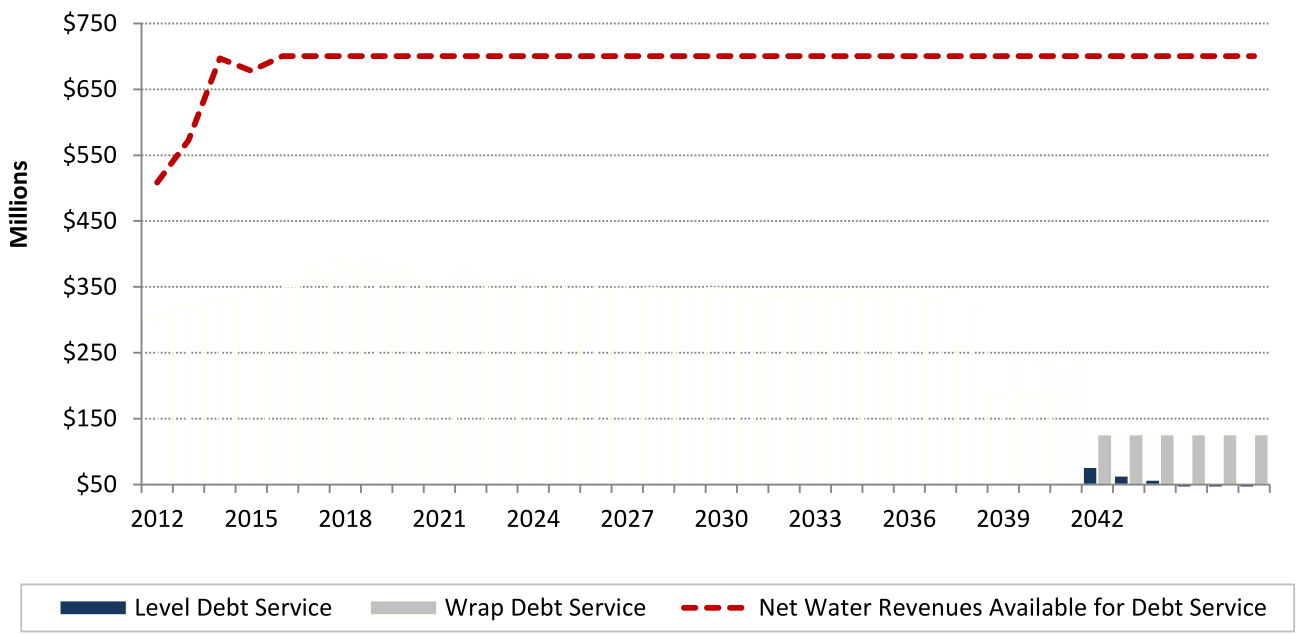
2019	2020	2021	2022	2023	2024	Total
131,629,101	131,627,992	131,628,767	131,627,928	109,996,489	132,499,395	1,708,761,396

(1) Assumes $5/bond underwriter's discount, $2/bond costs of issuance.
(2) Interest rates as of 3/2/12.

SUMMARY OF DEBT SERVICE COVERAGE

Debt Service Coverage All Parity Water Revenue Bond Obligations		
FY	Level	Wrap
2012	180%	180%
2013	189%	189%
2014	224%	225%
2015	209%	213%
2016	208%	213%
2017	200%	207%
2018	191%	199%
2019	193%	201%
2020	194%	202%
2021	211%	220%
2022	199%	207%
2023	208%	217%
2024	202%	210%
2025	211%	221%
2026	212%	217%
2027	212%	217%
2028	215%	219%
2029	216%	218%
2030	215%	215%
2031	222%	224%
2032	222%	216%
2033	222%	217%
2034	222%	216%
2035	222%	217%
2036	222%	217%
2037	223%	218%
2038	284%	239%
2039	392%	311%
2040	397%	314%
2041	402%	317%
2042	976%	592%

Annual Debt Service Coverage (1) (2)



Level vs. Wrap Amortization Key Statistics Comparison

Series (FY 2012 – 2017)	Level	Wrap
Total Par Amount	1,225,000,000	1,225,000,000
Total Bond Proceeds	1,250,952,350	1,248,631,159
Combined TIC	4.83%	4.89%
Gross Debt Service (1)	2,380,874,983	2,830,176,667
Average Life	21.41	28.73

(1) Reflects debt service for all parity obligations, including full implementation of FY 2012 – 17 capital improvement program

(2) Debt service does not reflect BAB interest subsidies.

Source: MWD 2011 Water Revenue Bonds Series C Official Statement – Appendix A

What is a “CAB”?

“CAB” = Capital Appreciation Bond, or a bond that does not pay coupon payments, but only a lump sum at maturity

Issuers often use CABs when facing a strict budget constraint to avoid any interest in the near term.

CABs end up costing more in total debt service since the duration of the loan is longer and investors demand a higher spread due to risk.

2012 Financing Analysis -- $350 Million Project Fund, 35-Year Ascending Debt[1]

	All CIBs	Backloaded CABs	Upfront CABs	Backloaded CCABs	Backloaded CCABs + CAPI
Par Amount ($)	373,435,000	362,129,833	376,404,894	373,333,505	428,117,818
CCABs/CABs PV Amount ($)	N/A	124,999,833	124,999,894	124,998,505	62,497,818
CCABs/CABs Final Maturity Value ($)	N/A	640,065,000	356,930,000	196,755,000	98,665,000
CAPI Through October 1, 2015 ($)	N/A	N/A	N/A	N/A	54,987,734
Maturity Structure	CIBS: 2021-2047	CIBS: 2021-2032; CABs: 2032-2047	CABs: 2021-2040; CIBs: 2040-2047	CIBS: 2021-2042; CCABs: 2042-2047	CIBS: 2021-2045; CCABs: 2045-2047
Average Life (years)	27.9	19.0	27.4	27.1	27.4
All-In-TIC	**5.158%**	**5.400%**	**5.396%**	**5.414%**	**5.288%**
Avg. Annual D/S 2013-2020 ($)	**19,125,590**	**11,732,995**	**13,061,275**	**12,582,255**	**11,783,086**
Maximum Annual D/S ($)	39,053,013	49,240,000	47,636,150	48,149,676	49,430,703
NPV of D/S ($)[2]	**375,540,725**	**394,513,404**	**392,576,833**	**392,899,064**	**390,573,524**
NPV D/S (Dis)Savings vs. All CIBs	**N/A**	**(18,972,680)**	**(17,036,108)**	**(17,358,339)**	**(15,032,799)**

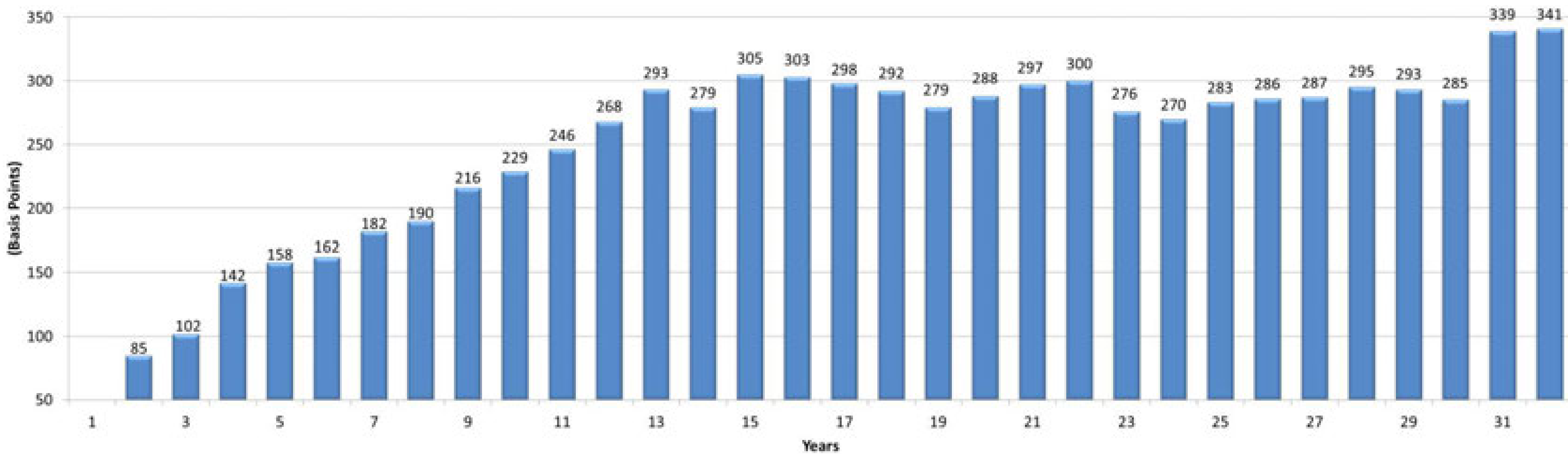
1) Assumes current market rates, 11/1/2012 delivery, $7/bond COI and DSRF deposit of $25 million

2) Discounted to 11/1/2012 @ 5%

CURRENT INTEREST BONDS VS. CAPITAL APPRECIATION BONDS

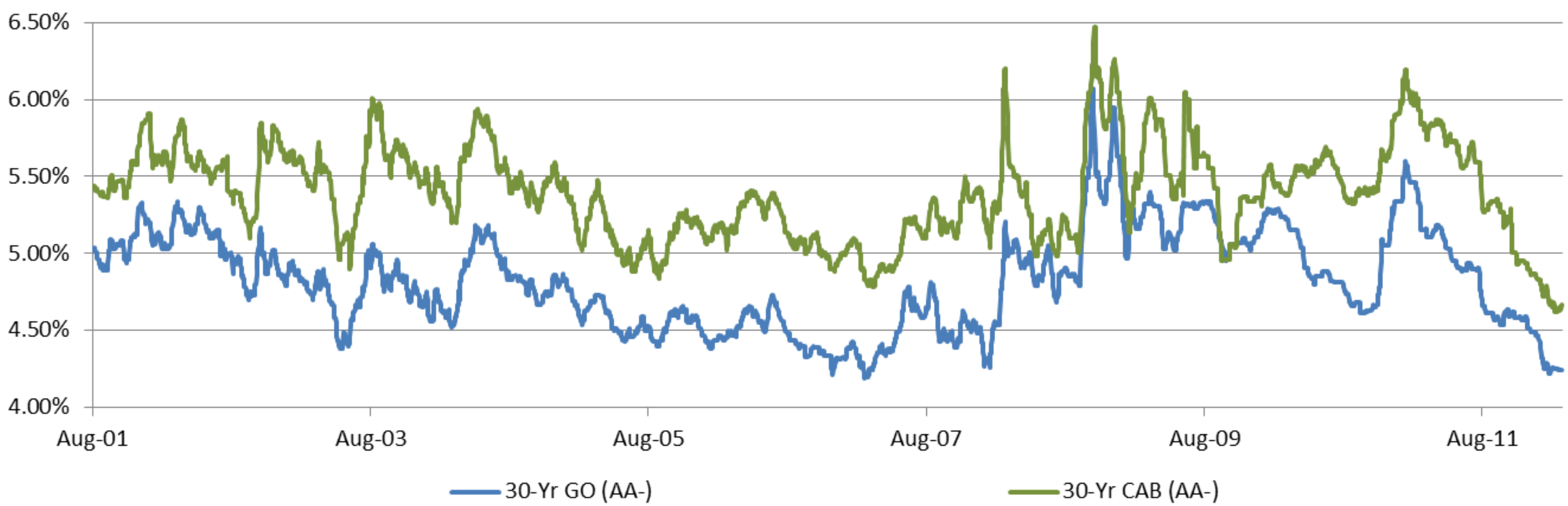
Average CAB Spread at Issuance – Maturity-by-Maturity

(Since 8/1/11)



CIBs vs. CABs (1) (2)

(30-Year Maturity – Since 8/10/01)



(1) Source: Bloomberg Generic Yields

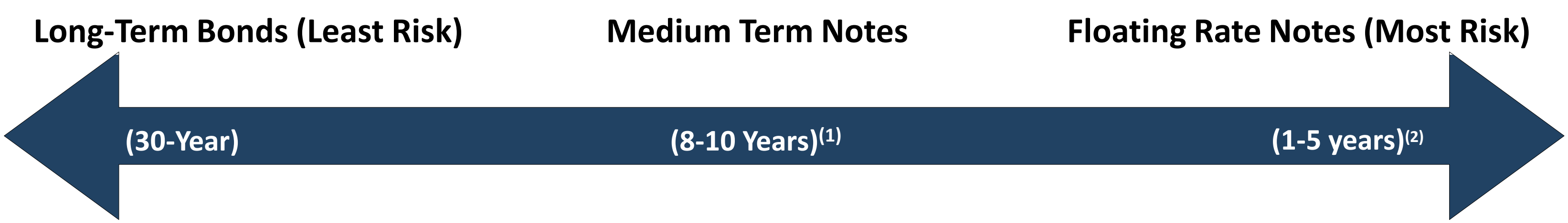
(2) AA- yields

ALTERNATE NEW MONEY FINANCING CONSIDERATIONS

- A 30-Year fixed rate financing is the most conservative structure for issuing new money water revenue bonds.
- However, due to the current steepness of the yield curve, we recommend that the District also consider lowering the cost of funds for future bond issues by accessing the shorter end of the yield curve
- Medium Term Notes (MTNs) and Floating Rate Notes (FRNs) allow the District to take advantage of the lower rates currently available on the shorter end of the yield curve

Financing Option	Description	Key Considerations
Medium Term Notes (MTNs)	▪ Issue Notes in the 8- to 10-year range; may be refinanced again in the shorter portion of the curve to provide blended savings relative to a single fixed rate issue amortized over 20 or 30 years	▪ Helps MWD diversify debt profile while allowing for borrowing on short end of steep yield curve. Bond documents will need to be reviewed to determine whether "Balloon" maturities are permitted. Advance/current refund MTNs as necessary. Some exposure to higher rates in future
Floating Rate Notes (FRNs):	▪ Issue floating rate securities at a fixed spread to SIFMA or % of LIBOR	▪ No liquidity or remarketing. Typically callable six months prior to maturity. Limited investor universe.

Interest Rate Risk Spectrum



1) Assumes par call one year prior to maturity. There may be an additional premium for a shorter call.

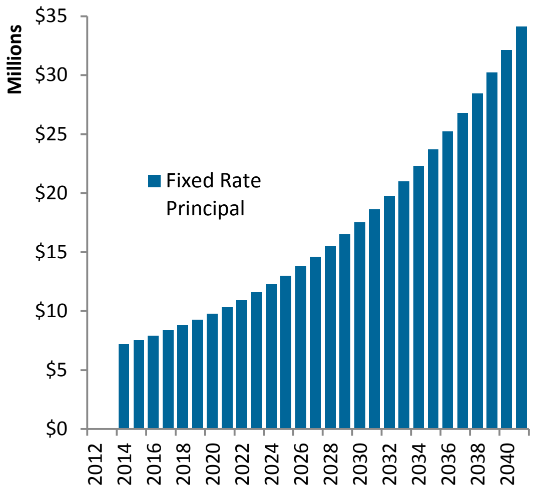
Medium Term Notes Concept

- Medium Term Notes ("MTN") principal is amortized as a bullet in one or several maturities from 8-10 years
  - Issued in place of maturities in the 20-30 year range in order to reduce borrowing costs
- Anytime during the term of the MTNs, issuers can use its advance refunding capability to extend the MTNs to the original desired maturity
- MTNs avoid and/or mitigate many of the risks associated with short-term variable rate debt including liquidity, remarketing, LOC bank, counterparty and short-term interest rate risk
- Issuers should weigh the potential benefits of MTNs against several considerations including refinancing risk and interest rate risk
  - A sharp and sustained rise in interest rates may cause the refinancing interest rate to exceed the breakeven rate, resulting in dissavings relative to locking in long-term rates today
  - MTNs should be sized and structured based on the District's risk tolerance and as a small percentage of its overall debt portfolio, similar to short-term variable rate debt

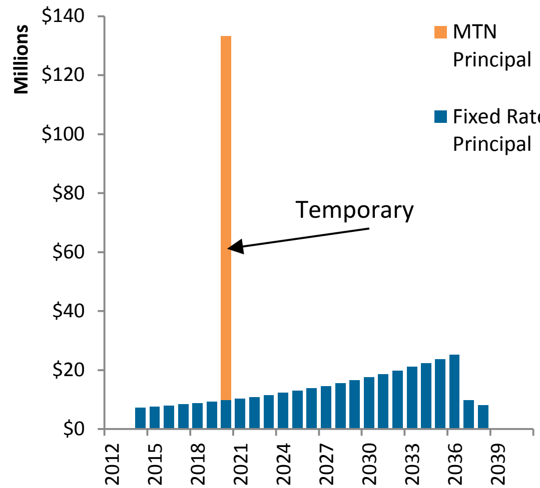
MTN Savings Analysis (Cont'd)

- As shown below, the MTN/Fixed rate financing provides $4.2 million in NPV savings relative to a 100% fixed rate financing
- Assumes the MTN will be called on its first call date eight years from now in June 2019 and refinanced as a term bond with sinking fund installments from 2037-2041 at the current 20-year AMT rate plus 75 basis points (7.12%)

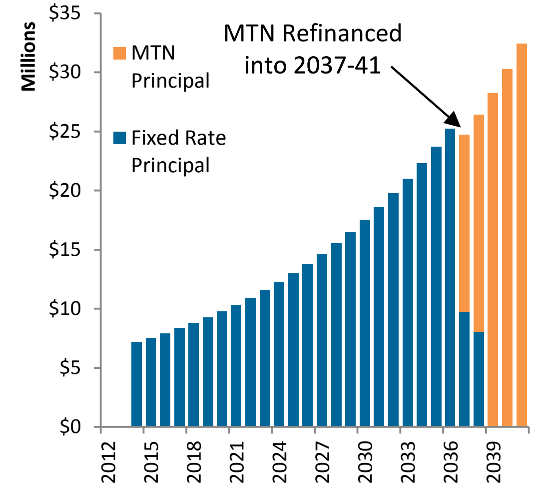
100% Fixed Rate Financing



MTN/Fixed Rate (Initial Financing)



MTN/Fixed Rate (2019 Refinancing)



Summary of GO New Money Structuring Alternatives -- $400 million Project Fund

	30 Year Level Fixed	MTN/Fixed Rate (Blended)
Par Amount in 2011 ($)	476,945,000	466,525,000
MTN Par ($)	N/A	123,425,000
Non-MTN Par in 2011 ($)	476,945,000	343,100,000
Project Fund Deposit ($)	394,327,190	394,327,190
Maturity Structure	2014-2041	2014-2041; 2020 MTN
All-In-TIC(1)	6.152%	5.966%
Initial MTN Yield	N/A	5.050%
Assumed MTN Refinancing Yield in 2019	N/A	7.120%
Average Annual Debt Service ($)	35,759,513	35,722,802
NPV of Debt Service($)(2)	488,675,041	484,454,487
NPV Debt Service (Dis)Savings vs. Level Debt ($)	N/A	4,220,554

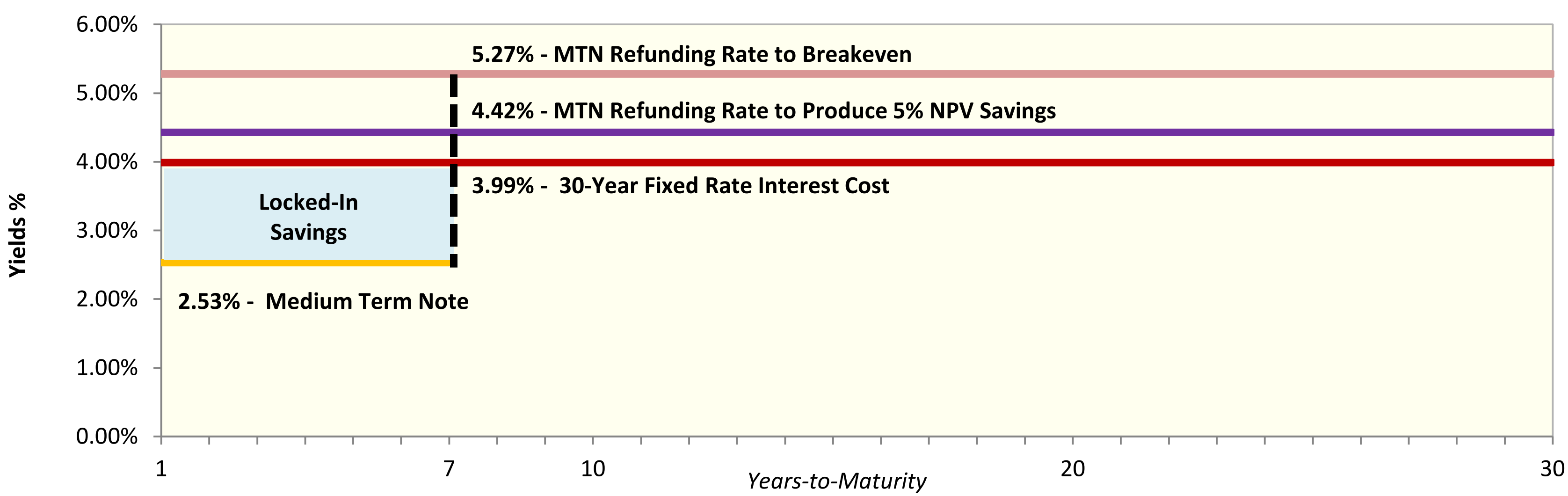
(1) The All-In TIC of the MTN/Fixed Rate Scenario reflects the combined issuance of the MTN and its subsequent refinancings

(2) Discounted @ discount rate of 5%

MTN Savings Analysis

- Assuming the following:
  - The District issues a $250 million 8-year MTN maturing in 2020 in lieu of selling 30-year fixed rate level debt at 3.99% (1)
  - The MTN is issued with a 8-year maturity and an 7-year par call at a rate of 2.53% (2)
  - Principal is amortized on a 30-year basis during the first seven years with a majority of the principal due in year 8
  - The bullet due in 2020 would be refinanced in 2019 and amortized from 2020 through 2042.
- Assuming the MTN is refinanced as level debt amortizing principal from 2020 to 2042 in 2019 (one year prior to maturity), interest rates could go as high as 5.28%, a 181 basis point rise relative to the current 20-year AAA MMD yield at the time of the refinancing to achieve economic break-even from this strategy (3)
- To achieve 5% present value savings versus selling 30-year fixed rate bonds today, the MTNs would need to be refinanced at a yield of 4.43%, a 96 basis point rise relative to the current 20-year AAA MMD yield (4)

MTN Financing Strategy



(1) 30-Year AAA MMD as of October 18, 2011 + 31 basis points (Aa1/AAA/AA+ water revenue credit).
(2) 8 Year AAA MMD as of October 18, 2011 plus 20 basis points.
(3) Economic breakeven point determined assuming a discount rate of 5%.
(4) As of October 18, 2011; Savings expressed as a percentage of target par amount ($250 million) and discounted @ 5%.

Forward Delivery Bonds

The problem: *An issuer has bonds callable in 2013 but they are not legally advance refundable. The issuer would like to lock in savings, taking advantage of today's low rates.*

The Solution: *Price bonds in today's market, locking in today's rates. However, bonds are not actually delivered until 2013. To compensate for the delay, investors will charge an additional "forward premium."*

“To Fix or Not to Fix – That is the Question”

VARIABLE RATE ALTERNATIVES

Section Overview

- Overview and Historical Context

- True <u>Costs</u> of Variable Rate Bonds
- <u>Risk</u> Factors in the Post-Crisis World

- The Appropriate Debt Mix and ALM
- Today's types of Variable Rate Debt

- Q & A

I. Overview of Floating Rate Bonds

Mechanics

- Bonds reset rates periodically as interest rates change.
- Usually need a bank “letter of credit” given tender risk

Why consider short-term bonds?

- Lower Interest Cost
- Investors may overcharge for long-term credit
- Diversify Liability (Asset Liability Management)
- Allows constant flexibility

Why NOT consider short-term bonds?

- RISKS!!!!
- Hard to value uncertainty – responsible use of taxpayer dollars?

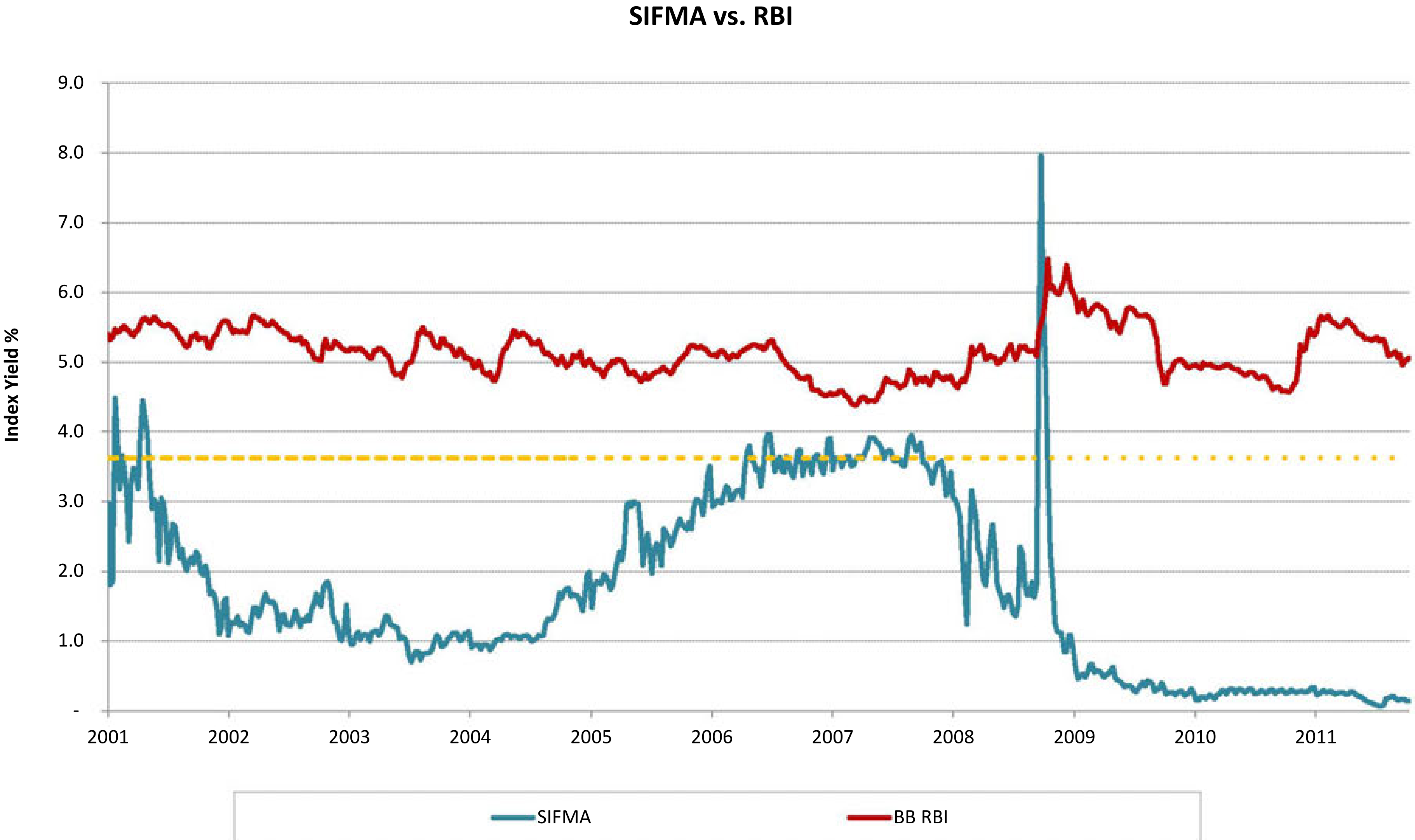
A Historical Context

- Pre-Crisis
  - Insurance, Swaps, ARCs very prevalent
  - LOC Cost **< 10 BPS**

- 2008 Crisis
  - Insurance Vanishes – Auction Rates Dead
  - ARCS reset > 10% after insurance dissappears
  - “Swaps” market is virtually finished
  - LOC Cost **> 100++ BPS**… Issuers restructure debt

- Post-Crisis
  - Low floating rates
    - FRNs, Mandatory Puts, VRDBs, Private Placements
  - LOC Cost – Stabilizing around **40-80 BPS**, but hard to find
  - A renewed focus on Risk

VR Costs - A Snapshot Rate Comparison



Costs of Traditional Floaters

1 – Interest Rate   (0.1% - 5.0%)

Historically fairly low, usually tracks SIFMA index

2 – Credit Support Costs (5 bps – 400 bps)

LOC, SBPA, Liquidity, Insurance

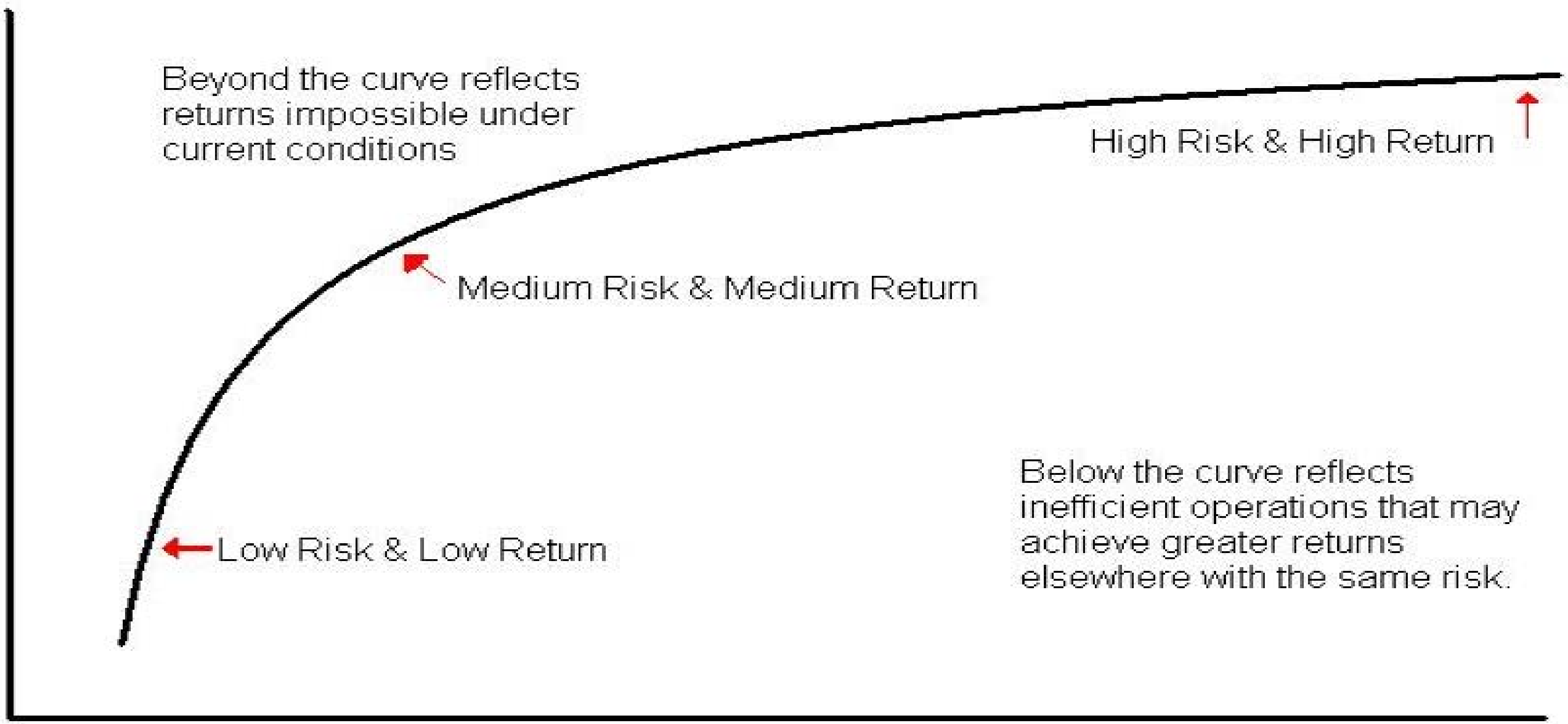
Can be short-term and uncertain

High variation over the past decade

3 – RISKS!

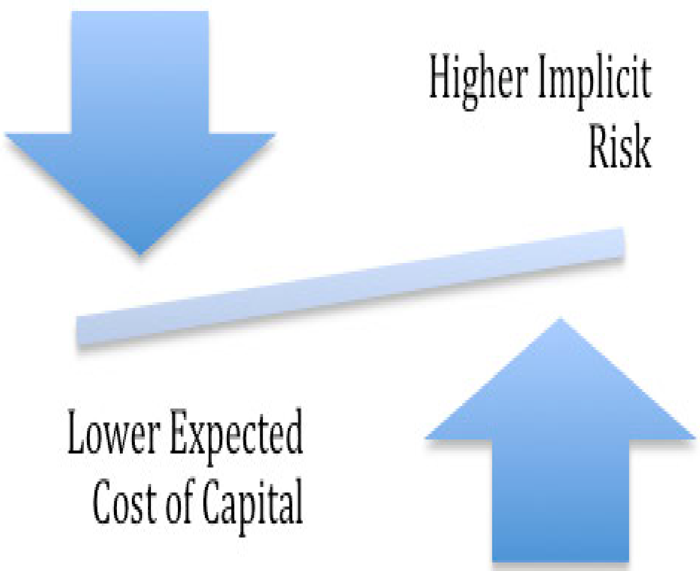
Can be tough to value properly

Rethinking "Risk" in the Frontier



What if our convention "risk" measures were wrong?

II. VR Costs - The Great Trade-Off



Fixed Rate Bonds

- Expected Cost
  5.00%
- Variance
  0 BPS

Variable Rate Bonds

- Expected Cost
  3.10%
- Variance
  120 BPS

III. VR Risks - Pre-Crisis Risk Disclosure

"The following 47 risks are associated with this product, but are not expected to materially affect the City's debt profile "

1. Interest Rate risk
2. "PUT" Risk
3. Liquidity Risk
4. Counterparty Risk
5. Credit Rollover Risk
6. Headline/Political Risk
7. Operational Risk
8. "PUT" Risk
9. Market Access Risk
10. Basis Risk
11. Credit Risk

<u>Pre Crisis Example:</u>

"Non Material Risk" = Bank Counterparty Risk

… because "large banks never go bankrupt but large cities do"

III. The Ubiquitous Risk Palette

1. Interest Rate risk
2. "PUT" Risk
3. Liquidity Risk
4. Counterparty Risk
5. Credit Rollover Risk
6. Headline/Political Risk
7. Operational Risk
8. Downgrade Risk
9. Market Access Risk
10. Basis Risk
11. Credit Risk
12. Swap Risks (MTM)

2013 Issuers take these risks much more seriously than 2003 issuers.

	Summary	Products Effected	Concern Level	Potential Solutions
Interest Rate Risk	General market interest rate fluctuations can be unpredictable	All	High	Caps/Collars
Put Risk	Bondholders can "put" the bonds back to MA on any reset date	VRDBs		Replace with FRNs, Syn. Floaters
Liquidity Risk (Cashflow)	Cash to cover interest rate spikes may need appropriation	All	Medium	Stabilization Fund
Political Risk	Hindsight is 20/20 to newspapers and general population - Headline Risk	All	Med/High	Swap Policies, Academic Studies, Advisors
Operational Risk	Operational staff to process changing bond payments can be bottleneck	All	Low	Technology, Staffing
Rollover Risk	usually only 1-3 years and need to be renewed - renewal costs and availability vary highly	VRDBs	High	Replace with FRNs, Syn. Floaters
Market Access Risk	At maturity or credit renewal, MA may need to replace with long term fixed rate bonds at higher rates	VRDBs, FRNs	Low (for MA only)	VRDBs, Short Maturity FRNs
Swap Related Risks	Collateral Posting, Counterparty Risk, Termination events	Synthetic Floaters	Low	Synthetic Floaters
Basis Risk	Cash earnings and variable rates dislocate, as one example	All	Medium	n/a
Credit Risk	MA credit gets worse, short-term bondholders demand higher rates at remarketing	VRDBs	Low	Replace with FRNs, Syn. Floaters

IV. Appropriate Debt Mix?

How much variable rate is appropriate in a public debt issuer's portfolio???

- 50-70% (norm in international and corporate markets)
- 20% (traditional muni rating agency guidelines)
- 0-5% (new norm in municipal market)

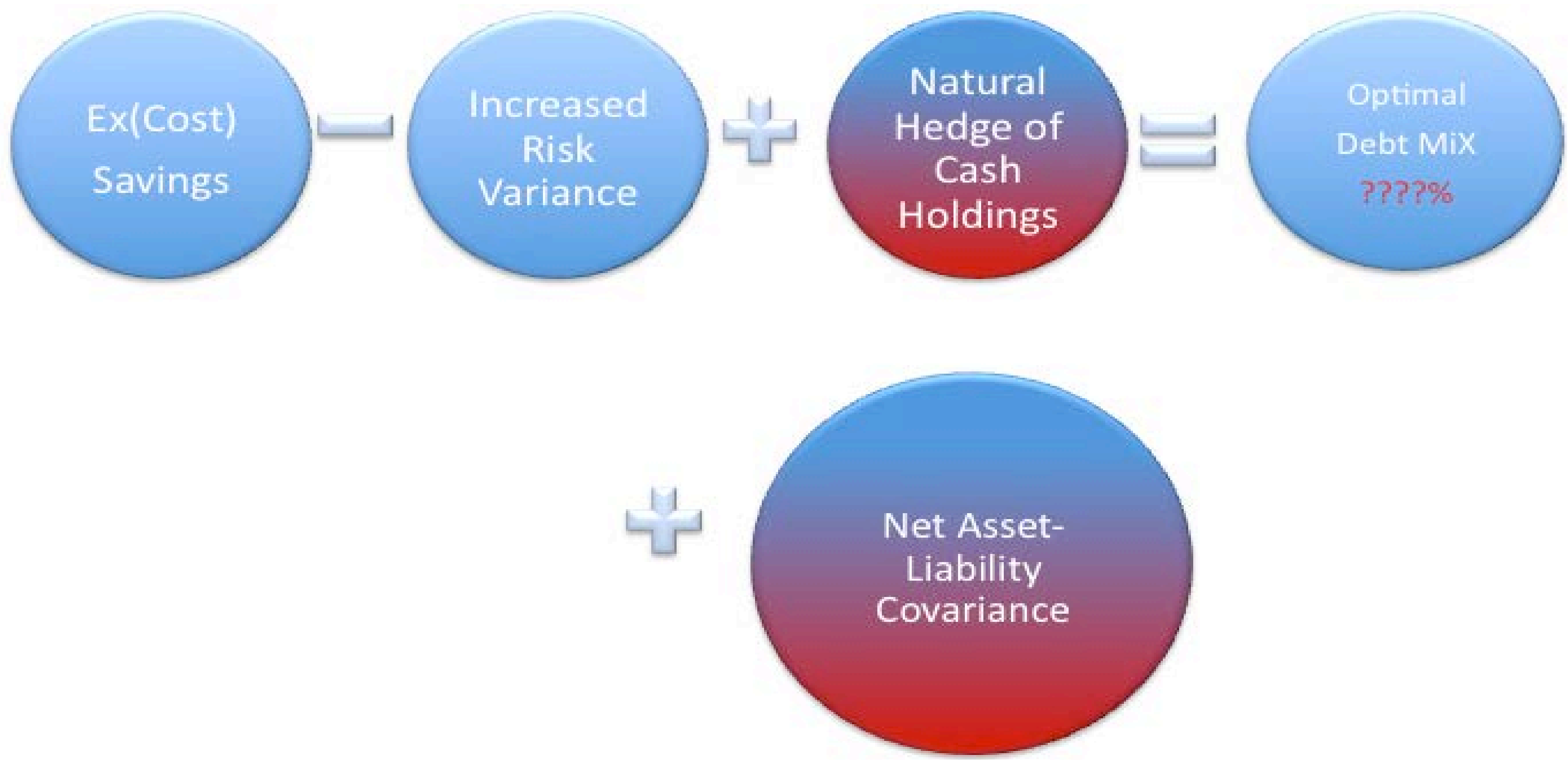
- How much risk can the municipality TRULY assume? How much can it transfer to other parties and at what cost?

- What strategies does an issuer to have answer this question?
  - We explore two options next

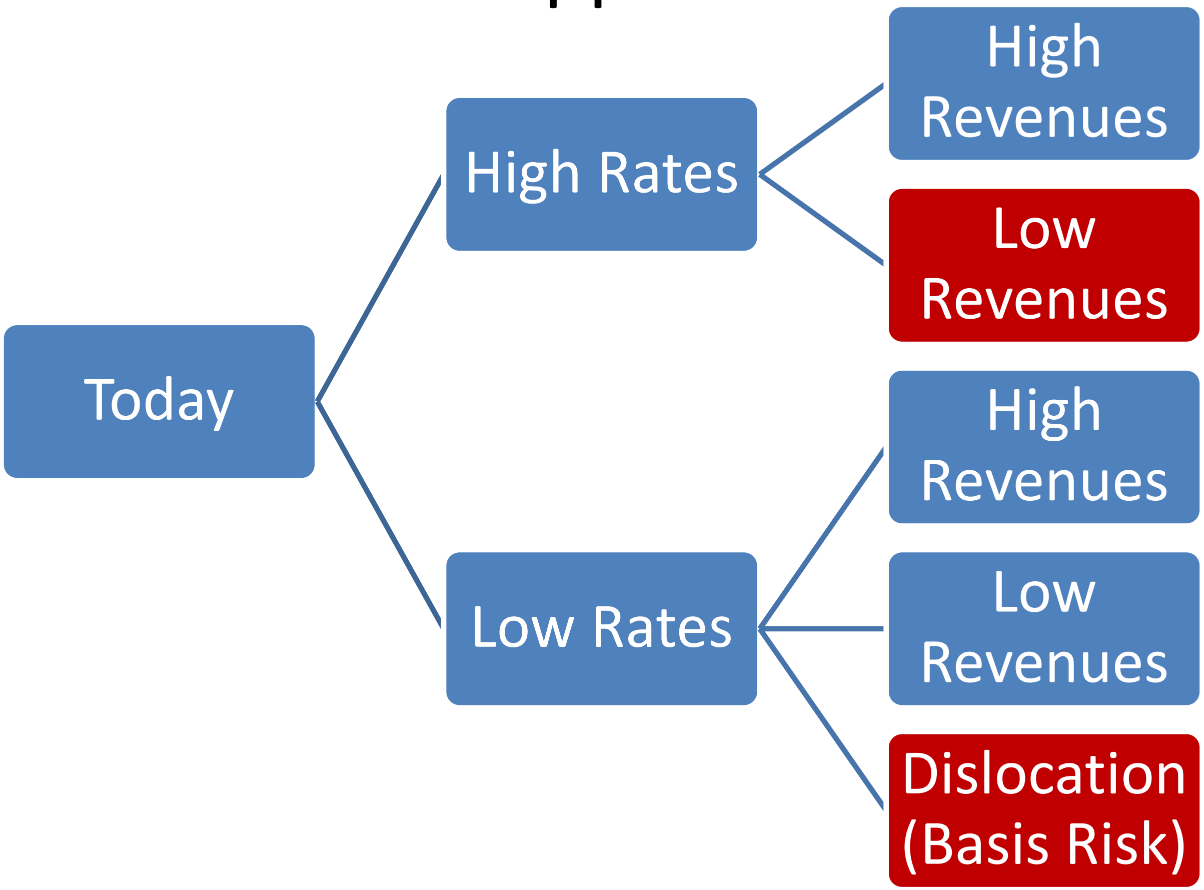
IV. Debt Mix – Asset Liability Management

A more sophisticated approach to Debt Management

- Tactics – Data Collection, Multivariate Regression, Monte Carlo Simulation



IV. Hypothetical Rates/Revenues – A Simpler Approach



We must expect the unexpected – Can your tax base handle the RED boxes????

IV. Alternatives to Fixed Rate Bonds

- VRDBs
- Auction Rate Securities (all but dead)
- Floating Rate Notes
- Mandatory Tender Bonds
- Medium Term Notes
- Synthetic Fixed/Synthetic Floating (rare now)
- Interest rate caps/collars
- Direct Private Placement

V. Types of Short-Term Bonds

	Auction Rate	VRDBs	Floating Rate Note	Syntetic Floating
Bond Maturity	30 Years	30 Years	1-4 Years	30 Years
"Real" Maturity	Insurer Term	LOC Term 1-5 years	1-4 Years	Flexible
Interest Rate Risk	Yes	Yes	Yes	Yes
Put Risk	No	**Yes**	**No**	No
Rollover Risk	Maybe	Yes	Yes	Maybe
Credit Risk	Yes	**Yes**	**No**	Some
"Swap" Related Risks	No	No	No	Yes
Credit Faciliity	Insurance	**LOC or SBPA**	**None**	Flexible
Key Takeaway	No Longer Feasible after 2008 insurance debacle	LOC terms can be elusive and costly - Rollover risk is key	Cost effective in shorter terms only - Bonds Mature soon requiring takeout	Swap risks including termination and collateral can be troublesome

V. Summary of Variable Rate Financing Alternatives

Option	Benefits	Considerations
VRDBs	▪ Low variable interest rates in current market ▪ Provides redemption flexibility as bonds are callable at par at any time ▪ Established market acceptance	▪ LOC renewal and bank credit exposure risk ▪ LOC pricing is currently at a significant premium versus historical averages ▪ Difficult to secure long-term bank commitments ▪ Refinancing and interest rate risk ▪ Exposure to and reliance on Bank's credit ratings
Indexed Floating Rate Notes ("FRNs")	▪ No LOC or remarketing fees ▪ No exposure to bank credit risk or LOC renewal availability ▪ Low variable interest rates in current market ▪ Can include a call feature 6 months prior to maturity ▪ Can use a long maturity and mandatory tender structure	▪ Market access risk associated with future take-out of the bonds ▪ Refinancing and interest rate risk ▪ Need to consult bond documents and Bond Counsel to allow for longer maturity amortization in regards to the ABT and mode change if for a remarketing
Mandatory Tender Bonds/BANs	▪ Locks in borrowing costs on the short-end of the yield curve ▪ Can be structured with a call provision 6 months prior to maturity ▪ Can be structured using tender dates from one to five years allowing for smaller block size, reducing liquidity concerns ▪ No ongoing LOC and remarketing fees ▪ No exposure to bank credit risk and LOC renewal	▪ Market access risk associated with future put bond takeout ▪ Requires discussions with rating agencies to establish guidelines for maximum par amount ▪ Refinancing and interest rate risk ▪ Better execution for "hard put" structure
Medium Term Notes (MTNs)	▪ Issue Notes in the 8- to 10-year range; may be refinanced again in the shorter portion of the curve to provide blended savings relative to a single fixed rate issue amortized over 20 or 30 years	▪ Helps diversify debt profile while allowing for borrowing on short end of steep yield curve. Bond documents will need to be reviewed to determine whether "Balloon" maturities are permitted. Advance/current refund MTNs as necessary. Some exposure to higher rates in future

Direct Private Placements

Why do a Public Offering at all???

- Alternative to expiring LOCs

- Limited public disclosure

- Ease of execution, size restrictions

Q & A

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Head of Quantitative Group

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