Municipal Bond Basics

Presented by: Lee Davidow

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PFM

1735 Market Street
42nd Floor
Philadelphia, PA 19103

pfm.com
(215) 567-6100

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Agenda

I. New Money Transactions

- Elements of Size
- Debt Service Structure
- Bond Structure
- Yield(s)

II. Why Arbitrage Yield Matters – IRS Regulations

- IRS Regulations
- Arbitrage Yield & Yield Restrictions
- Exceptions to Arbitrage Rebate
- Funds Subject to Rebate

New Money Transactions

Why Issue Bonds?

- States, cities, counties and other public authorities are responsible for funding public projects such as the construction and upkeep of schools, hospitals, highways, sewers, and universities
- How should issuers fund these capital projects?
  - **Option 1: Use that treasure chest of funds that's been sitting around.**
    - *What treasure chest of funds???*

  - **Option 2: Save up money (maybe from a newly instituted tax) for a long period of time (20 to 30 years) and then build the project once the necessary amount has been saved (i.e., "pay as you go" funding).**
    - *Problem: Issuer needs the project now, the project may also be much more expensive in 20 to 30 years.*

    - *Problem: Unfair - Those that are taxed to fund the project should also be those that benefit from/ use the project (i.e., generational transfer).*

  - **Option 3: Issue Bonds.**
    - Issuers can procure funds today to build the project they need by borrowing money through a bond issuance.
    - The debt service (i.e., principal and interest) on the bonds is paid by the users of the project (i.e., tax-payers, toll-payers, rate-payers).

Tax Exemption

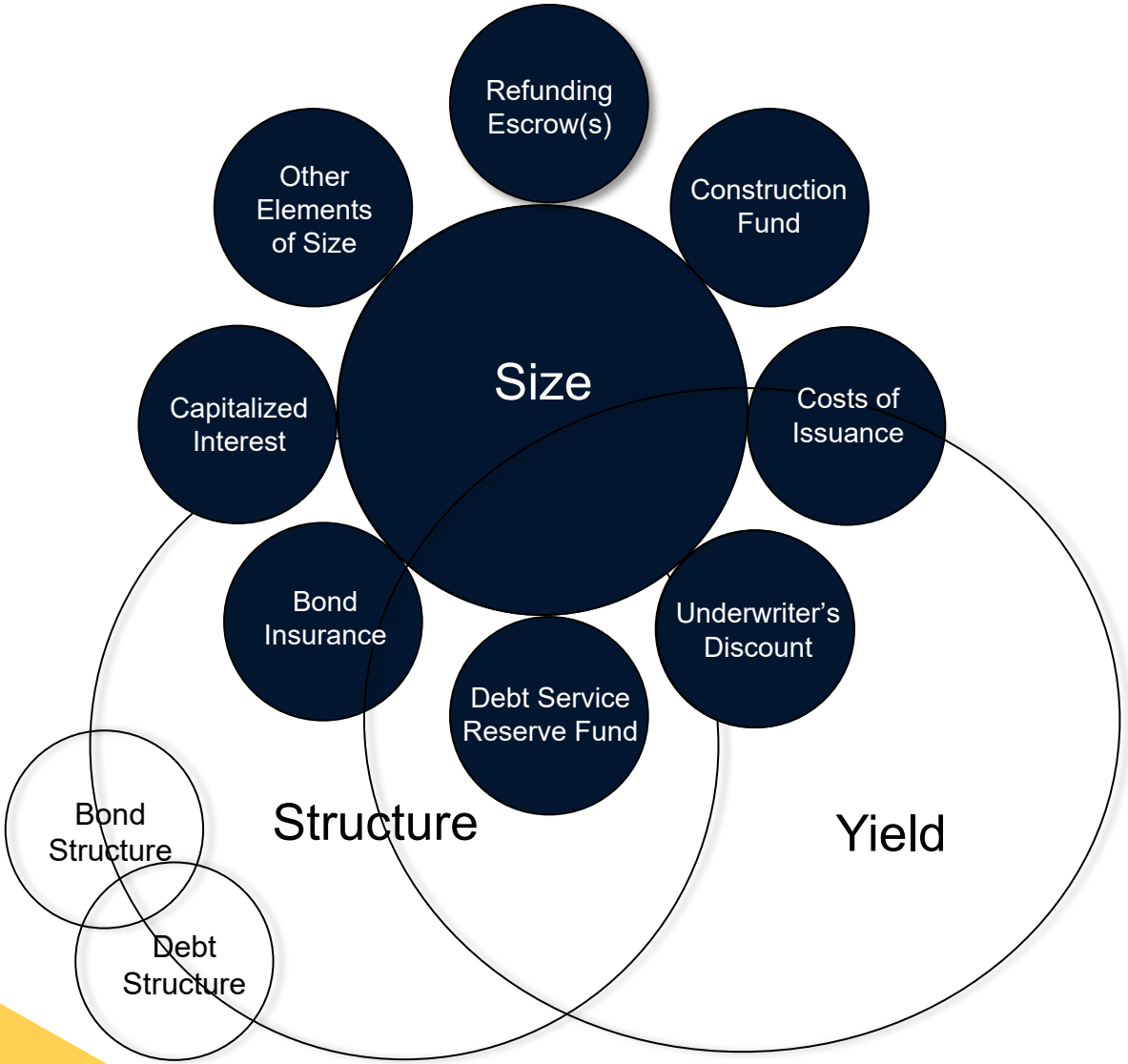
- The IRS deems bonds that are issued for qualified public projects by municipal governments (e.g., state and local governments) and non-profits entities (e.g., school districts, higher education, toll and transit, airports, public power, health care, etc.) tax-exempt .
  - The interest income on these bonds are exempt from federal income taxes.
  - Many are also exempt from state income taxes, for owners that reside within those states.
- Why? Because the capital projects funded by these bonds are for the good of the public.
- Due to these exemptions, tax-exempt bonds typically carry lower interest rates than comparable, taxable bonds.

	Taxable Bond	Tax-exempt Bond
Market Interest Rate	10.00%	6.70%
Less Taxes	(3.30%)	0.00%
Effective Interest Rate	6.70%	6.70%

Investors are willing to receive a lower rate since they are not required to pay taxes on interest income. Their net effective rate equalizes.

Source: IRS / Federal Tax Code

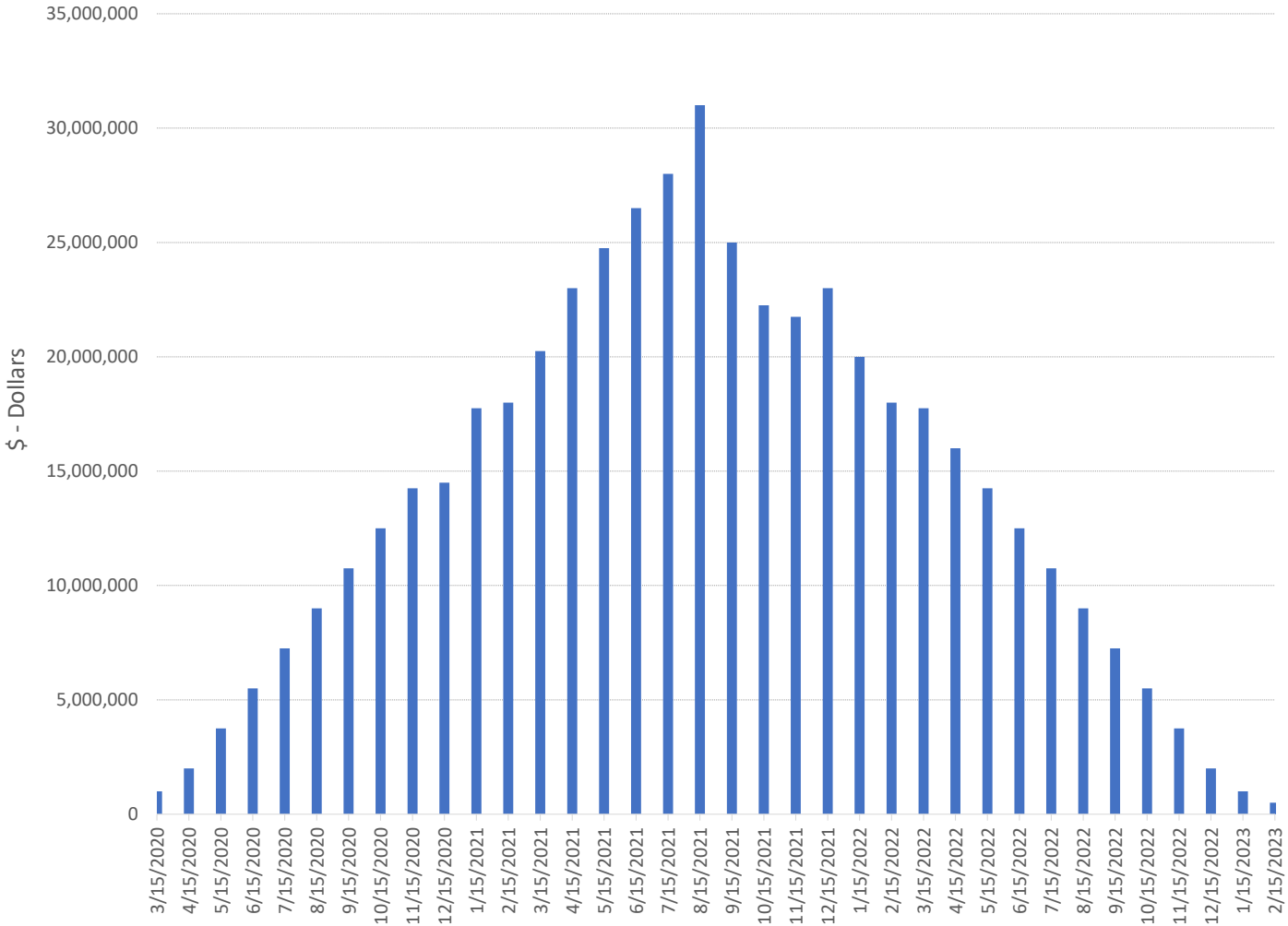
Tao of Municipal Modeling



Sizing

A government needs to build a new bridge. At the time, the estimated completion was three years and total project costs totaled $500 million. Construction for the project began March 15, 2020, although it will take 3 years until all projects became fully operational. As such, revenues securing the debt service (i.e., bridge tolls) become available to pay debt service on the bonds on March 15, 2023.

Construction Fund Draw Schedule



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Construction Fund Schedule — Gross Funded

Gross funded

Interest earnings not needed to fund scheduled draws

Date	Deposit	Interest @3%	Principal	Scheduled Draws	Balance
03/01/2020	500,000,000				500,000,000
03/15/2020		583,333.33	1,000,000	1,000,000	499,000,000
04/15/2020		1,247,500.00	2,000,000	2,000,000	497,000,000
05/15/2020		1,242,500.00	3,750,000	3,750,000	493,250,000
06/15/2020		1,233,125.00	5,500,000	5,500,000	487,750,000
07/15/2020		1,219,375.00	7,250,000	7,250,000	480,500,000
08/15/2020		1,201,250.00	9,000,000	9,000,000	471,500,000
09/15/2020		1,178,750.00	10,750,000	10,750,000	460,750,000
10/15/2020		1,151,875.00	12,500,000	12,500,000	448,250,000
11/15/2020		1,120,625.00	14,250,000	14,250,000	434,000,000
12/15/2020		1,085,000.00	14,500,000	14,500,000	419,500,000
01/15/2021		1,048,750.00	17,750,000	17,750,000	401,750,000
02/15/2021		1,004,375.00	18,000,000	18,000,000	383,750,000
03/15/2021		959,375.00	20,250,000	20,250,000	363,500,000
04/15/2021		908,750.00	23,000,000	23,000,000	340,500,000
05/15/2021		851,250.00	24,750,000	24,750,000	315,750,000
06/15/2021		789,375.00	26,500,000	26,500,000	289,250,000
07/15/2021		723,125.00	28,000,000	28,000,000	261,250,000
08/15/2021		653,125.00	31,000,000	31,000,000	230,250,000
09/15/2021		575,625.00	25,000,000	25,000,000	205,250,000
10/15/2021		513,125.00	22,250,000	22,250,000	183,000,000
11/15/2021		457,500.00	21,750,000	21,750,000	161,250,000
12/15/2021		403,125.00	23,000,000	23,000,000	138,250,000
01/15/2022		345,625.00	20,000,000	20,000,000	118,250,000
02/15/2022		295,625.00	18,000,000	18,000,000	100,250,000
03/15/2022		250,625.00	17,750,000	17,750,000	82,500,000
04/15/2022		206,250.00	16,000,000	16,000,000	66,500,000
05/15/2022		166,250.00	14,250,000	14,250,000	52,250,000
06/15/2022		130,625.00	12,500,000	12,500,000	39,750,000
07/15/2022		99,375.00	10,750,000	10,750,000	29,000,000
08/15/2022		72,500.00	9,000,000	9,000,000	20,000,000
09/15/2022		50,000.00	7,250,000	7,250,000	12,750,000
10/15/2022		31,875.00	5,500,000	5,500,000	7,250,000
11/15/2022		18,125.00	3,750,000	3,750,000	3,500,000
12/15/2022		8,750.00	2,000,000	2,000,000	1,500,000
01/15/2023		3,750.00	1,000,000	1,000,000	500,000
02/15/2023		1,250.00	500,000	500,000	
	500,000,000	21,831,458.33	500,000,000	500,000,000	

For illustrative purposes only

Construction Fund Schedule — Net Funded

Net funded

Interest earnings + draws on principal fund scheduled draws

Date	Deposit	Interest @ 3%	Principal	Scheduled Draws	Balance
03/01/2020	478,739,963.84				478,739,963.84
03/15/2020		558,529.96	441,470.04	1,000,000	478,298,493.80
04/15/2020		1,195,746.23	804,253.77	2,000,000	477,494,240.03
05/15/2020		1,193,735.60	2,556,264.40	3,750,000	474,937,975.63
06/15/2020		1,187,344.94	4,312,655.06	5,500,000	470,625,320.57
07/15/2020		1,176,563.30	6,073,436.70	7,250,000	464,551,883.87
08/15/2020		1,161,379.71	7,838,620.29	9,000,000	456,713,263.58
09/15/2020		1,141,783.16	9,608,216.84	10,750,000	447,105,046.74
10/15/2020		1,117,762.62	11,382,237.38	12,500,000	435,722,809.36
11/15/2020		1,089,307.02	13,160,692.98	14,250,000	422,562,116.38
12/15/2020		1,056,405.29	13,443,594.71	14,500,000	409,118,521.67
01/15/2021		1,022,796.30	16,727,203.70	17,750,000	392,391,317.97
02/15/2021		980,978.29	17,019,021.71	18,000,000	375,372,296.26
03/15/2021		938,430.74	19,311,569.26	20,250,000	356,060,727.00
04/15/2021		890,151.82	22,109,848.18	23,000,000	333,950,878.82
05/15/2021		834,877.20	23,915,122.80	24,750,000	310,035,756.02
06/15/2021		775,089.39	25,724,910.61	26,500,000	284,310,845.41
07/15/2021		710,777.11	27,289,222.89	28,000,000	257,021,622.52
08/15/2021		642,554.06	30,357,445.94	31,000,000	226,664,176.58
09/15/2021		566,660.44	24,433,339.56	25,000,000	202,230,837.02
10/15/2021		505,577.09	21,744,422.91	22,250,000	180,486,414.11
11/15/2021		451,216.04	21,298,783.96	21,750,000	159,187,630.15
12/15/2021		397,969.08	22,602,030.92	23,000,000	136,585,599.23
01/15/2022		341,464.00	19,658,536.00	20,000,000	116,927,063.23
02/15/2022		292,317.66	17,707,682.34	18,000,000	99,219,380.89
03/15/2022		248,048.45	17,501,951.55	17,750,000	81,717,429.34
04/15/2022		204,293.57	15,795,706.43	16,000,000	65,921,722.91
05/15/2022		164,804.31	14,085,195.69	14,250,000	51,836,527.22
06/15/2022		129,591.32	12,370,408.68	12,500,000	39,466,118.54
07/15/2022		98,665.30	10,651,334.70	10,750,000	28,814,783.84
08/15/2022		72,036.96	8,927,963.04	9,000,000	19,886,820.80
09/15/2022		49,717.05	7,200,282.95	7,250,000	12,686,537.85
10/15/2022		31,716.34	5,468,283.66	5,500,000	7,218,254.19
11/15/2022		18,045.64	3,731,954.36	3,750,000	3,486,299.83
12/15/2022		8,715.75	1,991,284.25	2,000,000	1,495,015.58
01/15/2023		3,737.54	996,262.46	1,000,000	498,753.12
02/15/2023		1,246.88	498,753.12	500,000	
	478,739,963.84	21,260,036.16	478,739,963.84	500,000,000	

For illustrative purposes only

Construction Fund (cont'd)

Sources:	
Bond Proceeds:	
Par Amount	478,740,000.00
	478,740,000.00
Uses:	
Project Fund Deposits:	
Project Fund	478,739,963.84
Other Uses of Funds:	
Additional Proceeds	36.16
	478,740,000.00

Required, as bonds are sold in denominations of $5,000 (a.k.a. "Rounding")

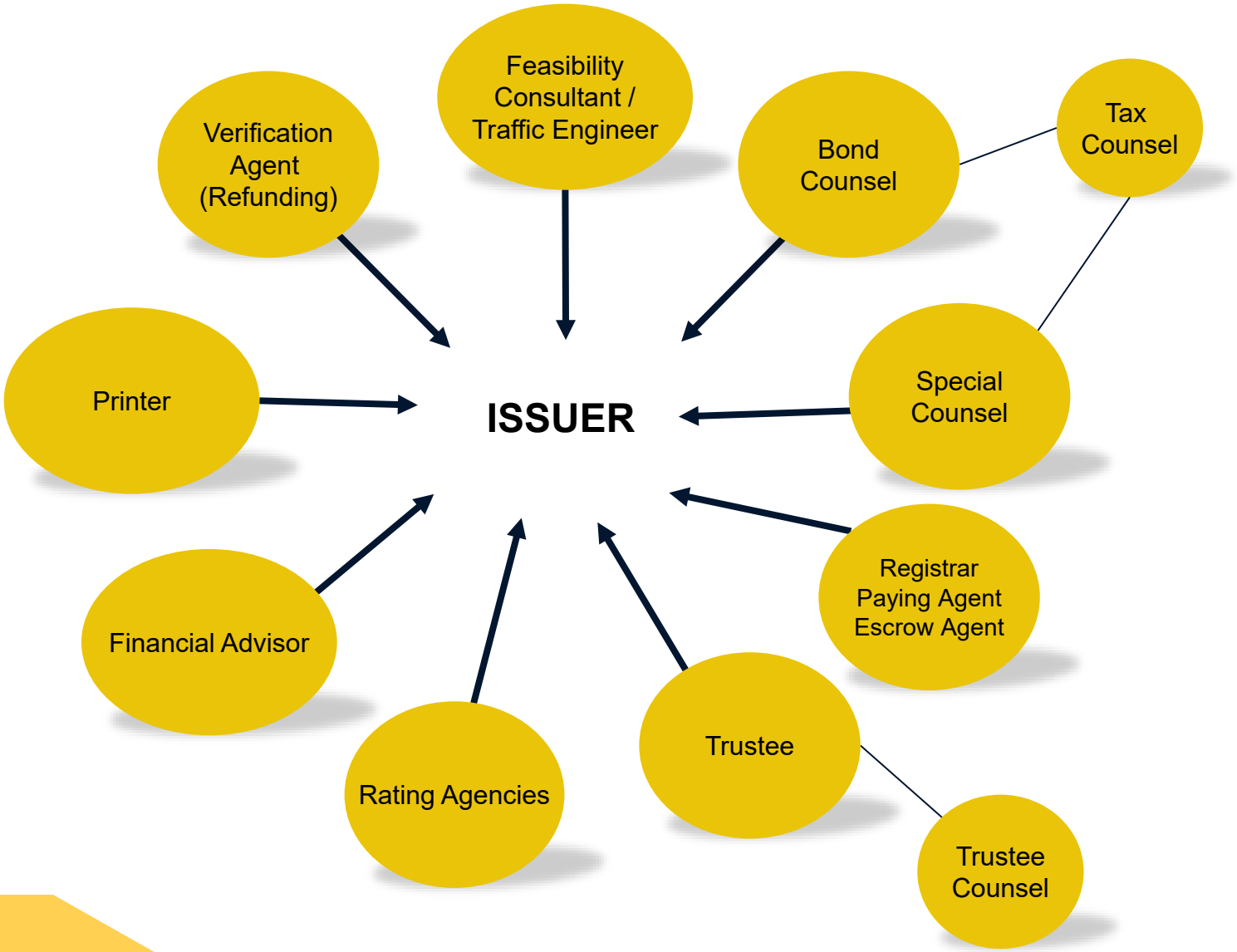
Poll question 1

Which of the following would result in a greater amount of par issued?

A. A net-funded project

B. A gross-funded project

Cost of Issuance



Cost of Issuance (cont'd)

Cost of Issuance	$/1000	Amount
Bond Counsel	0.20876	100,000.00
Tax Counsel	0.03131	15,000.00
Special Counsel	0.02088	10,000.00
Trustee	0.00626	3,000.00
Trustee Counsel	0.00418	2,000.00
Standard & Poor's	0.04175	20,000.00
Fitch	0.04175	20,000.00
Moody's	0.04175	20,000.00
Financial Advisor	0.15657	75,000.00
Printer	0.01044	5,000.00
Miscellaneous	0.03131	15,000.00
	0.59496	285,000.00

Cost of Issuance (cont'd)

Sources:	
Bond Proceeds:	
Par Amount	479,025,000.00
	479,025,000.00
Uses:	
Project Fund Deposits:	
Project Fund	478,739,963.84
Delivery Date Expenses:	
Cost of Issuance	285,000.00
Other Uses of Funds:	
Additional Proceeds	36.16
	479,025,000.00

up from $478,740,000

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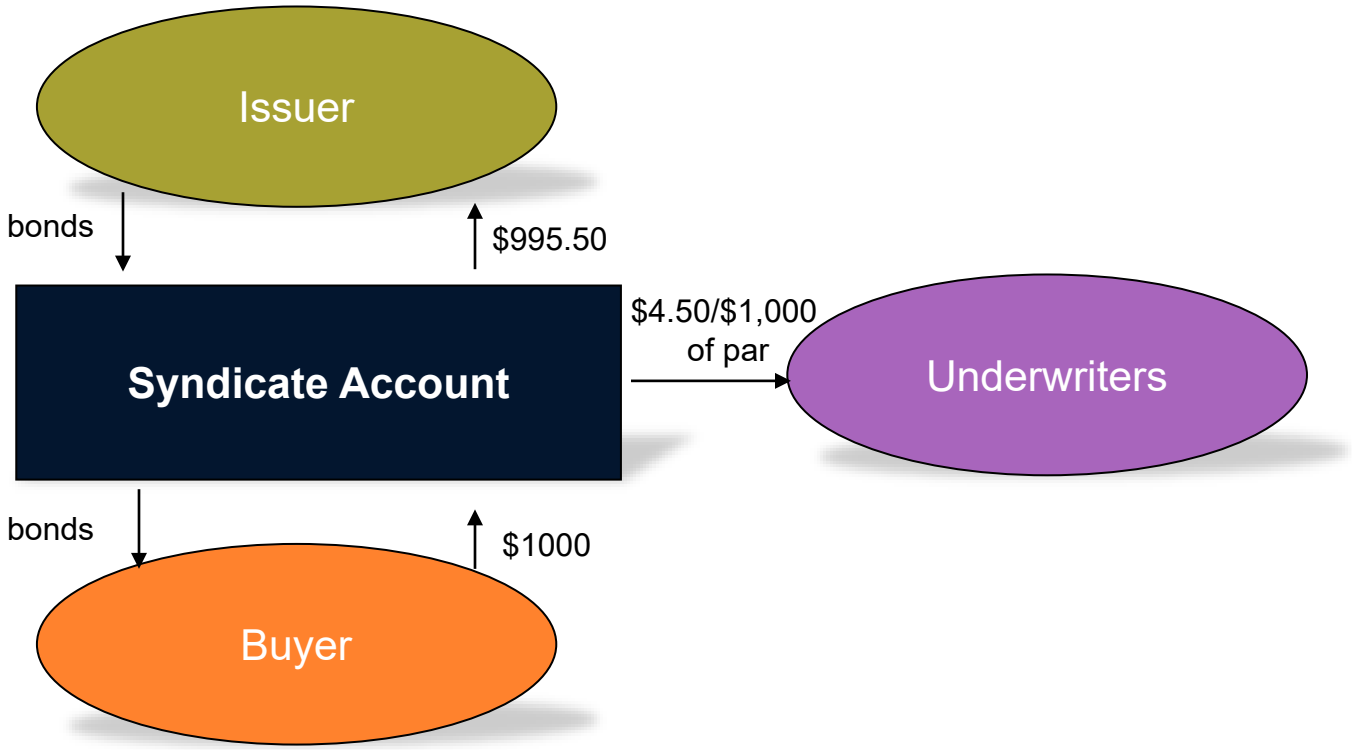
Underwriter's Discount



Component	"Old" Days	Today
Management Fee	$5.00	$0.00
Takedown	20.00	3.00
Risk	1.00	0.00
Expenses	4.00	1.50
	$30.00	$4.50

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Underwriter's Discount (cont'd)

Underwriter's Discount	$/1000	Amount
Average Takedown	3.00000	1,441,725.00
Underwriter's Counsel	0.11445	55,000.00
MSRB	0.00104	500.00
CUSIP	0.00062	300.00
Dalcomp	0.03000	14,417.25
SIFMA	0.03000	14,417.25
Day Loan	0.02700	12,975.53
Miscellaneous	0.02081	10,000.00
	3.22392	1,549,335.03

Underwriter's Discount (cont'd)

Sources:	
Bond Proceeds:	
Par Amount	480,575,000.00
	480,575,000.00
Uses:	
Project Fund Deposits:	
Project Fund	478,739,963.84
Delivery Date Expenses:	
Cost of Issuance	285,000.00
Underwriter's Discount	1,549,335.03
	1,834,335.03
Other Uses of Funds:	
Additional Proceeds	701.13
	480,575,000.00

up from $479,025,000

Poll question 2

In the current market for a typical bond issuance, what items comprise the Underwriter's Discount?

A. Risk
B. Takedown
C. Expenses
D. Management Fee
E. B and C only
F. B, C and D only
G. All of the above

Debt Service Reserve Fund

- Security for investors in case the issuer is unable to meet debt service obligations
- Provides short-term liquidity
- Interest generated from DSRF can be used to subsidize other funds (i.e., reduce initial deposit size in project fund) or pay debt service costs
- Sized to meet investor needs, subject to IRS constraints
  - Reasonably Required Reserve and Replacement Fund (4-R)
  - Lesser of:
    - 10% of Par
    - 1.25X Average Annual Debt Service
    - Maximum Annual Debt Service (“MADS”)

Debt Service Reserve Fund – Formula Verification

Annual Debt Service

Period Ending	Principal	Coupon	Interest	Debt Service
01/01/2021			12,843,625	12,843,625
01/01/2022	7,565,000	5.000%	25,498,125	33,063,125
01/01/2023	7,950,000	5.000%	25,110,250	33,060,250
01/01/2024	8,360,000	5.000%	24,702,500	33,062,500
01/01/2025	8,790,000	5.000%	24,273,750	33,063,750
01/01/2026	9,240,000	5.000%	23,823,000	33,063,000
01/01/2027	9,715,000	5.000%	23,349,125	33,064,125
01/01/2028	10,210,000	5.000%	22,851,000	33,061,000
01/01/2029	10,735,000	5.000%	22,327,375	33,062,375
01/01/2030	11,285,000	5.000%	21,776,875	33,061,875
01/01/2031	11,865,000	5.000%	21,198,125	33,063,125
01/01/2032	12,470,000	5.000%	20,589,750	33,059,750
01/01/2033	13,110,000	5.000%	19,950,250	33,060,250
01/01/2034	13,785,000	5.000%	19,277,875	33,062,875
01/01/2035	14,490,000	5.000%	18,571,000	33,061,000
01/01/2036	15,235,000	5.000%	17,827,875	33,062,875
01/01/2037	16,015,000	5.000%	17,046,625	33,061,625
01/01/2038	16,835,000	5.000%	16,225,375	33,060,375
01/01/2039	17,700,000	5.000%	15,362,000	[illegible]
01/01/2040	18,610,000	5.000%	14,454,250	33,064,250
01/01/2041	19,560,000	5.000%	13,500,000	[illegible]
01/01/2042	20,565,000	5.000%	12,496,875	33,061,875
01/01/2043	21,620,000	5.000%	11,442,250	33,062,250
01/01/2044	22,730,000	5.000%	10,333,500	33,063,500
01/01/2045	23,895,000	5.000%	9,167,875	33,062,875
01/01/2046	25,120,000	5.000%	7,942,500	33,062,500
01/01/2047	26,410,000	5.000%	6,654,250	33,064,250
01/01/2048	27,760,000	5.000%	5,300,000	33,060,000
01/01/2049	29,185,000	5.000%	3,876,375	33,061,375
01/01/2050	30,680,000	5.000%	2,379,750	33,059,750
01/01/2051	32,255,000	5.000%	806,375	33,061,375
	513,745,000		490,958,500	1,004,703,500

Reserve Requirement = MADS

Formula Verification

Component	Formula	Value
DSRF	10% of Par Amount	51,374,500.00
DSRF	125% of average annual Debt Service	41,862,645.83
DSRF	Maximum annual Debt Service	[illegible]
DSRF	Debt Service Reserve Fund	33,064,250.00

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Debt Service Reserve Fund Earnings

Why not Net Fund?

DSRF interest earnings used to offset debt service payments

Date	Deposit	Interest @ 4.5%	Principal	Debt Service	Balance
01/01/2021	33,064,250	743,945.63		-743,945.63	33,064,250
01/01/2022		1,487,891.26		-1,487,891.26	33,064,250
01/01/2023		1,487,891.26		-1,487,891.26	33,064,250
01/01/2024		1,487,891.26		-1,487,891.26	33,064,250
01/01/2025		1,487,891.26		-1,487,891.26	33,064,250
01/01/2026		1,487,891.26		-1,487,891.26	33,064,250
01/01/2027		1,487,891.26		-1,487,891.26	33,064,250
01/01/2028		1,487,891.26		-1,487,891.26	33,064,250
01/01/2029		1,487,891.26		-1,487,891.26	33,064,250
01/01/2030		1,487,891.26		-1,487,891.26	33,064,250
01/01/2031		1,487,891.26		-1,487,891.26	33,064,250
01/01/2032		1,487,891.26		-1,487,891.26	33,064,250
01/01/2033		1,487,891.26		-1,487,891.26	33,064,250
01/01/2034		1,487,891.26		-1,487,891.26	33,064,250
01/01/2035		1,487,891.26		-1,487,891.26	33,064,250
01/01/2036		1,487,891.26		-1,487,891.26	33,064,250
01/01/2037		1,487,891.26		-1,487,891.26	33,064,250
01/01/2038		1,487,891.26		-1,487,891.26	33,064,250
01/01/2039		1,487,891.26		-1,487,891.26	33,064,250
01/01/2040		1,487,891.26		-1,487,891.26	33,064,250
01/01/2041		1,487,891.26		-1,487,891.26	33,064,250
01/01/2042		1,487,891.26		-1,487,891.26	33,064,250
01/01/2043		1,487,891.26		-1,487,891.26	33,064,250
01/01/2044		1,487,891.26		-1,487,891.26	33,064,250
01/01/2045		1,487,891.26		-1,487,891.26	33,064,250
01/01/2046		1,487,891.26		-1,487,891.26	33,064,250
01/01/2047		1,487,891.26		-1,487,891.26	33,064,250
01/01/2048		1,487,891.26		-1,487,891.26	33,064,250
01/01/2049		1,487,891.26		-1,487,891.26	33,064,250
01/01/2050		1,487,891.26		-1,487,891.26	33,064,250
01/01/2051		743,945.63	33,064,250	-33,808,195.63	
	33,064,250	44,636,737.80	33,064,250	-77,700,987.80	

Debt Service Reserve Fund – Net Debt Service

DSRF interest earnings

Period Ending	Total Debt Service	Debt Service Reserve Fund	Net Debt Service
01/01/2021	12,843,625	743,945.63	12,099,679.37
01/01/2022	33,063,125	1,487,891.26	31,575,233.74
01/01/2023	33,060,250	1,487,891.26	31,572,358.74
01/01/2024	33,062,500	1,487,891.26	31,574,608.74
01/01/2025	33,063,750	1,487,891.26	31,575,858.74
01/01/2026	33,063,000	1,487,891.26	31,575,108.74
01/01/2027	33,064,125	1,487,891.26	31,576,233.74
01/01/2028	33,061,000	1,487,891.26	31,573,108.74
01/01/2029	33,062,375	1,487,891.26	31,574,483.74
01/01/2030	33,061,875	1,487,891.26	31,573,983.74
01/01/2031	33,063,125	1,487,891.26	31,575,233.74
01/01/2032	33,059,750	1,487,891.26	31,571,858.74
01/01/2033	33,060,250	1,487,891.26	31,572,358.74
01/01/2034	33,062,875	1,487,891.26	31,574,983.74
01/01/2035	33,061,000	1,487,891.26	31,573,108.74
01/01/2036	33,062,875	1,487,891.26	31,574,983.74
01/01/2037	33,061,625	1,487,891.26	31,573,733.74
01/01/2038	33,060,375	1,487,891.26	31,572,483.74
01/01/2039	33,062,000	1,487,891.26	31,574,108.74
01/01/2040	33,064,250	1,487,891.26	31,576,358.74
01/01/2041	33,060,000	1,487,891.26	31,572,108.74
01/01/2042	33,061,875	1,487,891.26	31,573,983.74
01/01/2043	33,062,250	1,487,891.26	31,574,358.74
01/01/2044	33,063,500	1,487,891.26	31,575,608.74
01/01/2045	33,062,875	1,487,891.26	31,574,983.74
01/01/2046	33,062,500	1,487,891.26	31,574,608.74
01/01/2047	33,064,250	1,487,891.26	31,576,358.74
01/01/2048	33,060,000	1,487,891.26	31,572,108.74
01/01/2049	33,061,375	1,487,891.26	31,573,483.74
01/01/2050	33,059,750	1,487,891.26	31,571,858.74
01/01/2051	33,061,375	33,808,195.63	-746,820.63
	1,004,703,500	77,700,987.80	927,002,512.20

For illustrative purposes only

Debt Service Reserve Fund (cont'd)

Sources:		
Bond Proceeds:		
Par Amount	513,745,000.00	up from $480,575,000
	513,745,000.00	
Uses:		
Project Fund Deposits:		
Project Fund	478,739,963.84	
Other Fund Deposits:		
Debt Service Reserve Fund	33,064,250.00	
Delivery Date Expenses:		
Cost of Issuance	285,000.00	
Underwriter's Discount	1,651,730.82	increased par = increased UD
	1,936,730.82	
Other Uses of Funds:		
Additional Proceeds	4,055.34	
	513,745,000.00	

Bond Insurance

- Monoline insurance companies guarantee timely payment of debt service in consideration of an up-front insurance premium
- Premium charged equals a percentage of insured debt service
- Issuer may borrow at rating of insurer

Bond Insurance – Premium Verification

Annual Debt Service

Period Ending	Principal	Coupon	Interest	Debt Service
01/01/2021			13,007,250	13,007,250
01/01/2022	7,660,000	5.000%	25,823,000	33,483,000
01/01/2023	8,055,000	5.000%	25,430,125	33,485,125
01/01/2024	8,465,000	5.000%	25,017,125	33,482,125
01/01/2025	8,900,000	5.000%	24,583,000	33,483,000
01/01/2026	9,355,000	5.000%	24,126,625	33,481,625
01/01/2027	9,835,000	5.000%	23,646,875	33,481,875
01/01/2028	10,340,000	5.000%	23,142,500	33,482,500
01/01/2029	10,870,000	5.000%	22,612,250	33,482,250
01/01/2030	11,430,000	5.000%	22,054,750	33,484,750
01/01/2031	12,015,000	5.000%	21,468,625	33,483,625
01/01/2032	12,630,000	5.000%	20,852,500	33,482,500
01/01/2033	13,280,000	5.000%	20,204,750	33,484,750
01/01/2034	13,960,000	5.000%	19,523,750	33,483,750
01/01/2035	14,675,000	5.000%	18,807,875	33,482,875
01/01/2036	15,430,000	5.000%	18,055,250	33,485,250
01/01/2037	16,220,000	5.000%	17,264,000	33,484,000
01/01/2038	17,050,000	5.000%	16,432,250	33,482,250
01/01/2039	17,925,000	5.000%	15,557,875	33,482,875
01/01/2040	18,845,000	5.000%	14,638,625	33,483,625
01/01/2041	19,810,000	5.000%	13,672,250	33,482,250
01/01/2042	20,825,000	5.000%	12,656,375	33,481,375
01/01/2043	21,895,000	5.000%	11,588,375	33,483,375
01/01/2044	23,020,000	5.000%	10,465,500	33,485,500
01/01/2045	24,200,000	5.000%	9,285,000	33,485,000
01/01/2046	25,440,000	5.000%	8,044,000	33,484,000
01/01/2047	26,745,000	5.000%	6,739,375	33,484,375
01/01/2048	28,115,000	5.000%	5,367,875	33,482,875
01/01/2049	29,560,000	5.000%	3,926,000	33,486,000
01/01/2050	31,075,000	5.000%	2,410,125	33,485,125
01/01/2051	32,665,000	5.000%	816,625	33,481,625
	520,290,000		497,220,500	1,017,510,500

Multiply aggregate debt service by 60 bps

Formula Verification

Component	Formula	Value
INS	0.60% of total Debt Service	6,105,063.00
DSRF	10% of Par Amount	52,029,000.00
DSRF	125% of average annual Debt Service	42,396,270.83
DSRF	Maximum annual Debt Service	33,486,000.00
DSRF	Debt Service Reserve Fund	33,486,000.00

For Illustrative purposes only

Bond Insurance (cont'd)

Sources:	
Bond Proceeds:	
Par Amount	520,290,000.00
	520,290,000.00
Uses:	
Project Fund Deposits:	
Project Fund	478,739,963.84
Other Fund Deposits:	
Debt Service Reserve Fund	33,486,000.00
Delivery Date Expenses:	
Cost of Issuance	285,000.00
Underwriter's Discount	1,671,935.23
Bond Insurance	6,105,063.00
	8,061,998.23
Other Uses of Funds:	
Additional Proceeds	2,037.93
	520,290,000.00

up from $513,745,000

increased MADS = increased DSRF

increased par = increased UD

Capitalized Interest

- Portion of bond proceeds set aside to pay interest on the bonds for a specified period of time
- Commonly utilized over the construction period of a revenue-producing project to ensure that debt service expense is not required to be paid from project revenues until the project is operational and producing revenues
- Most commonly net-funded
- Capitalized period usually lasts less than three years
- Issuers typically will not amortize principal during capitalized interest periods

Capitalized Interest (cont'd)

Principal not amortized during capitalized interest period

Capitalized Interest through 3/15/2023

Period Ending	Principal	Coupon	Interest	Debt S
01/01/2021			15,283,875	15,283,875
01/01/2022			30,567,750	30,567,750
01/01/2023			30,567,750	30,567,750
01/01/2024			30,567,750	30,567,750
01/01/2025	10,970,000	5.000%	30,293,500	41,263,500
01/01/2026	11,530,000	5.000%	29,731,000	41,261,000
01/01/2027	12,120,000	5.000%	29,139,750	41,259,750
01/01/2028	12,745,000	5.000%	28,518,125	41,263,125
01/01/2029	13,395,000	5.000%	27,864,625	41,259,625
01/01/2030	14,085,000	5.000%	27,177,625	41,262,625
01/01/2031	14,805,000	5.000%	26,455,375	41,260,375
01/01/2032	15,565,000	5.000%	25,696,125	41,261,125
01/01/2033	16,365,000	5.000%	24,897,875	41,262,875
01/01/2034	17,205,000	5.000%	24,058,625	41,263,625
01/01/2035	18,085,000	5.000%	23,176,375	41,261,375
01/01/2036	19,010,000	5.000%	22,249,000	41,259,000
01/01/2037	19,985,000	5.000%	21,274,125	41,259,125
01/01/2038	21,010,000	5.000%	20,249,250	41,259,250
01/01/2039	22,090,000	5.000%	19,171,750	41,261,750
01/01/2040	23,225,000	5.000%	18,038,875	41,263,875
01/01/2041	24,415,000	5.000%	16,847,875	41,262,875
01/01/2042	25,665,000	5.000%	15,595,875	41,260,875
01/01/2043	26,980,000	5.000%	14,279,750	41,259,750
01/01/2044	28,365,000	5.000%	12,896,125	41,261,125
01/01/2045	29,820,000	5.000%	11,441,500	41,261,500
01/01/2046	31,350,000	5.000%	9,912,250	41,262,250
01/01/2047	32,955,000	5.000%	8,304,625	41,259,625
01/01/2048	34,645,000	5.000%	6,614,625	41,259,625
01/01/2049	36,425,000	5.000%	4,837,875	41,262,875
01/01/2050	38,290,000	5.000%	2,970,000	41,260,000
01/01/2051	40,255,000	5.000%	1,006,375	41,261,375
	611,355,000		609,686,000	1,221,041,000

Capitalized Interest (cont'd)

Net Debt Service

Period Ending	Total Debt Service	Debt Service Reserve Fund	Capitalized Interest	Net Debt Service
01/01/2021	15,283,875		15,283,875	
01/01/2022	30,567,750		30,567,750	
01/01/2023	30,567,750		30,567,750	
01/01/2024	30,567,750	928,437.19	15,283,875	14,355,437.81
01/01/2025	41,263,500	1,856,874.38		39,406,625.62
01/01/2026	41,261,000	1,856,874.38		39,404,125.62
01/01/2027	41,259,750	1,856,874.38		39,402,875.62
01/01/2028	41,263,125	1,856,874.38		39,406,250.62
01/01/2029	41,259,625	1,856,874.38		39,402,750.62
01/01/2030	41,262,625	1,856,874.38		39,405,750.62
01/01/2031	41,260,375	1,856,874.38		39,403,500.62
01/01/2032	41,261,125	1,856,874.38		39,404,250.62
01/01/2033	41,262,875	1,856,874.38		39,406,000.62
01/01/2034	41,263,625	1,856,874.38		39,406,750.62
01/01/2035	41,261,375	1,856,874.38		39,404,500.62
01/01/2036	41,259,000	1,856,874.38		39,402,125.62
01/01/2037	41,259,125	1,856,874.38		39,402,250.62
01/01/2038	41,259,250	1,856,874.38		39,402,375.62
01/01/2039	41,261,750	1,856,874.38		39,404,875.62
01/01/2040	41,263,875	1,856,874.38		39,407,000.62
01/01/2041	41,262,875	1,856,874.38		39,406,000.62
01/01/2042	41,260,875	1,856,874.38		39,404,000.62
01/01/2043	41,259,750	1,856,874.38		39,402,875.62
01/01/2044	41,261,125	1,856,874.38		39,404,250.62
01/01/2045	41,261,500	1,856,874.38		39,404,625.62
01/01/2046	41,262,250	1,856,874.38		39,405,375.62
01/01/2047	41,259,625	1,856,874.38		39,402,750.62
01/01/2048	41,259,625	1,856,874.38		39,402,750.62
01/01/2049	41,262,875	1,856,874.38		39,406,000.62
01/01/2050	41,260,000	1,856,874.38		39,403,125.62
01/01/2051	41,261,375	42,192,312.19		-930,937.19
	1,221,041,000	91,399,483.26	91,703,250	1,037,938,266.74

Gross Capitalized Interest Requirements

Net funded

Capitalized Interest Fund

Date	Deposit	Interest @ 3%	Principal	Debt Service Reserve Fund	Scheduled Draws	Balance
03/01/2020	81,785,616.04					81,785,616.04
09/01/2020		1,226,784.24	13,128,653.57	928,437.19	15,283,875	68,656,962.47
03/01/2021		1,029,854.44	13,325,583.37	928,437.19	15,283,875	55,331,379.10
09/01/2021		829,970.69	13,525,467.12	928,437.19	15,283,875	41,805,911.98
03/01/2022		627,088.68	13,728,349.13	928,437.19	15,283,875	28,077,562.85
09/01/2022		421,163.44	13,934,274.37	928,437.19	15,283,875	14,143,288.48
03/01/2023		212,149.33	14,143,288.48	928,437.19	15,283,875	
	81,785,616.04	4,347,010.82	81,785,616.04	5,570,623.14	91,703,250	

Capitalized Interest (cont'd)

Sources:	
Bond Proceeds:	
Par Amount	611,355,000.00
	611,355,000.00
Uses:	
Project Fund Deposits:	
Project Fund	478,739,963.84
Other Fund Deposits:	
Debt Service Reserve Fund	41,263,875.00
Capitalized Interest	81,785,616.04
	123,049,491.04
Delivery Date Expenses:	
Cost of Issuance	285,000.00
Underwriter's Discount	1,953,052.89
Bond Insurance	7,326,240.00
	9,564,292.89
Other Uses of Funds:	
Additional Proceeds	1,252.23
	611,355,000.00

up from $520,290,000

increased MADS = increased DSRF

increased par = increased UD

increased DS = increased insurance premium

Poll question 3

Issuers may choose to capitalize interest for their bond issue when:

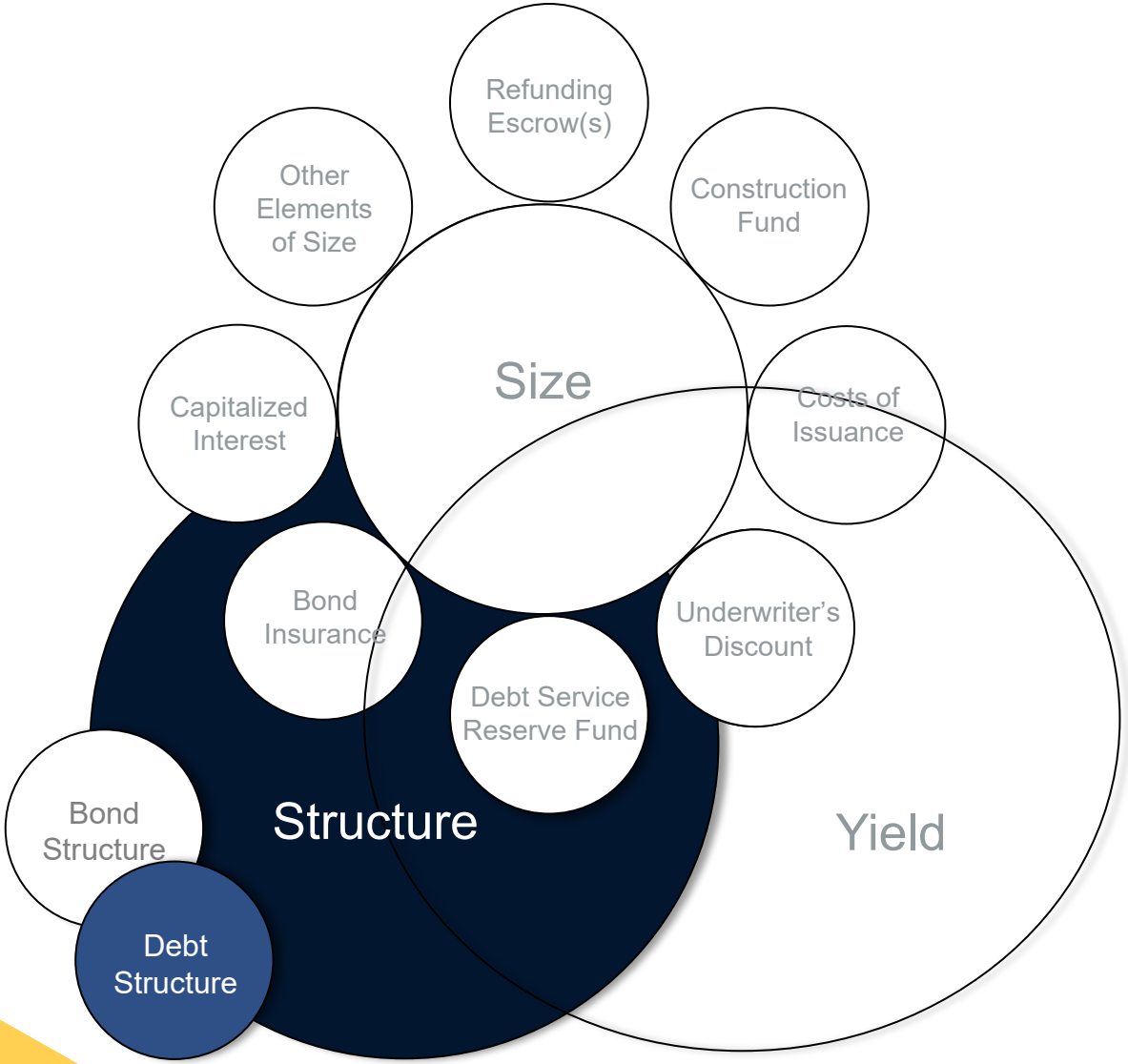
A. The project that the bonds are funding will not produce revenue for several years, while construction is under way.

B. They want to achieve an overall lower par amount of bonds issued.

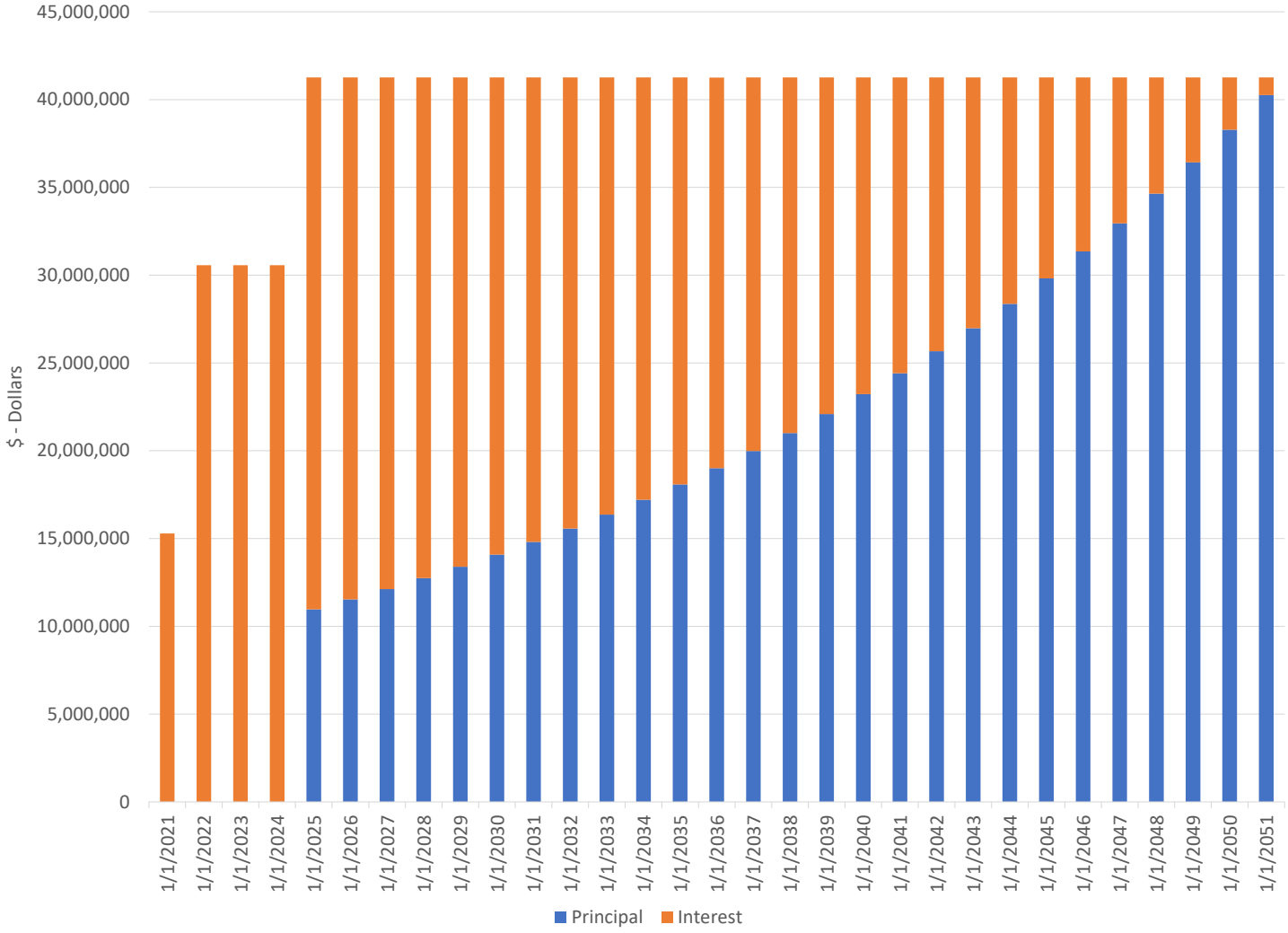
C. They want to lower the all-in cost of the bonds.

D. They want to use the capitalized interest funds to pay for costs of issuance.

Tao of Municipal Modeling — Debt Structure



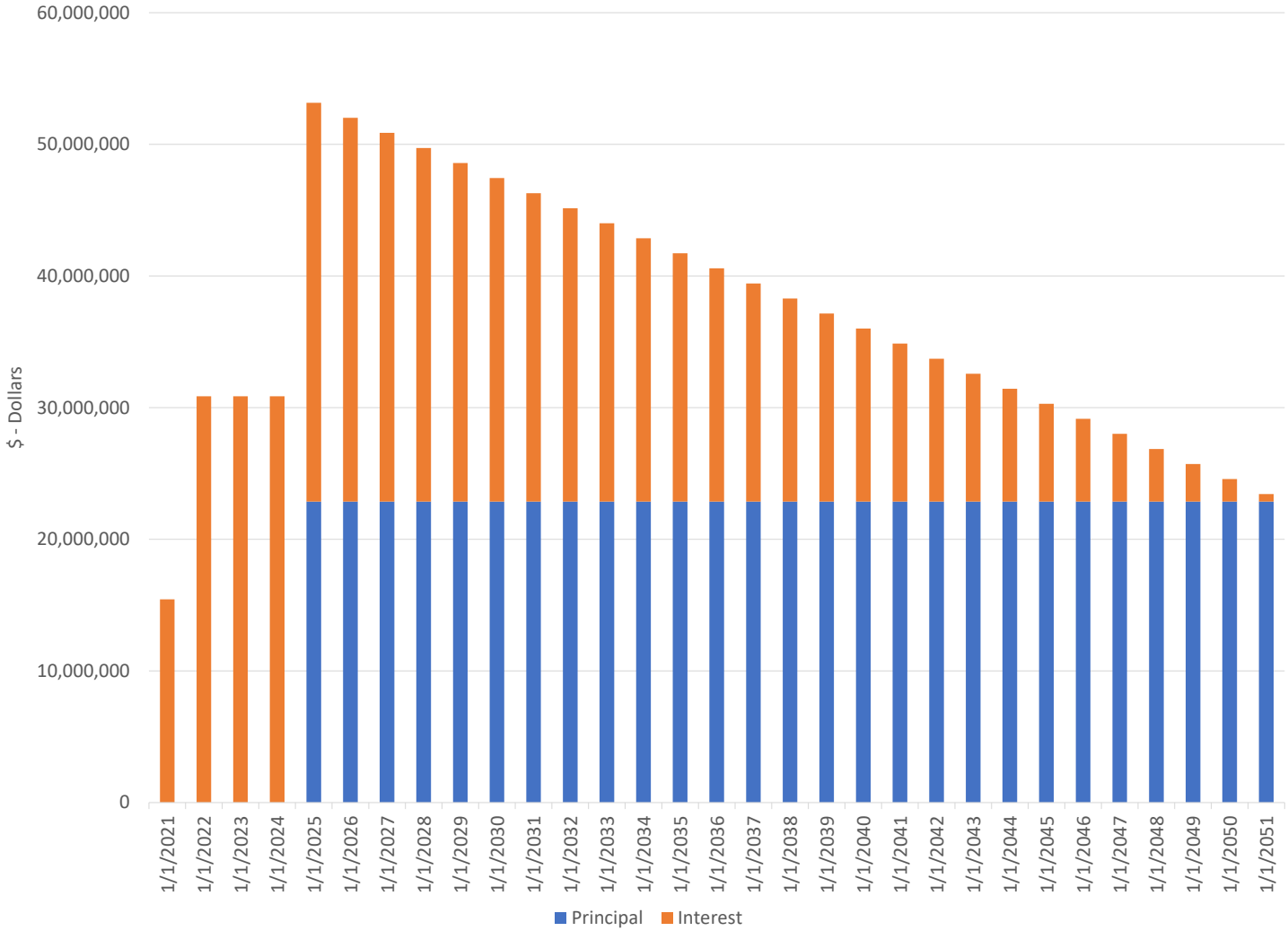
Level Debt Service



Aggregate Debt Service: $1,221,041,000

For Illustrative purposes only

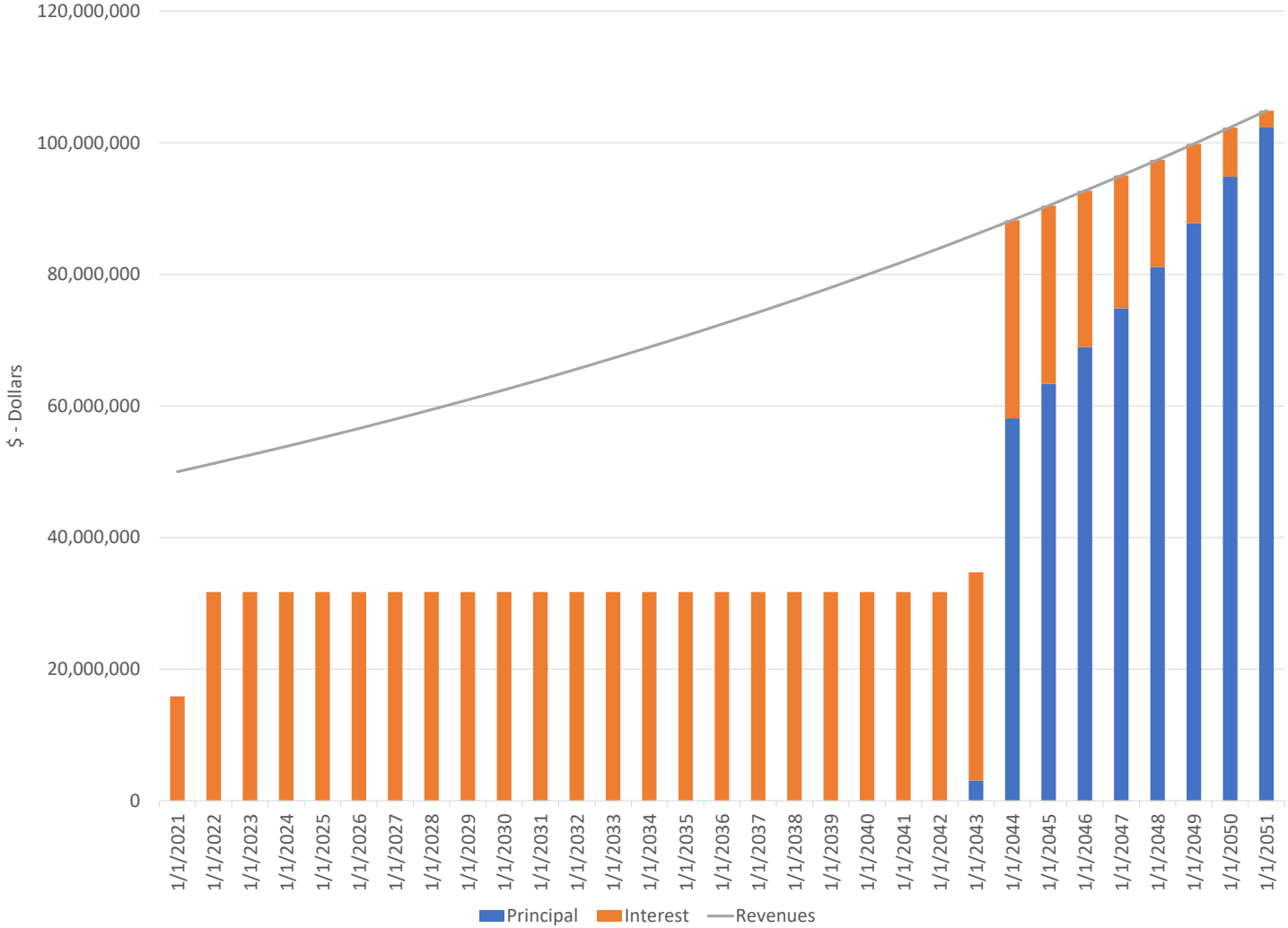
Level Principal Amortization



Aggregate Debt Service: $1,141,889,500

For Illustrative purposes only

Deferred Principal Amortization



Aggregate Debt Service: $1,487,433,500

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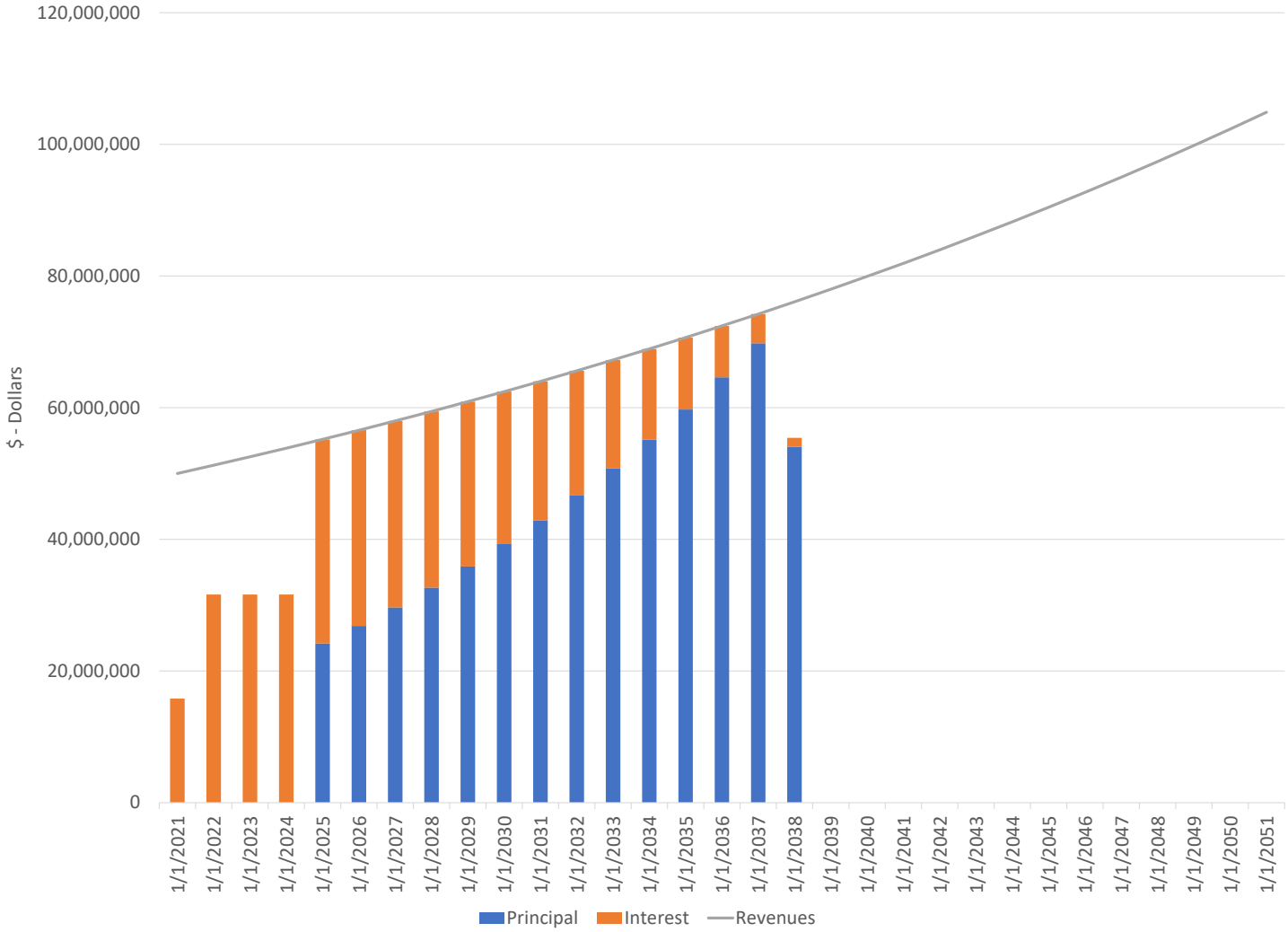
Accelerated Principal Amortization

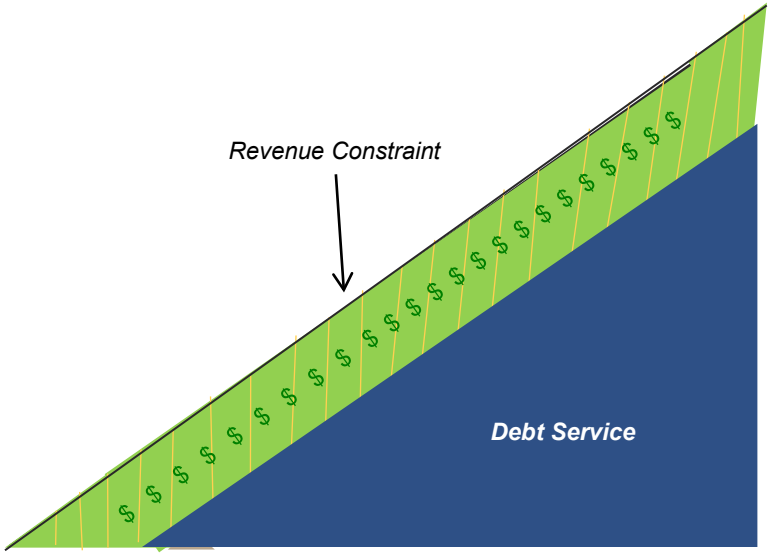


Aggregate Debt Service: $1,001,619,250

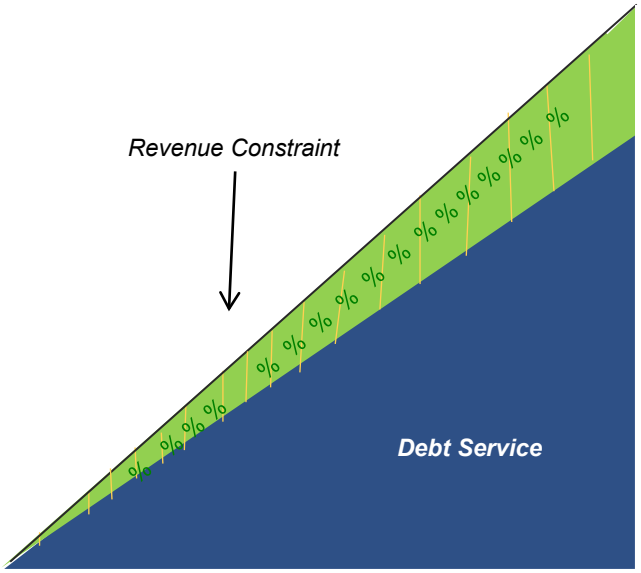
For Illustrative purposes only

Uniform vs. Proportional Debt Service

UNIFORM DEBT SERVICE



PROPORTIONAL DEBT SERVICE



Poll question 4

Which debt service structure would result in the **lowest** overall aggregate dollar cost of debt service if all other variables are held constant (project fund amount, coupons, yields, issuance costs, etc.), in a normal yield curve environment?

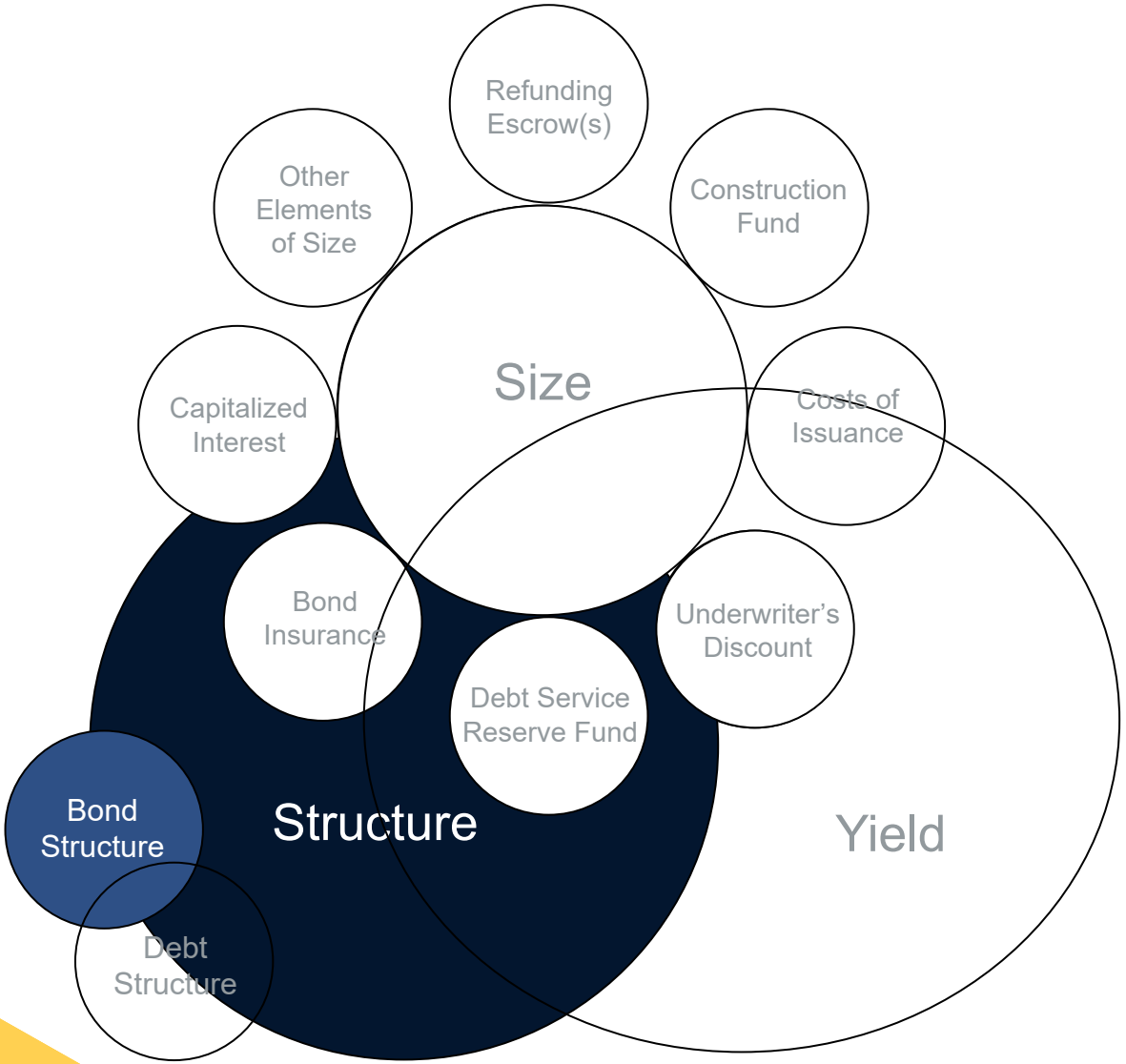
A. Level debt service

B. Equal principal

C. Accelerated principal

D. Deferred principal

Tao of Municipal Modeling — Bond Structure



Coupon/Yield Relationships

For a given coupon, the price an investor is willing to pay for a bond is inversely related to the yield.

	Original Issue Discount (OID)	Par Bond	Original Issue Premium (OIP)
General Rule	Coupon<Yield ⇩ Price<100	Coupon=Yield ⇩ Price=100	Coupon>Yield ⇩ Price>100
Example (20-year bond)*	Coupon=4.00% Yield=5.00% **Price=87.448**	Coupon=5.00% Yield=5.00% **Price=100.000**	Coupon=6.00% Yield=5.00% **Price=112.551**

*Assumes settlement date of 1/1/06 and final maturity of 1/1/26

Issuer/Investor Preferences

- Given the same proceeds and present value of debt service, you would think an issuer would be essentially indifferent between issuing OID, Par, or OIP Bonds

	OID	Par	OIP
Par Amount	55,860,000	50,000,000	42,565,000
Coupon	3.000%	3.75%	5.000%
Yield	3.750%	3.75%	3.750%
Price	89.513%	100.000%	117.478%
Proceeds	50,001,962	50,000,000	50,004,511

Assumes 20 year bond

- Retail investors are typically less sensitive to coupon
  - Typically "buy and hold"
  - Less sensitive to market discount rules
  - Retail-only order periods allow par bonds to be pre-sold
  - Demand is strongest in years 1 - 10 and 20

- Institutional investors are NOT indifferent to coupon
  - Interest rate views (price protection, coupon reinvestment, duration and convexity management)
  - Possible tax implications (market discount rule)
  - Cash flow needs (replace refunded higher coupon bonds)

Price Volatility

- Premium bonds provide price protection against rising interest rates.
- Discount bonds provide opportunity for investors to enhance their return in falling rate environment.

Price Volatility			
	OID	Par	OIP
Purchase Date	1/1/06	1/1/06	1/1/06
Maturity	1/1/26	1/1/26	1/1/26
Coupon	3.000%	3.750%	5.000%
Yield	3.750%	3.750%	3.750%
Price	89.513%	100.000%	117.478%
Purchase Date	4/1/06	4/1/06	4/1/06
Maturity	1/1/26	1/1/26	1/1/26
Coupon	3.000%	3.750%	5.000%
Yield	3.000%	3.000%	3.000%
Price	100.000%	111.111%	129.636%
% Price Change	11.716%	11.111%	10.349%
Purchase Date	4/1/06	4/1/06	4/1/06
Maturity	1/1/26	1/1/26	1/1/26
Coupon	3.000%	3.750%	5.000%
Yield	4.500%	4.500%	4.500%
Price	80.503%	90.248%	106.490%
% Price Change	(10.066%)	(9.752%)	(9.353%)

Most price appreciation

Falling Interest Rate Environment

Rising Interest Rate Environment`

Least price depreciation

For illustrative purposes only

Pricing Callable Bonds

- Depending on the type of bond an investor holds, the call option an issuer holds may affect the yield that the investor expects

	Par	Discount	Premium
Settlement Date	10/1/2007	10/1/2007	10/1/2007
Maturity	10/1/2027	10/1/2027	10/1/2027
Call	10/1/2017	10/1/2017	10/1/2017
Price*	100	87.448	112.551
Coupon	5.000%	4.000%	6.000%
Yield (to Maturity)	5.000%	5.000%	5.000%
Yield (to Call)	5.000%	5.660%	4.432%**

*to maturity
**Yield to worst

- If a callable premium bond is called, the investor receives a lower yield than originally represented ("yield to worst")

Pricing of Callable Premium Bonds

- MSRB rules require issuers to sell OIPs at the price and yield that constitutes the worst case for the investor (i.e., lower yield, higher price).
- A higher coupon premium bond has a better chance of being called, but a bigger "kick" to maturity if it is not called.

Delivery Date	10/1/07
Maturity Date	10/1/27
Coupon	6.000%
Price to Maturity (PTM)	112.551
YTM	5.000%
Call Date	10/1/17
Call Price	100.000
Yield to Worst (at call date)	4.432%
Price to Call (PTC)	112.556
Yield to Maturity (YTM)	5.000%

Issuer's best case (bonds called) / Investor's worst case

Issuer's worst case (bonds not called) / Investor's best case

(Δ = .57% = "Kick to Maturity")

Pricing of Callable Premium Bonds (cont'd)

- Callable premium bonds are usually denoted with an asterisk or footnote when priced to a date other than the final maturity date.

MATURITY DATES, PRINCIPAL AMOUNTS, INTEREST RATES AND PRICES

Due (July 1)	Principal Amount($)	Interest Rate(%)	Price	Due (July 1)	Principal Amount($)	Interest Rate(%)	Price
2005	3,350,000	3.000	100.937	2015	22,025,000	5.000	110.850*
2006	3,495,000	4.000	103.556	2016	18,450,000	4.000	101.118*
2007	3,635,000	5.000	107.481	2017	10,955,000	4.125	101.071*
2008	3,810,000	3.000	102.072	2018	5,755,000	4.250	101.185*
2009	3,930,000	5.000	109.616	2019	6,000,000	4.250	100.548*
2010	4,125,000	5.000	110.122	2020	6,255,000	4.250	100.000
2011	12,285,000	5.000	110.705	2021	6,520,000	4.375	100.347*
2012	12,810,000	5.000	111.108	2022	6,805,000	4.200	98.156
2013	13,240,000	5.000	111.317	2023	7,090,000	4.300	98.228
2014	9,620,000	5.000	111.629	2024	7,395,000	4.500	99.734

* These 2004 Bonds are priced to the July 1, 2014 call date.

Bond Pricing Reports for Callable Premium Bonds

Bond Component	Maturity Date	Amount	Rate	Yield	Price	Yield to Maturity	Call Date	Call Price	Premium (-Discount)
Serial Bonds, Series A of 2016:									
	09/01/2017	2,585,000	4.000%	0.690%	103.975				102,753.75
	09/01/2018	2,690,000	5.000%	0.820%	109.127				245,516.30
	09/01/2019	2,820,000	5.000%	0.960%	112.732				359,042.40
	09/01/2020	2,965,000	5.000%	1.100%	115.993				474,192.45
	09/01/2021	3,110,000	5.000%	1.220%	119.017				591,428.70
	09/01/2022	3,265,000	5.000%	1.360%	121.598				705,174.70
	09/01/2023	3,430,000	5.000%	1.510%	123.749				814,590.70
	09/01/2024	3,600,000	5.000%	1.620%	125.878				931,608.00
	09/01/2025	3,780,000	5.000%	1.740%	127.624				1,044,187.20
	09/01/2026	3,970,000	5.000%	1.860%	129.069				1,154,039.30
	09/01/2027	4,170,000	5.000%	1.990%	127.680 C	2.200%	09/01/2026	100.000	1,154,256.00
	09/01/2028	4,380,000	5.000%	2.060%	126.939 C	2.435%	09/01/2026	100.000	1,179,928.20
	09/01/2029	4,595,000	5.000%	2.110%	126.413 C	2.621%	09/01/2026	100.000	1,213,677.35
	09/01/2030	4,825,000	5.000%	2.160%	125.889 C	2.781%	09/01/2026	100.000	1,249,144.25
	09/01/2031	5,065,000	5.000%	2.220%	125.265 C	2.929%	09/01/2026	100.000	1,279,672.25
	09/01/2032	5,320,000	5.000%	2.280%	124.644 C	3.060%	09/01/2026	100.000	1,311,060.80
	09/01/2033	5,585,000	5.000%	2.330%	124.129 C	3.170%	09/01/2026	100.000	1,347,604.65
	09/01/2034	5,865,000	5.000%	2.370%	123.719 C	3.262%	09/01/2026	100.000	1,391,119.35
	09/01/2035	6,160,000	5.000%	2.400%	123.412 C	3.339%	09/01/2026	100.000	1,442,179.20
	09/01/2036	6,465,000	5.000%	2.450%	122.904 C	3.420%	09/01/2026	100.000	1,480,743.60
		84,645,000							19,471,919.15

Poll question 5

Callable premium bonds must be represented to investors in the Official Statement using which yield option?

A. The lowest possible yield achieved between the bond's first optional redemption date and its maturity date.

B. The highest possible yield achieved between the bond's first optional redemption date and its maturity date

C. A 0% yield.

D. Offering yields are not shown on the Official Statement.

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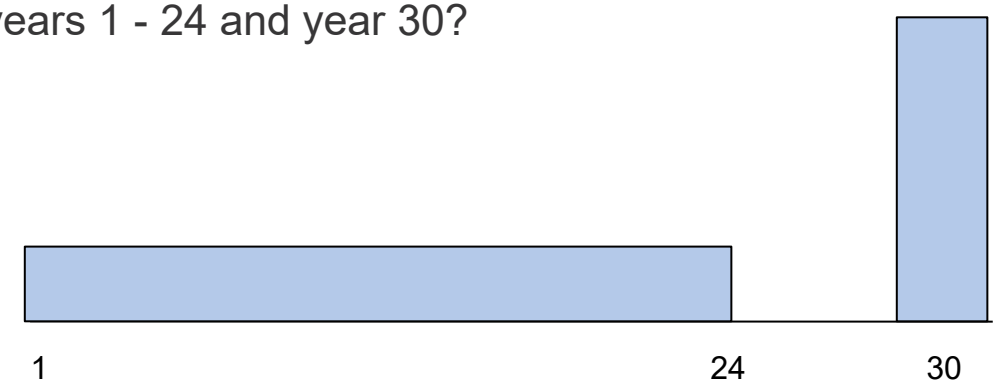
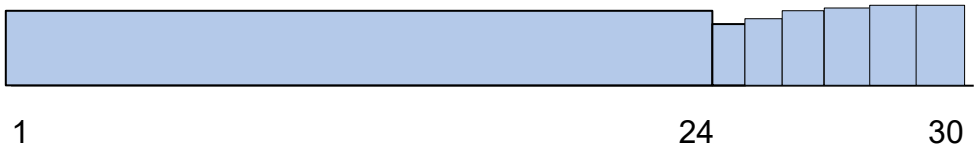
Mandatory Redemption Provisions

- What are the implications if you are selling 30-year bonds and investors are only interested in years 1 - 24 and year 30?



  - Debt service structure will not be level
  - Yields may have to increase in order to interest buyers in years 25-29 (increased cost to issuer)

- To mitigate this, underwriters may spread out the 30 year maturity amount amongst the 25 - 30 year maturities as mandatory sinking funds. All maturities will be priced to the 30 year maturity.



Mandatory Redemption Provisions (cont'd)

$87,230,000 ISSUE 26A BONDS (AMT) MATURITY SCHEDULE†

Maturity Date (May 1)	Principal Amount	Interest Rate	Initial Reoffering Yield	Maturity Date (May 1)	Principal Amount	Interest Rate	Initial Reoffering Yield
2003	$1,275,000	5.00%	4.15%	2011	$2,030,000	5.00%	4.65%
2004	1,350,000	5.00	4.23	2012	2,150,000	5.00	4.75
2005	1,430,000	5.00	4.28	2013	2,280,000	5.00	4.85
2006	1,515,000	5.00	4.32	2014	2,415,000	5.00	4.95
2007	1,610,000	5.00	4.35	2015	2,560,000	5.00	5.03
2008	1,705,000	5.00	4.45	2016	2,715,000	5.00	5.10
2009	1,805,000	5.00	4.50	2017	2,875,000	5.00	5.15
2010	1,915,000	5.00	4.55	2018	3,050,000	5.00	5.20

$14,150,000 5.25% Term Bonds Due May 1, 2022—Yield 5.30%
$17,855,000 5.25% Term Bonds Due May 1, 2026—Yield 5.35%
$22,545,000 5.25% Term Bonds Due May 1, 2030—Yield 5.37%

Term Bond

Mandatory Redemption Provisions (cont'd)

Mandatory Redemption

The Issue 26 Bonds are also subject to redemption prior to their stated maturity dates, in part, by lot, from mandatory sinking fund payments, at the principal amount thereof plus accrued interest thereon to the date of redemption, but without premium, on May 1 in the years and in the amounts set forth below:

ISSUE 26A - (AMT)

2022 Term Bonds		2026 Term Bonds	
Sinking Fund Payment Date (May 1)	Sinking Fund Payment Amount	Sinking Fund Payment Date (May 1)	Sinking Fund Payment Amount
2019	$3,235,000	2023	$4,085,000
2020	3,430,000	2024	4,325,000
2021	3,635,000	2025	4,585,000
2022†	3,850,000	2026†	4,860,000

Optional Redemption Provisions

Optional Redemption

The Bonds, or portions thereof in integral multiples of $5,000, maturing on and after March 1, 2029 are subject to redemption at the option of the Commonwealth prior to scheduled maturity on and after March 1, 2028, as a whole or in part (and if in part, within one or more maturities) at any time and from time to time, in any order of maturity determined by the Commonwealth and by lot within a maturity in such manner as the Commonwealth in its discretion may determine, on at least 30 days (but not more than 60 days) notice, at a redemption price equal to par (100% of stated principal amount) plus accrued interest to the date fixed for redemption.

Bond Statistics - Offsets in Calculations Differ

	TIC	All-in-TIC	Arbitrage Yield
Par Value	200,000,000	200,000,000	200,000,000
+ Accrued Interest	0	0	0
+ Premium (Discount)	0	0	0
- Underwriter's Discount	(2,000,000)	(2,000,000)	
- Cost of Issuance Expense		(300,000)	
- Other Amounts		(1,533,066)	(1,533,066)
Target Value	198,000,000	196,166,934	198,466,934

Bond Insurance

All Discount with Semi-Annual Debt Service

	TIC	All-in-TIC	Arbitrage Yield
Target Value	198,000,000	196,166,934	198,466,934
Target Date (Delivery Date)	5/7/2015	5/7/2015	5/7/2015
Yield	5.218445%	5.420231%	5.167482%

SEMI-ANNUAL DEBT SERVICE					BOND STATISTICS		
Dates	Par	Coupon	Interest	Debt Service	TIC	All-In-TIC	Arb Yield
5/7/2015							
7/1/2015			1,500,000	1,500,000	1,488,454	1,488,015	1,488,565
1/1/2016	15,900,000	5.00%	5,000,000	20,900,000	20,211,752	20,185,946	20,218,279
7/1/2016			4,602,500	4,602,500	4,337,756	4,327,962	4,340,234
1/1/2017	16,695,000	5.00%	4,602,500	21,297,500	19,562,012	19,498,671	19,578,052
7/1/2017			4,185,125	4,185,125	3,746,338	3,730,539	3,750,341
1/1/2018	17,530,000	5.00%	4,185,125	21,715,125	18,944,120	18,845,700	18,969,073
7/1/2018			3,746,875	3,746,875	3,185,627	3,165,964	3,190,615
1/1/2019	18,405,000	5.00%	3,746,875	22,151,875	18,354,806	18,223,593	18,388,115
7/1/2019			3,286,750	3,286,750	2,654,114	2,632,552	2,659,591
1/1/2020	19,325,000	5.00%	3,286,750	22,611,750	17,795,110	17,633,205	17,836,261
7/1/2020			2,803,625	2,803,625	2,150,305	2,128,648	2,155,813
1/1/2021	20,295,000	5.00%	2,803,625	23,098,625	17,265,527	17,074,845	17,314,052
7/1/2021			2,296,250	2,296,250	1,672,732	1,652,634	1,677,850
1/1/2022	21,310,000	5.00%	2,296,250	23,606,250	16,758,993	16,541,359	16,814,444
7/1/2022			1,763,500	1,763,500	1,220,141	1,203,113	1,224,482
1/1/2023	22,375,000	5.00%	1,763,500	24,138,500	16,276,402	16,033,489	16,338,370
7/1/2023			1,204,125	1,204,125	791,286	778,711	794,496
1/1/2024	23,495,000	5.00%	1,204,125	24,699,125	15,818,194	15,551,522	15,886,307
7/1/2024			616,750	616,750	384,944	378,083	386,698
1/1/2025	24,670,000	5.00%	616,750	25,286,750	15,381,389	15,092,386	15,455,296
Total	**200,000,000**		**55,511,000**	**255,511,000**	**198,000,000**	**196,166,934**	**198,466,934**

Definitions

- True Interest Cost (TIC):
  Rate, compounded semi-annually, necessary to discount the amounts payable on the respective principal and interest payment dates to the purchase price received for the new issue securities. TIC computations produce a figure slightly different from the net interest cost ("NIC") method since TIC considers the time value of money while NIC does not.

- All-In True Interest Cost (AIC):
  Discount rate, assuming semiannual compounding and a 30/360-day calendar, which is the net present value (NPV) of all payments of principal, interest, and future expenses equal to the par amount of bonds plus accrued interest plus premium less original issue discount less insurance premium less costs of issuance less other up front expenses, as applicable. The cashflows can be discounted to either the delivery date or the dated date.

- Arbitrage Yield:
  "Arbitrage" refers to the difference between the interest rate at which bonds are issued, a.k.a. the Arbitrage Yield, and the interest rate at which bond proceeds are invested, a.k.a. the Investment Yield. If the Investment Yield exceeds the Arbitrage Yield, the dollar difference in earnings is "positive arbitrage" and must be rebated to the IRS unless certain exceptions are met. Common exceptions are for "small issuers" and for issuers who meet certain "spend-down" requirements. Conversely, if the Investment Yield is less than the Arbitrage Yield, the dollar difference in earnings is "negative arbitrage" and no rebate is owed.

Source: MSRB

Definitions (cont'd)

- **Net Interest Cost (NIC):**
  A method of computing the interest expense to the issuer of bonds, which may serve as the basis of award in a competitive sale. NIC takes into account any premium or discount applicable to the issue, as well as the dollar amount of coupon interest payable over the life of the issue. NIC does not take into account the time value of money (as would be done in other calculation methods, such as the "true interest cost" (TIC) method). The term "net interest cost" refers to the overall rate of interest to be paid by the issuer over the life of the bonds. (Disadvantage: No consideration for time value of money)

$$\frac{\text{Total coupon interest payments + premium(discount)}}{\text{Bond Years}}$$

Why Arbitrage Yield Matters – IRS Regulations

IRS Regulations of Municipal Bonds

- Benefit of tax-exempt bonds:
  - Cost of financing is generally lower for issuers – *public benefit for public projects*
  - Interest paid to bondholders is not includable in their gross income for federal income tax purposes.
  - *This tax-exempt status remains throughout the life of the bonds provided that all applicable federal tax laws are satisfied both at the time the bonds are issued and throughout the term of the bonds.*
- Federal Laws
  - Tax Code 1954 and 1986 - § 103, 141-150
  - Constitution
  - Regulations
  - Rulings, Revenue Procedures, Private Letter Rulings
- Primary objectives of federal laws
  - No private activity
  - No arbitrage

Source: IRS / Federal Tax Code

Arbitrage Rebate & Yield Restriction – It's the Law

- To prevent abuses, the tax code limits the permitted uses of tax-exempt bonds
  - Prevents issuance of more bonds than are necessary
  - Prevents issuance of bonds earlier than is necessary
  - Prevents bonds from remaining outstanding longer than is necessary
  - **In other words, borrow what you need, when you need it, for an appropriate duration based on what is being financed.**
- Tax law and Regulations create financial disincentives (i.e., arbitrage rebate) to prevent issuance of tax-exempt debt for profit-driven reasons
  - Yield restriction – IRC Section 148(b)
  - Arbitrage rebate – IRC Section 148(f)
  - Overlapping requirements – "Belt & Suspenders"
- Applies to **every** tax-exempt borrowing and some taxable subsidy obligations

Exceptions to Arbitrage Rebate

- The Small Issuer Exception

- The Spending Exceptions
  - 6-month spending exception
  - 18-month spending exception
  - 2-year spending exception

- "Bona Fide" Debt Service Fund exception
- Electing to pay the 1.5% penalty in lieu of rebate
- Investing in tax-exempt obligations (eliminating the "arbitrage")

Source: IRS / Federal Tax Code

Small Issuer Exception

- Calendar year exception
  - $5 million of governmental bonds for municipalities
  - $15 million per year for public school construction
- Requirements
  - General taxing powers
  - Governmental bonds (not private activity bonds)
  - At least 95% of the proceeds must be used for local governmental activities
- Exclusion of current refunding issue in certain circumstances

Source: IRS / Federal Tax Code

Spending Exceptions – Can Be Internally Monitored

- "Reward" for spending bond proceeds quickly
- Allowed to keep positive arbitrage
- Simple way to establish compliance (no FV, no yields)
- Must meet each benchmark, no catch-up allowed

* Exceptions for 5% of the proceeds of the issue if spent within one year

** De minimis (lesser of 3% or $250K) and reasonable retainage (5% spent in 12 months) exceptions may apply for last benchmark

6-Month	
All gross proceeds	
✓ 6 months	100% *

18-Month	
All new money	
✓ 6 months	15%
✓ 12 months	60%
✓ 18 months	100% **

2-Year (ACP)	
Construction issues	
✓ 6 months	10%
✓ 12 months	45%
✓ 18 months	75%
✓ 24 months	100% **

Source: IRS / Federal Tax Code

Funds Subject to Rebate

PROCEEDS	+	REPLACEMENT PROCEEDS	=	GROSS PROCEEDS
Sale Proceeds / Investment Proceeds • Project / Construction Funds • Capitalized Interest Funds • Debt Service Reserve Funds • Escrow Funds • Costs of Issuance Funds • Interest earnings Transferred Proceeds Any of the above		Cash / Equity / Revenue Funded • Debt Service Funds • Debt Service Reserve Funds • Any “Pledged” Fund		All subject to Rebate Exceptions may apply

Thank you.

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