

MEMORANDUM

TO: File No. 4-610

FROM: Dave Sanchez
Office of Municipal Securities, Division of Trading and Markets

DATE: November 23, 2011

SUBJECT: Meeting with Andrew Kalotay, Ph.D. of Andrew Kalotay Associates, Inc.

On November 18, 2011, Mary Simpkins, Dave Sanchez, Tom Eady, David Dimitrious and Alicia Goldin from the Division of Trading and Markets met with Andrew Kalotay, Ph.D. of Andrew Kalotay Associates, Inc. to discuss issues related to the municipal securities market.

The attached materials were discussed at the meeting.

ANDREW
KALOTAY
ASSOCIATES, INC.

Making the Right Call With Municipal Bonds



October 27, 2011

Flexible
Fast ACCURATE
Cutting-
FLEXIBLE edge
Accurate
CUTTING-EDGE
Flexible
Fast ACCURATE
Cutting-
FLEXIBLE edge
Accurate ACCU
CUTTING-EDGE
Flexible
Fast ACCURATE
Cutting-
FLEXIBLE edge

Bird's Eye View of Municipal Bonds

Market is sizeable

50,000 issuers, \$3 trillion principal, 2 million Cusips

Federal subsidy to borrowers for qualifying projects

Indirect: When interest is tax-exempt, market accepts lower coupon

Direct: On taxable Build America Bonds issuer receives 35% rebate on interest expense (BABs ended 2010)

Trade press: Bond Buyer

Dominant newspaper/website for municipal finance

Regulator: MSRB

Rule-making board; transaction data via EMMA

Recent Activities in the Municipal Market

Advance Refunding Calculator at BondBuyer.com
Technology for intraday pricing of Muni ETFs
SEC hearing on mark-up of municipal swaps
MSRB municipal advisor certification task force
Debt management advisor to State Treasury

Publications

Why the municipal curve always rises

On the pros and cons of 5% bonds

BABs and the make-whole call

Topics Discussed

New issue structuring

Current practice explained

Who benefits?

Refunding

Optimum option exercise

How does current practice compare?

Municipalities Rely on Financial Advisors

For decisions on issuance and refunding...

Firms specializing in public finance, or banks

... and swaps, as needed

Swap advisor compensated only if transaction consummated

Tax-Exempt Bond Structures: Current Industry Practice

'Fractured' serial issue

Small size of individual pieces results in illiquidity

Callable after 10 years at par

May be eligible for advance refunding

5% coupon is the norm for institutional issues

Sold at a premium over par

Call option is deep in the money

Until recently most issues were insured

Municipal Yield Curves Are 'Callable'

Daily 'consensus' curves from MMA and MMD

Released late in the day; live curves not available

Yields are of bonds callable at par after 10 years

Hence the long end of the curve always rises*

MMD yields are for hypothetical 5% bonds

Reported as yields-to-call, reflecting likelihood of call
MMA is about to follow suit

*"What Makes the Muni Yield Curve Rise?"
– *Journal of Fixed Income* (Winter 2008)

What Is Advance Refunding?

1. Issue new 'refunding' bonds
2. Use proceeds to buy escrow to defease outstanding bonds to call date

Escrow consists of US Treasuries;
yield cannot exceed that of new issue

3. Defeased bonds are rated AAA,
independent of issuer's credit

Because collateralized by Treasuries

Just About Everybody Benefits from Advance Refunding

Underwriters
Investors
Rating agencies
Lawyers
Debt advisors
Swap advisors
Financial press
Prospectus printers

Except the taxpayers

New York State Refunding Guidelines Completely Disregard Option Values

REFUNDING CRITERIA

- For a standard fixed rate refunding (i.e., assumes callable bonds and pricing based on existing market standards with respect to 5% premium bond couponing structures), each individual bond maturity must have net present value (NPV) savings of at least the following amounts:

		Years to Call:		
		0 to 2	3 to 7	8 to 10
Years from Call to Maturity:	0 to 5	0.5%	1.0%	2.0%
	6 to 10	1.0%	2.5%	4.0%
	11 to 15	3.0%	4.0%	5.0%
	16 to 20	4.0%	5.0%	5.5%

- In addition to achieving the above maturity-by-maturity NPV savings, overall total NPV savings must be at least the lesser of 2.0 percent of the par amount of refunded bonds or three times the refunding's total costs of issuance, including underwriters' discount and bond insurance (if applicable).

NPV-Based Refunding Rules Are Hard to Shake

"My rule of thumb, which I think is pretty common, is at least 3% present-value savings" – Lucien Calhoun, Calhoun, Baker Inc., an adviser in Pennsylvania.

"It's just tradition and politics. If that's the way people have always done it, then it's very hard to swim against that." – Phil Ferrand, Ferrand Consulting Group

Source: "The Not-Quite Science of Refinancing"
Dan Seymour, *The Bond Buyer*, June 18, 2009

Recommended Approach to Refunding: Savings vs. Loss of Option Value

$$\text{Efficiency}_{gen} = \frac{PV \text{ Savings}}{\Delta \text{Option Value}}$$

Refund when efficiency is close to 100%

“Refunding Efficiency: A Generalized Approach”
--*Applied Financial Economics Letters*, 2007:3
Handles case of refunding with callable bonds

Refunding Calculator at BondBuyer.com Case Study

Bond Terms	
Issuer:	SEATTLE WASH
Cusip:	812626LD9
State:	WA
Maturity Date:	10/01/2013
Amt Outstanding:	4,345,000
Coupon:	4.000
Pmt Frequency:	Semiannual
Call Date:	10/01/2012
Call Price:	100.000
Rating:	AAA

	Interest Rates				
	2-yr	5-yr	10-yr	15-yr	30-yr
Treasuries	0.16	0.84	1.96	2.53	3.23
MMA AAA GO	0.46	1.24	2.50	3.30	4.28

THE BOND BUYER

THE DAILY NEWSPAPER OF PUBLIC FINANCE

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**ANDREW
KALOTAY**
ASSOCIATES, INC.

Advance Refunding Analyzer

Powered by
BondOAS™

[How to Use This Calculator](#)

SEATTLE WASH 4.000's due 10/01/2013 (\$4,345M)

812626LD9

Callable at 100.000 on or after 10/01/2012

Analysis as of: 10/19/2011

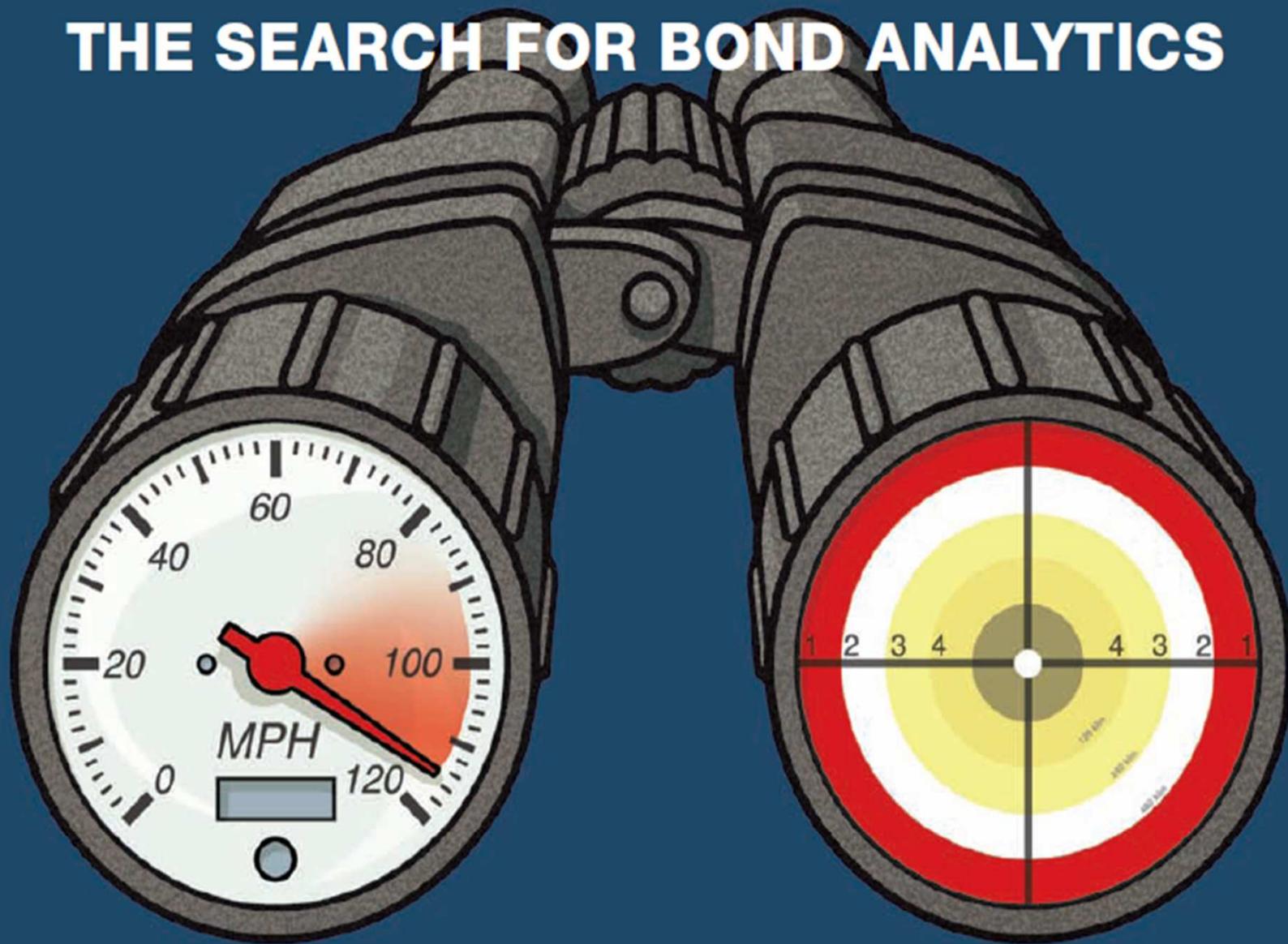
Hypothetical Refunding Coupon (%)	0.264	0.364	0.464	0.564	0.664
Escrow Yield (%)	0.272	0.272	0.272	0.272	0.272
Cost of Escrow*	103.735	103.735	103.735	103.735	103.735
Underwriting Discount*	0.175	0.175	0.175	0.175	0.175
Size of Refunding Bond*	103.916	103.916	103.916	103.916	103.916
Size of Refunding Bond (\$M)	4,515	4,515	4,515	4,515	4,515
TIC of Refunding Bond (%)	0.355	0.454	0.554	0.654	0.755
PV Savings Ratio*	3.544	3.342	3.140	2.938	2.736
PV Savings (\$) (a)	153,995	145,217	136,415	127,635	118,876
Option Value of Refunded Bond (\$) (b)	153,995	149,433	144,863	140,308	135,768
Refunding Efficiency (%) (a/b)	100.0	97.2	94.2	91.0	87.6

*Percent of refunded par amount

Refunding not recommended below 95% efficiency

Analysis above assumes refunding with maturity-matched optionless bond at par.
 Refunding coupons are *hypothetical* and may be far removed from issuer's actual refunding levels.

THE SEARCH FOR BOND ANALYTICS



Speed or Accuracy?

Why not both?

BondOAS™

The industry standard in
bond analytics delivers
unparalleled speed*
and accuracy.

*1.2 million OAS to price per minute
for 10NC2 bonds (Intel i7 3.4Ghz PC)

Contact

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Using the Calculator to Your Advantage

Issuers: determine whether or not refund

But most issuers still base decision on 3% NPV savings, without reference to option value

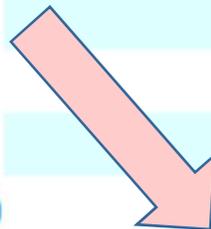
Investors: assess likelihood of achieving issuer's target NPV savings (e.g. 3%)

Refunding policy may be in the public domain

Issuers Should Focus On Refunding Efficiency

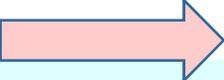
[How to Use This Calculator](#)

SEATTLE WASH 4.000's due 10/01/2013 (\$4,345M)			
812626LD9			
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Investors Should Monitor Market Yields And Savings Thresholds

How to Use This Calculator

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Bond Buyer Search Engine Provides Access To All Refunding Candidates

For detail and analysis, click on a CUSIP

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CUSIP	Issuer	Coupon (%)	Maturity	Amt O/S (\$)	Call Date	Call Price
64970MYN7	NEW YORK N Y CITY HSG DEV CORP MULTIFAMILY HSG REV	5.350	05/01/49	31,850,000	05/01/2017	100.000
64971PJA4	NEW YORK N Y CITY INDL DEV AGY REV	7.000	03/01/49	191,960,000	03/01/2019	100.000
649903S44	NEW YORK ST DORM AUTH REVS NON ST SUPPORTED DEBT	5.250	07/01/48	132,610,000	07/01/2018	100.000
649903U66	NEW YORK ST DORM AUTH REVS NON ST SUPPORTED DEBT	5.250	07/01/48	97,665,000	07/01/2018	100.000
64989KGH3	NEW YORK ST PWR AUTH REV	4.500	11/15/47	41,025,000	11/15/2017	100.000
64989KGJ9	NEW YORK ST PWR AUTH REV	5.000	11/15/47	41,000,000	11/15/2017	100.000
64970MWU3	NEW YORK N Y CITY HSG DEV CORP MULTIFAMILY HSG REV	4.800	05/01/47	5,235,000	05/01/2015	100.000
64970M2Q5	NEW YORK N Y CITY HSG DEV CORP MULTIFAMILY HSG REV	5.700	11/01/46	34,155,000	05/01/2019	100.000
649438FN3	NEW YORK CITY N Y INDL DEV AGY CIVIC FAC REV	5.875	10/01/46	113,420,000	10/01/2017	102.000
64983Q6U8	NEW YORK ST DORM AUTH REVS NONST SUPPORTED DEBT	5.000	07/01/46	32,520,000	07/01/2016	100.000
649903KD2	NEW YORK ST DORM AUTH REVS NON ST SUPPORTED DEBT	5.000	07/01/46	54,330,000	07/01/2017	100.000
64970MUF8	NEW YORK N Y CITY HSG DEV CORP MULTIFAMILY HSG REV	5.250	05/01/46	3,400,000	11/01/2014	100.000
64967BAA0	NEW YORK N Y CITY INDL DEV AGY RENTAL REV	5.900	03/01/46	24,715,000	09/01/2016	100.000
64971PFH3	NEW YORK N Y CITY INDL DEV AGY REV	5.000	03/01/46	238,000,000	09/01/2016	100.000
64971PFJ9	NEW YORK N Y CITY INDL DEV AGY REV	4.750	03/01/46	79,435,000	09/01/2016	100.000
64971PEB7	NEW YORK N Y CITY INDL DEV AGY REV	5.000	01/01/46	118,245,000	01/01/2017	100.000
64971PJP1	NEW YORK N Y CITY INDL DEV AGY REV	6.500	01/01/46	33,125,000	01/01/2019	100.000
649451AY7	NEW YORK CONVENTION CTR DEV CORP N Y REV	4.750	11/15/45	500,000	11/15/2015	100.000
649451AZ4	NEW YORK CONVENTION CTR DEV CORP N Y REV	4.750	11/15/45	75,000,000	11/15/2015	100.000
64970MD42	NEW YORK N Y CITY HSG DEV CORP MULTIFAMILY HSG REV	5.250	11/01/45	7,205,000	05/01/2017	100.000
64986MS63	NEW YORK ST HSG FIN AGY REV	5.450	11/01/45	10,320,000	11/01/2017	100.000
64986M5K7	NEW YORK ST HSG FIN AGY REV	5.000	11/01/45	3,500,000	05/01/2019	100.000
62947YAE1	NEW YORK CNTYS TOB TR IV	5.000	06/01/45	83,875,000	06/01/2015	100.000
64986MTL9	NEW YORK ST HSG FIN AGY REV	4.900	02/15/45	1,000,000	02/15/2014	100.000
64983QDP1	NEW YORK ST DORM AUTH REVS NONST SUPPORTED DEBT	4.950	02/15/45	9,335,000	02/15/2015	100.000

Mergent data includes millions of cusips

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New Issue Selection Is Another Challenge

Check performance under various interest rate scenarios

Higher coupon implies that refunding is more likely

5% bonds virtually guarantee early redemption

With associated replacement costs for both sides

5% bonds tend to be a good deal for investors

Based on OAS analysis

Also, unlikely to cross the 'de minimis' threshold

Banks benefit from increased churning

In Summary: Inefficient Debt Management Creates Investment Opportunities

Refunding without capturing full option value is
wasting taxpayer money

But benefits investors

Option-based analytics are available to identify
the best investment candidate

Such as the Advance Refunding Calculator at
www.bondbuyer.com

***You don't have to be an options expert
to profit from option-based analytics!***