

Advanced Refunding Analysis Using Micromuni Debt And Micromuni Sizing

From
Financial Management Systems, Inc.

Disclaimer

This advanced refunding analysis is in no way intended to illustrate all the methods and techniques available in Micromuni Debt and Micromuni Sizing. We will evaluate an existing bond issue that is a possible consideration for refinancing. While evaluating an existing bond issue for refinancing, you will be familiarized with Micromuni Debt and Micromuni Sizing features and methods to obtain bond solutions, price bonds, compare bond issue savings, and present value calculations.

Note: The first few pages of this tutorial are like the “Micromuni Debt Brief Look” but is included as a reminder of how Micromuni Debt, and Micromuni Sizing, handle bond issues.

What is Micromuni Debt

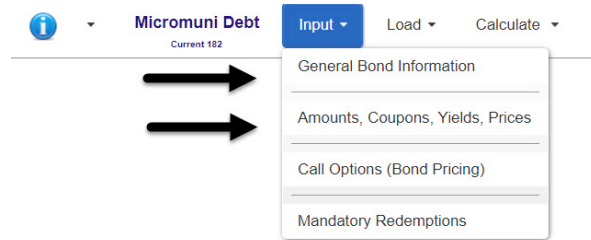
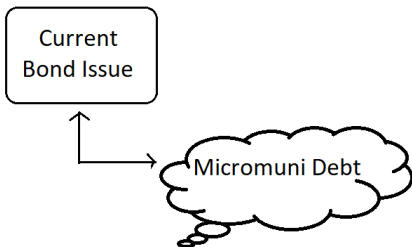
- A highly flexible software tool for analyzing the cash flows associated with a potential refinancing of an existing bond issue (or issues), or for simply structuring new debt.
- Save several bond issues within your unique database. Each bond issue is identified by a Project Name, Key Name, and a unique numeric Key ID generated by Micromuni Debt.
- Evaluates the repayment structure of tax-exempt debt obligations.
- Performs bond calculations, NIC, TIC, Arbitrage yield,
- Used for competitive bid calculations and bid verifications.
- Consolidates multiple bond issues into a single debt service stream.
- Calculates bond maturities for Level, Accelerated, Deferred, and Uniform Debt Service. Solutions can include prior debt service for wraparound Debt Service.
- Reports include Bond Issue Debt Service, Consolidated Debt Service, Debt Service Savings, Bond Production.

Micromuni Debt and Micromuni Sizing have the capability of handling two sets of bond issue cash flows. Each set contains a complete set of information about a bond issue, such as the dated date, delivery date, first and last maturity dates, and all the cash flows that represent the debt service principal and interest repayments. The two bond issues are referred to as the "Current Bond Issue" and the "Prior Bond Issue".



Current Bond Issue

The "Current Bond Issue" is the work area where all bond information is entered via input pages. You can enter and modify the bond issue information while it is stored in the program's current issue workspace. The current issue data is saved in your database and can be loaded into the current issue workspace or loaded into the prior issue workspace.



Bond Maturity Dates

Save Info

Par Amount: \$20,225,000.00 Denomination: 5,000.00

Dated Date: 1/1/2021 Delivery Date: 1/15/2021

First Coupon: 4/1/2021 First Maturity Date: 4/1/2022

Fiscal (Interest Payment Date): 4/1/2021 Last Maturity Date: 4/1/2041

Interest Frequency: Semi-Annual Maturity Frequency: Annual

Year for Interest Calculations: 30/360 Data Share: No

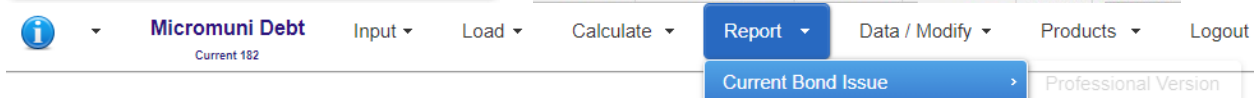
Project Name: State and Local Governments

Key Name: Municipal Financing Project

Report Titles:

- State and Local Governments
- Municipal Financing Project
-

Maturity Date	Amount	Bond Type	Coupon	Yield	Price
04/01/2022	\$975,000.00	Standard	0.100000	0.000000	100.000000
04/01/2023	\$975,000.00	Standard	0.150000	0.000000	100.000000
04/01/2024	\$980,000.00	Standard	0.200000	0.000000	100.000000
04/01/2025	\$980,000.00	Standard	0.250000	0.000000	100.000000
04/01/2026	\$985,000.00	Standard	0.300000	0.000000	100.000000
04/01/2027	\$985,000.00	Standard	0.350000	0.000000	100.000000
04/01/2028	\$990,000.00	Standard	0.400000	0.000000	100.000000
04/01/2029	\$995,000.00	Standard	0.450000	0.000000	100.000000
04/01/2030	\$995,000.00	Standard	0.000000	0.000000	100.000000
04/01/2031	\$995,000.00	Standard	0.550000	0.000000	100.000000
04/01/2032	\$1,005,000.00	Standard	0.600000	0.000000	100.000000
04/01/2033	\$1,010,000.00	Standard	0.650000	0.000000	100.000000
04/01/2034	\$1,015,000.00	Standard	0.700000	0.000000	100.000000
04/01/2035	\$1,025,000.00	Standard	0.750000	0.000000	100.000000
04/01/2036	\$1,030,000.00	Standard	0.800000	0.000000	100.000000
04/01/2037	\$1,040,000.00	Standard	0.850000	0.000000	100.000000
04/01/2038	\$1,045,000.00	Standard	0.900000	0.000000	100.000000
04/01/2039	\$1,055,000.00	Standard	0.950000	0.000000	100.000000
04/01/2040	\$1,065,000.00	Standard	1.000000	0.000000	100.000000
04/01/2041	\$1,080,000.00	Standard	1.050000	0.000000	100.000000



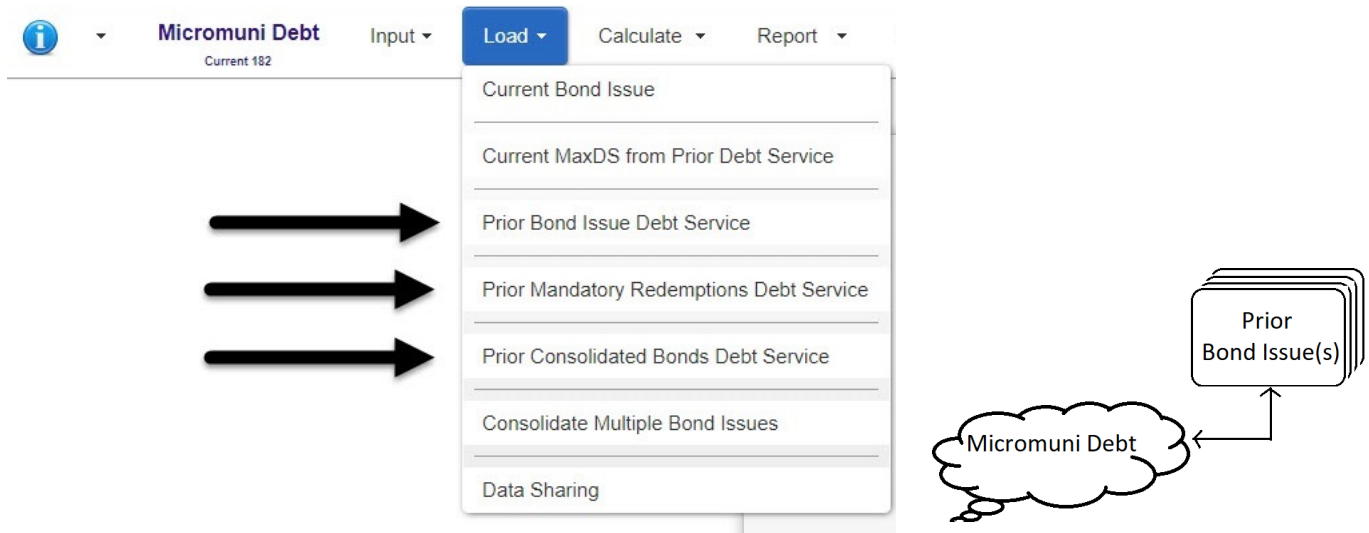
State and Local Governments
Municipal Financing Project
Delivery: January 15, 2021

Debt Service Schedule

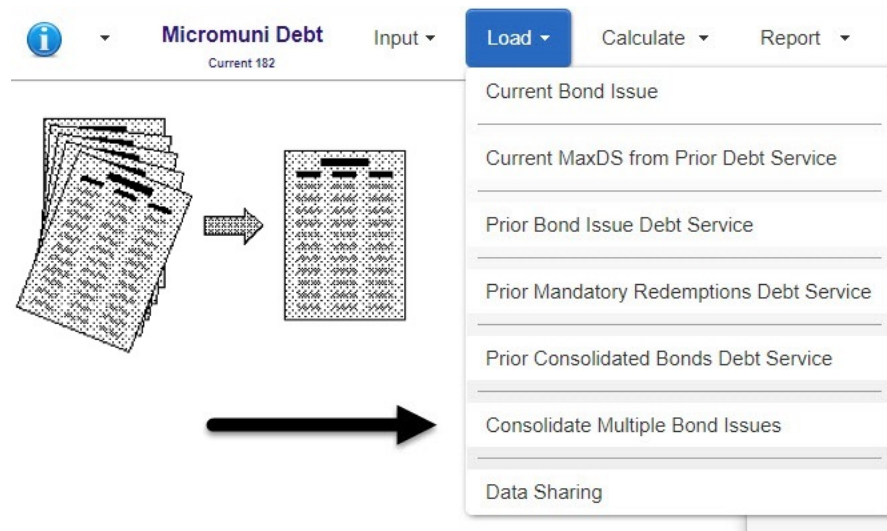
Date	Principal	Coupon	Yield	Interest	Period Total	Fiscal Total
4/1/2021				28,261.25	28,261.25	28,261.25
10/1/2021				56,522.50	56,522.50	56,522.50
4/1/2022	975,000.00	0.1000	0.1000	56,522.50	1,031,522.50	1,088,045.00
10/1/2022				56,035.00	56,035.00	56,035.00
4/1/2023	975,000.00	0.1500	0.1500	56,035.00	1,031,035.00	1,087,070.00
10/1/2023				55,303.75	55,303.75	55,303.75
4/1/2024	980,000.00	0.2000	0.2000	55,303.75	1,035,303.75	1,090,607.50
10/1/2024				54,323.75	54,323.75	54,323.75
4/1/2025	980,000.00	0.2500	0.2500	54,323.75	1,034,323.75	1,088,647.50
10/1/2025				53,098.75	53,098.75	53,098.75
4/1/2026	985,000.00	0.3000	0.3000	53,098.75	1,038,098.75	1,091,197.50
10/1/2026				51,621.25	51,621.25	51,621.25
4/1/2027	985,000.00	0.3500	0.3500	51,621.25	1,036,621.25	1,088,242.50
10/1/2027				49,887.50	49,887.50	49,887.50
4/1/2028	990,000.00	0.4000	0.4000	49,887.50	1,038,887.50	1,089,795.00
10/1/2028				47,917.50	47,917.50	47,917.50
4/1/2029	995,000.00	0.4500	0.4500	47,917.50	1,042,917.50	1,090,835.00
10/1/2029				45,678.75	45,678.75	45,678.75
4/1/2030	995,000.00			45,678.75	1,040,678.75	1,088,357.50
10/1/2030				45,678.75	45,678.75	45,678.75
4/1/2031	995,000.00	0.5500	0.5500	45,678.75	1,040,678.75	1,088,357.50
10/1/2031				42,942.50	42,942.50	42,942.50
4/1/2032	1,005,000.00	0.6000	0.6000	42,942.50	1,047,942.50	1,090,885.00
10/1/2032				39,927.50	39,927.50	39,927.50
4/1/2033	1,010,000.00	0.6500	0.6500	39,927.50	1,049,927.50	1,089,855.00
10/1/2033				36,645.00	36,645.00	36,645.00

Prior Bond Issue

The "Prior Bond Issue" is the work area where bond information, previously saved, can be loaded, through the "Load" menu item and "Prior Bond Debt Service" submenu item. The "Prior Bond Issue" can be used for bond issue comparisons with the "Current Bond Issue" or used for wraparound bond solutions so that the combination of the Current and Prior Bond Issues provide a desired debt service.



Additionally, using the "Load" menu item and "Consolidate Multiple Bond Issues" submenu item you can consolidate several bond issues into one set of cash flows and load it in the prior issue workspace. This feature is very helpful in advanced refunding's when you are evaluating various combinations of prior debt service.



How To Use This Tutorial

General Instructions

Because each step of the tutorial depends on the previous step, it is important to complete the tutorial at one sitting. If it is necessary for you to stop before completing it, save all your data and exit the program. When you begin again, Load the Current Bond Issue, (and Prior Bond Issue, if necessary), and Micromuni Debt will load all bond information, and you can continue from where you left off.

Details of Use

Most of the pages you will see and the reports you will print are reproduced in the tutorial to help you orient yourself to where you are. They also serve as checkpoints so you can make sure you are performing the steps correctly.

Menu Items

To select a menu item, move your mouse over any menu item, and a dropdown list of submenu items will appear. Select any submenu item by clicking your mouse.

Data Entry

Data Entry Web Pages have a "Save" button. If you have entered data or modify existing data, you must click the Save button for the information to be saved. If not, the changes will be lost.

Micromuni Debt and Micromuni Sizing bond issue keys

Micromuni identifies each bond issue by a key number that Micromuni generates. If you have created a bond issue or loaded a previous bond issue, Micromuni will display the Current and/or Prior bond issue numbers beneath the product name in the menu bar. When you log out of Micromuni (via any product, Debt or Sizing), the last set of bond issue numbers you were using will be remembered by Micromuni when you log in again.

When using Micromuni Online

One great feature of Micromuni Online is that, within the same web browser, you can have a browser tab open for each product. You can have Micromuni Debt open in one browser tab and Micromuni Sizing open in another browser tab. You can also have just one tab open, switch between Micromuni products (Debt or Sizing), return to your original product and the bond issue key numbers you were working on are still active.

Tutorial Purpose and Assumptions

Purpose of this Tutorial

This tutorial leads you through the process of using Micromuni Sizing to determine a bond solution for a project financing.

Tutorial Assumptions (Entering Data).

The assumptions that define this tutorial's scenario are explained on the following pages.

Existing Bond Issue Assumptions

Assume an existing bond issue was issued with a “Dated Date” of January 1, 2018, and a “Delivery Date” of January 15, 2018.

The bonds will pay interest semi-annually commencing on July 1, 2018.

Principal will be repaid annually from July 1, 2019, through July 1, 2038, with the following coupons and prices.

No.	Date	Bond Type	Amount	Coupon / Yield	Price
1)	7/ 1/19	Standard	\$500,000	1.500000	100.000000
2)	7/ 1/20	Standard	\$500,000	1.500000	100.000000
3)	7/ 1/21	Standard	\$500,000	1.500000	100.000000
4)	7/ 1/22	Standard	\$500,000	1.500000	100.000000
5)	7/ 1/23	Standard	\$500,000	1.500000	100.000000
6)	7/ 1/24	Standard	\$500,000	2.000000	100.000000
7)	7/ 1/25	Standard	\$500,000	2.000000	100.000000
8)	7/ 1/26	Standard	\$500,000	2.000000	100.000000
9)	7/ 1/27	Standard	\$500,000	2.000000	100.000000
10)	7/ 1/28	Standard	\$500,000	2.000000	100.000000
11)	7/ 1/29	Standard	\$600,000	3.000000	100.000000
12)	7/ 1/30	Standard	\$600,000	3.000000	100.000000
13)	7/ 1/31	Standard	\$600,000	3.000000	100.000000
14)	7/ 1/32	Standard	\$600,000	3.000000	100.000000
15)	7/ 1/33	Standard	\$600,000	3.000000	100.000000
16)	7/ 1/34	Standard	\$600,000	3.000000	100.000000
17)	7/ 1/35	Standard	\$600,000	3.000000	100.000000
18)	7/ 1/36	Standard	\$600,000	3.000000	100.000000
19)	7/ 1/37	Standard	\$600,000	3.000000	100.000000
20)	7/ 1/38	Standard	\$600,000	3.000000	100.000000

The bonds were issued with a call on 7/1/2028 @ 100.00 (Par Call) for all bond maturing from 7/1/2029 thru 7/1/2038.

New Bond Issue Assumptions

Assume the new bond issue will have a “Dated Date” of July 1, 2021, and a “Delivery Date” of July 15, 2021.

The bonds will pay interest semi-annually commencing on January 1, 2022.

Principal will be repaid annually from July 1, 2022, through July 1, 2041, with the following coupons and prices.

No.	Date	Bond Type	Coupon / Yield	Price
1)	7/ 1/22	Standard	0.750000	100.000000
2)	7/ 1/23	Standard	0.800000	100.000000
3)	7/ 1/24	Standard	0.850000	100.000000
4)	7/ 1/25	Standard	0.900000	100.000000
5)	7/ 1/26	Standard	0.950000	100.000000
6)	7/ 1/27	Standard	1.000000	100.000000
7)	7/ 1/28	Standard	1.050000	100.000000
8)	7/ 1/29	Standard	1.100000	100.000000
9)	7/ 1/30	Standard	1.150000	100.000000
10)	7/ 1/31	Standard	1.200000	100.000000
11)	7/ 1/32	Standard	1.250000	100.000000
12)	7/ 1/33	Standard	1.300000	100.000000
13)	7/ 1/34	Standard	1.350000	100.000000
14)	7/ 1/35	Standard	1.400000	100.000000
15)	7/ 1/36	Standard	1.450000	100.000000
16)	7/ 1/37	Standard	1.500000	100.000000
17)	7/ 1/38	Standard	1.550000	100.000000
18)	7/ 1/39	Standard	1.600000	100.000000
19)	7/ 1/40	Standard	1.650000	100.000000
20)	7/ 1/41	Standard	1.700000	100.000000

We will assume an underwriter’s discount of 7.0 dollars per bond and bond insurance of .25% of the total bond debt service less accrued interest.

Initially, we will assume that the par amount of the new bond issue will \$10,000,000, in order to determine the arbitrage yield and estimate cost of the escrow.

We will enter coupons that reflect the current yield on municipal bonds. Then we will use the Micromuni Debt options to set the yields equal to the coupons.

We will then select coupons that will result in the new issue being sold as premium bonds to cover the underwriter’s expense and the bond insurance. The Net to the Issuer will be an amount that will be used to cover the cost of the escrow for the called bond debt service. The new issue TIC (which will not include the underwriter’s expense and bond insurance) will be used to present value the old called bond debt service (Mandatory Bond Redemptions). This present value amount reflects the cost of the escrow.

There are no call options for this scenario.

A Call option would reduce the bond production and result in increased new issue coupons.

These assumptions use only Micromuni Debt to estimate an advanced refunding of an old bond issue with only underwriter’s expense, bond insurance and estimated cost of escrow securities.

General Bond Information – New Refunding Bonds

Using the “Input” menu item, select the “General Bond Information” submenu item.
Enter the general bond issue assumptions.

The “Bond Maturity Dates” tab of your page should look like this:

Bond Maturity Dates	Interest Calc Methods	Convertible CABs	Underwriters Discount	Bond Insurance
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Save

Bond Maturity Dates

Info

Par Amount

\$10,000,000.00

Denomination

5,000.00

Dated Date

7/1/2021

Delivery Date

7/15/2021

First Coupon

1/1/2022

First Maturity Date

7/1/2022

Fiscal (Interest Payment Date)

7/1/2022

Last Maturity Date

7/1/2041

Interest Frequency

Semi-Annual

Maturity Frequency

Annual

Year for Interest Calculations

30/360

Data Share

No

Project Name

State and Local Governments

Key Name

Municipal Debt Analysis

Report Titles

1

State and Local Governments

2

Municipal Debt Analysis

3

2021 Series A Refunding Bonds

Be certain to press the “**SAVE**” button.

General Bond Information – New Refunding Bonds

(continued) – Underwriters Discount

Now select the “Underwriters Discount” tab of the “General Bond Information” page and enter the Underwriters Discount of 7.0 dollars per bond, and make sure that the Underwriters Discount is based on the “Par of the Issue”.

The “Underwriters Discount” tab of your page should look like this:

Save

Underwriters Discount Information

Info

Underwriters Discount Based on

A - Par of the Issue

Options A and B Only:

Spread Per Thousand (e.g. 27.5)

7.000000

Option C Only:

Bid Price (% or dollar amount)

0.000000

(Values 200 or less are percentage - Greater than 200 are a dollar amount)

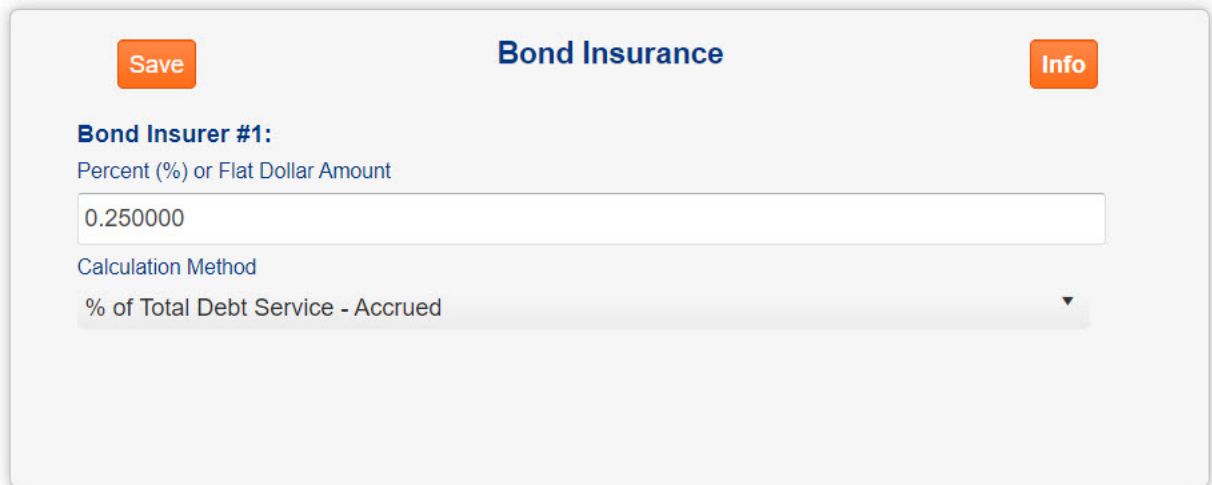
Be certain to press the “**SAVE**” button.

General Bond Information – New Refunding Bonds

(continued) – Bond Insurance

Now select the “Bond Insurance” tab of the “General Bond Information” page and enter the Bond Insurance of 0.25 for the percent of bond insurance. Make sure that the Bond Insurance is “Calculation Method” is set to “% of Total Debt Service - Accrued”.

The “Bond Insurance” tab of your page should look like this:



The screenshot shows a software interface for the "Bond Insurance" tab. At the top, there is a "Save" button on the left and an "Info" button on the right, both in orange. The title "Bond Insurance" is centered at the top in blue. Below the title, the section "Bond Insurer #1:" is displayed. Under this section, there is a label "Percent (%) or Flat Dollar Amount" followed by a text input field containing the value "0.250000". Below the input field, there is a label "Calculation Method" followed by a dropdown menu showing the selected option " % of Total Debt Service - Accrued".

Be certain to press the **“SAVE”** button.

Bond Maturity Coupons and Prices – New Refunding Bonds

Using the “Input” menu item, select the “Amounts, Coupons, Yields, Prices” submenu item. Here we enter the bond maturity amounts, coupons, prices, maximum allowable debt service and takedowns for each maturity. From the General Bond Information page, Micromuni Debt has generated all the bond maturity dates and set the default values. We will only enter the coupons for this tutorial.

First highlight the coupons that will be changed by clicking the first coupon to be changed with your mouse. The highlighted coupons will be changed soon.

Next enter a value of “20/.75” in the text box above the grid. This is the initial coupon value. Now enter an increasing value of “.05” for subsequent coupons, which will receive a value of 0.8, 0.85, 0.9, etc. (Note: This data entry is slightly different from Micromuni Sizing.)

Your page should look like this:

<div> <div>Save</div> <div>Add Row</div> <div>Cancel Changes</div> <div>BOND MATURITIES</div> </div> <div> <div>Change to 20/.75</div> <div>Increase by .05</div> <div>Value</div> <div>Change Selections</div> <div>Video(s)</div> </div> <div>Note: You must press the Save Button to complete changes, inserts and deletions.</div>						
Maturity Date	Amount	Bond Type	Coupon	Yield	Price	
07/01/2022	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2023	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2024	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2025	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2026	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2027	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2028	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2029	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2030	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2031	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2032	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2033	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2034	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2035	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2036	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2037	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2038	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2039	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2040	\$0.00	Standard	0.000000	0.000000	100.000000	
07/01/2041	\$0.00	Standard	0.000000	0.000000	100.000000	

Lastly press the “Change Selections” button, which is highlighted in orange. Your completed page should look like this:

<div> <div>Save</div> <div>Add Row</div> <div>Cancel Changes</div> <div>BOND MATURITIES</div> </div> <div> <div>Change to 20/.75</div> <div>Increase by .05</div> <div>Value</div> <div>Change Selections</div> <div>Video(s)</div> </div> <div>Note: You must press the Save Button to complete changes, inserts and deletions.</div>						
Maturity Date	Amount	Bond Type	Coupon	Yield	Price	
07/01/2022	\$0.00	Standard	0.750000	0.000000	100.000000	
07/01/2023	\$0.00	Standard	0.800000	0.000000	100.000000	
07/01/2024	\$0.00	Standard	0.850000	0.000000	100.000000	
07/01/2025	\$0.00	Standard	0.900000	0.000000	100.000000	
07/01/2026	\$0.00	Standard	0.950000	0.000000	100.000000	
07/01/2027	\$0.00	Standard	1.000000	0.000000	100.000000	
07/01/2028	\$0.00	Standard	1.050000	0.000000	100.000000	
07/01/2029	\$0.00	Standard	1.100000	0.000000	100.000000	
07/01/2030	\$0.00	Standard	1.150000	0.000000	100.000000	
07/01/2031	\$0.00	Standard	1.200000	0.000000	100.000000	
07/01/2032	\$0.00	Standard	1.250000	0.000000	100.000000	
07/01/2033	\$0.00	Standard	1.300000	0.000000	100.000000	
07/01/2034	\$0.00	Standard	1.350000	0.000000	100.000000	
07/01/2035	\$0.00	Standard	1.400000	0.000000	100.000000	
07/01/2036	\$0.00	Standard	1.450000	0.000000	100.000000	
07/01/2037	\$0.00	Standard	1.500000	0.000000	100.000000	
07/01/2038	\$0.00	Standard	1.550000	0.000000	100.000000	
07/01/2039	\$0.00	Standard	1.600000	0.000000	100.000000	
07/01/2040	\$0.00	Standard	1.650000	0.000000	100.000000	
07/01/2041	\$0.00	Standard	1.700000	0.000000	100.000000	

Be certain to press the “**SAVE**” button.

Bond Maturity Coupons and Prices – New Refunding Bonds (continued)

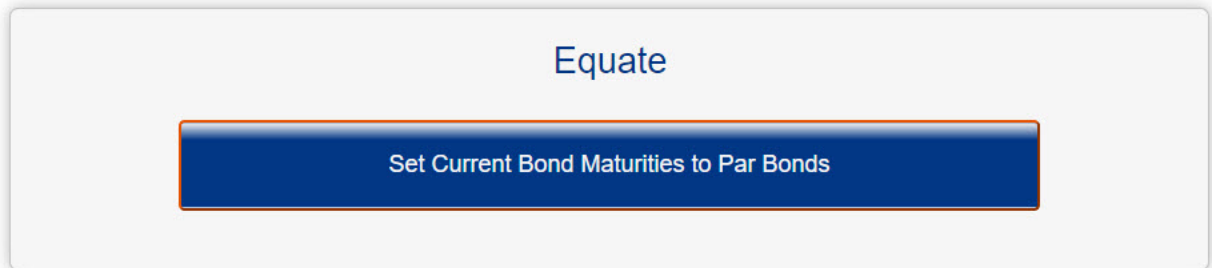
The coupon scale we entered reflects current yields on Municipal Bonds as of this tutorial. By default, Micromuni Debt sets all yields to zero and bond prices to 100%.

If we know the bond maturity amounts, we would have entered them at this time.

When we enter a coupon and the yield value is zero, Micromuni Debt will use the bond price entered when pricing bonds. If a coupon and yield is entered, Micromuni Debt will ignore the bond price and use the coupon and yield to determine the bond price. This will appear on the bond production report.

Now that we have entered our coupon scale and saved our information, we will set the yield scale to the coupon scale, without having to enter the yield scale.

Using the “Data/Modify” menu item click “Equate Coupons and Yields” submenu item. You will receive a prompt button “Set Current Bond Maturities to Par Bonds”. Click this button and Micromuni Debt will set the yields equal to the coupons and all bond prices to 100.00.



If you returned to the “Input” menu item, and “Amounts, Coupons, Yields, Prices” submenu item, you would see the changes.

This is a simple feature, but it is helpful when you know the yield scale, have not determined the coupon scale (competitive bidding on new issues), or you wish to generate premium bond production. We could have simply entered the yield scale, but I wanted the opportunity to introduce the “Data/Modify” menu item and the “Equate” submenu item.

The prior workspace should be empty. If not use the “Data/Modify” menu item and the “Clear Current and Prior Bonds” button to clear the Prior workspace.

We will now enter the old bond issue information.

Note: The old bond issue has a call option, and this information will be entered in the “Mandatory Redemptions” input page. Do not confuse the “Call options (Bond Pricing)” input page with the “Mandatory Redemptions” input page. One is for pricing new bonds and the other is for redeeming the bonds. Mandatory Redemptions produce called bond debt service which is used for the escrow in paying off the old bond being redeemed.

This is a very important difference.

General Bond Information – Existing Bonds to be Refunded

We now enter the information about the bonds we are going to refund. Using the “Data/Modify” menu item, select the “Clear Bond Issues” submenu item and select “Clear Current Bonds”. Next, using the “Input” menu item, select the “General Bond Information” submenu item and enter the general bond issue assumptions.

The “Bond Maturity Dates” tab of your page should look like this:

Save

Bond Maturity Dates

Info

Par Amount	Denomination
<input type="text" value="\$11,000,000.00"/>	<input type="text" value="5,000.00"/>
Dated Date	Delivery Date
<input type="text" value="1/1/2018"/>	<input type="text" value="1/15/2018"/>
First Coupon	First Maturity Date
<input type="text" value="7/1/2018"/>	<input type="text" value="7/1/2019"/>
Fiscal (Interest Payment Date)	Last Maturity Date
<input type="text" value="7/1/2019"/>	<input type="text" value="7/1/2038"/>
Interest Frequency	Maturity Frequency
<input type="text" value="Semi-Annual"/>	<input type="text" value="Annual"/>
Year for Interest Calculations	Data Share
<input type="text" value="30/360"/>	<input type="text" value="No"/>
Project Name	
<input type="text" value="State and Local Governments"/>	
Key Name	
<input type="text" value="2018 Series A Bonds"/>	
Report Titles	
1	
<input type="text" value="State and Local Governments"/>	
2	
<input type="text" value="2018 Series A Bonds"/>	
3	
<input type="text"/>	

Be certain to press the **“SAVE”** button.

Bond Maturity Coupons and Prices – Existing Bonds to be Refunded (continued)

Using the “Input” menu item, select the “Amounts, Coupons, Yields, Prices” submenu item. Here we enter the bond maturity amounts, and coupons. From the General Bond Information page, Micromuni Debt has generated all the bond maturity dates and set the default values.

First highlight the first amount that will be changed and click your mouse. The highlighted amount will be changed soon.

Next enter a value of “10/500000” in the text box above the grid. This is the initial amount value. Now click the “Change Selections” button and the first 10 amounts will be modified. Do the same for the next 10 amounts and set them to \$600,000 each (10/600000). Now change the coupons based on the assumptions previously mentioned. The first 5 coupons are 1.5, the next 5 coupons are 2.0 and the last 10 coupons are 3.0.

Your page should look like this:

Maturity Date	Amount	Bond Type	Coupon
07/01/2019	\$500,000.00	Standard	1.500000
07/01/2020	\$500,000.00	Standard	1.500000
07/01/2021	\$500,000.00	Standard	1.500000
07/01/2022	\$500,000.00	Standard	1.500000
07/01/2023	\$500,000.00	Standard	1.500000
07/01/2024	\$500,000.00	Standard	2.000000
07/01/2025	\$500,000.00	Standard	2.000000
07/01/2026	\$500,000.00	Standard	2.000000
07/01/2027	\$500,000.00	Standard	2.000000
07/01/2028	\$500,000.00	Standard	2.000000
07/01/2029	\$600,000.00	Standard	3.000000
07/01/2030	\$600,000.00	Standard	3.000000
07/01/2031	\$600,000.00	Standard	3.000000
07/01/2032	\$600,000.00	Standard	3.000000
07/01/2033	\$600,000.00	Standard	3.000000
07/01/2034	\$600,000.00	Standard	3.000000
07/01/2035	\$600,000.00	Standard	3.000000
07/01/2036	\$600,000.00	Standard	3.000000
07/01/2037	\$600,000.00	Standard	3.000000
07/01/2038	\$600,000.00	Standard	3.000000

Be certain to press the **“SAVE”** button.

Mandatory Redemptions – Existing Bonds to be Refunded (continued)

We will NOT enter any information in the “Call Options (Bond Pricing)” input page, since we are not pricing the old bonds.

Using the “Input” menu item, select the “Mandatory Redemptions” submenu item.

There should not be any information on this page. If there is, use the “Delete” button.

Press the “Add Row” button in the top section. This will add a new row for bond redemptions.

Now enter the “Call Date”, the “First Maturity” and “Last Maturity” dates that are being called and the “Call Price”. We will enter a Call Date of 7/1/2028, First Maturity of 7/1/2029, a Last Maturity of 7/1/2038, and a Call Price of 100.00.

Your page should look like this:

<div><div>Save</div><div>Add Row</div><div>Cancel Changes</div><div>Bond Redemptions Mandatory Calls</div></div> <div>Note: You must press the Save Button to complete changes, inserts and deletions.</div>				
Call Date	First Maturity	Last Maturity	Call Price	
7/01/2028	7/01/2029	7/01/2038	100.000000	<div>✕ Delete</div>

Be certain to press the “**SAVE**” button.

Report – Existing Bonds to be Refunded

Using the “Report” menu item, select the “Current Bond Issue” submenu item.

State and Local Governments 2018 Series A Bonds

Delivery: January 15 2018

Debt Service Schedule

Date	Principal	Coupon	Yield	Interest	Period Total	Fiscal Total
7/1/2018				133,750.00	133,750.00	133,750.00
1/1/2019				133,750.00	133,750.00	
7/1/2019	500,000.00	1.5000	1.5000	133,750.00	633,750.00	767,500.00
1/1/2020				130,000.00	130,000.00	
7/1/2020	500,000.00	1.5000	1.5000	130,000.00	630,000.00	760,000.00
1/1/2021				126,250.00	126,250.00	
7/1/2021	500,000.00	1.5000	1.5000	126,250.00	626,250.00	752,500.00
1/1/2022				122,500.00	122,500.00	
7/1/2022	500,000.00	1.5000	1.5000	122,500.00	622,500.00	745,000.00
1/1/2023				118,750.00	118,750.00	
7/1/2023	500,000.00	1.5000	1.5000	118,750.00	618,750.00	737,500.00
1/1/2024				115,000.00	115,000.00	
7/1/2024	500,000.00	2.0000	2.0000	115,000.00	615,000.00	730,000.00
1/1/2025				110,000.00	110,000.00	
7/1/2025	500,000.00	2.0000	2.0000	110,000.00	610,000.00	720,000.00
1/1/2026				105,000.00	105,000.00	
7/1/2026	500,000.00	2.0000	2.0000	105,000.00	605,000.00	710,000.00
1/1/2027				100,000.00	100,000.00	
7/1/2027	500,000.00	2.0000	2.0000	100,000.00	600,000.00	700,000.00
1/1/2028				95,000.00	95,000.00	
7/1/2028	500,000.00	2.0000	2.0000	95,000.00	595,000.00	690,000.00
1/1/2029				90,000.00	90,000.00	
7/1/2029	600,000.00	3.0000	3.0000	90,000.00	690,000.00	780,000.00
1/1/2030				81,000.00	81,000.00	
7/1/2030	600,000.00	3.0000	3.0000	81,000.00	681,000.00	762,000.00
1/1/2031				72,000.00	72,000.00	
7/1/2031	600,000.00	3.0000	3.0000	72,000.00	672,000.00	744,000.00
1/1/2032				63,000.00	63,000.00	
7/1/2032	600,000.00	3.0000	3.0000	63,000.00	663,000.00	726,000.00
1/1/2033				54,000.00	54,000.00	
7/1/2033	600,000.00	3.0000	3.0000	54,000.00	654,000.00	708,000.00
1/1/2034				45,000.00	45,000.00	
7/1/2034	600,000.00	3.0000	3.0000	45,000.00	645,000.00	690,000.00
1/1/2035				36,000.00	36,000.00	
7/1/2035	600,000.00	3.0000	3.0000	36,000.00	636,000.00	672,000.00
1/1/2036				27,000.00	27,000.00	
7/1/2036	600,000.00	3.0000	3.0000	27,000.00	627,000.00	654,000.00
1/1/2037				18,000.00	18,000.00	
7/1/2037	600,000.00	3.0000	3.0000	18,000.00	618,000.00	636,000.00
1/1/2038				9,000.00	9,000.00	
7/1/2038	600,000.00	3.0000	3.0000	9,000.00	609,000.00	618,000.00
	11,000,000.00			3,436,250.00	14,436,250.00	
				10,402.78	10,402.78	
	11,000,000.00			3,425,847.22	14,425,847.22	

Report – Current Mandatory Redemptions

Using the “Report” menu item, select the “Current Mandatory Redemptions” submenu item.

Micromuni Debt will compute the Called Bond Debt Service from the information entered via the “Input” menu item and “Mandatory Redemptions” submenu item. The Mandatory Redemptions Report will be displayed. This only needs to be performed one time. All redemption debt service will be saved and can only be loaded into the prior workspace. The report that is automatically displayed can also be viewed

State and Local Governments

2018 Series A Bonds

Delivery: January 15 2018

Mandatory Redemptions Debt Service

Date	Principal	Principal Redemptions	Call Premium	Interest	Total
7/1/2018				133,750.00	133,750.00
1/1/2019				133,750.00	133,750.00
7/1/2019	500,000.00			133,750.00	633,750.00
1/1/2020				130,000.00	130,000.00
7/1/2020	500,000.00			130,000.00	630,000.00
1/1/2021				126,250.00	126,250.00
7/1/2021	500,000.00			126,250.00	626,250.00
1/1/2022				122,500.00	122,500.00
7/1/2022	500,000.00			122,500.00	622,500.00
1/1/2023				118,750.00	118,750.00
7/1/2023	500,000.00			118,750.00	618,750.00
1/1/2024				115,000.00	115,000.00
7/1/2024	500,000.00			115,000.00	615,000.00
1/1/2025				110,000.00	110,000.00
7/1/2025	500,000.00			110,000.00	610,000.00
1/1/2026				105,000.00	105,000.00
7/1/2026	500,000.00			105,000.00	605,000.00
1/1/2027				100,000.00	100,000.00
7/1/2027	500,000.00			100,000.00	600,000.00
1/1/2028				95,000.00	95,000.00
7/1/2028	500,000.00	6,000,000.00		95,000.00	6,595,000.00
	5,000,000.00	6,000,000.00		2,446,250.00	13,446,250.00

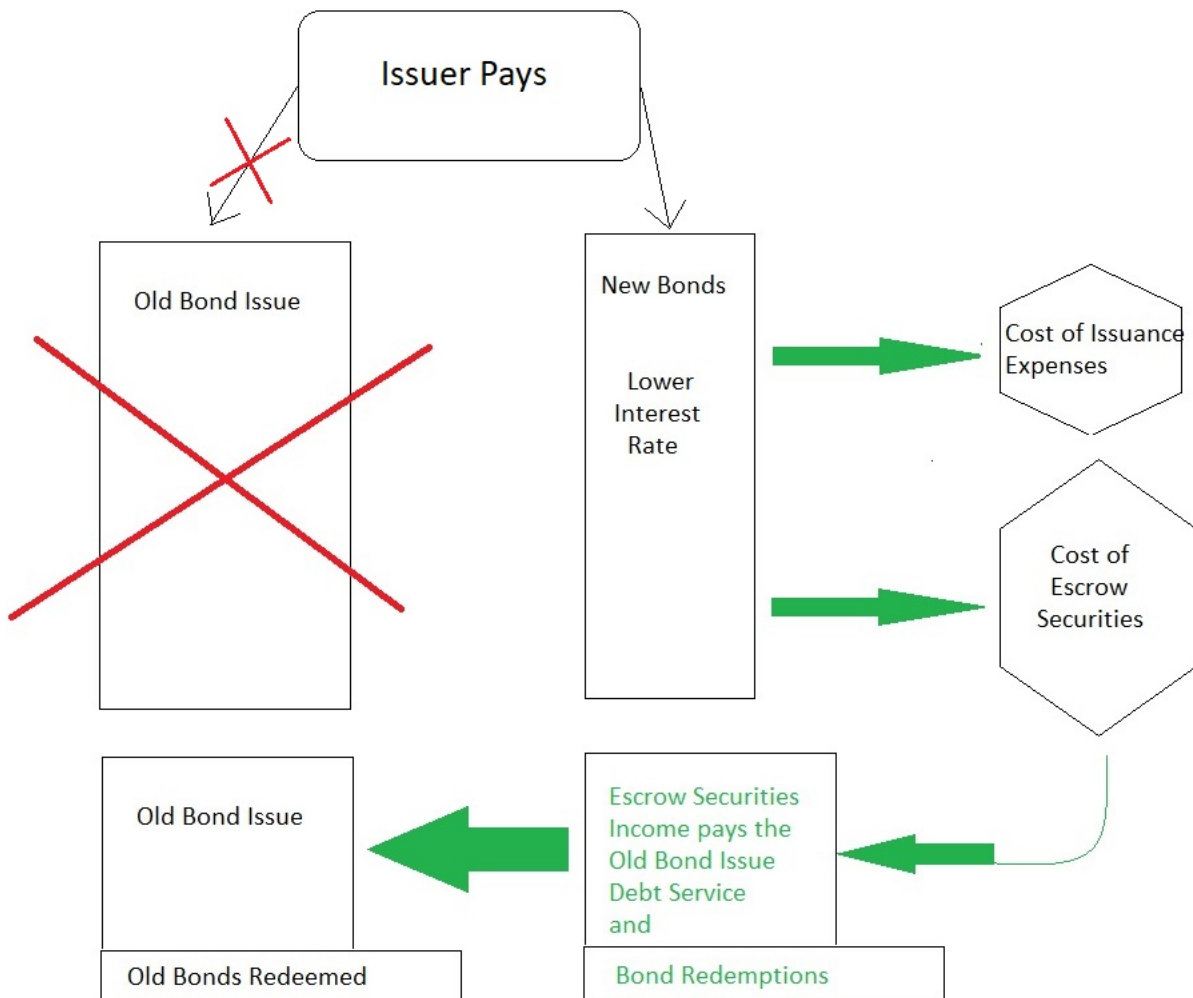
Call Date	First Maturity	Last Maturity	Call Amount	Call Price	Call Premium
7/1/2028	7/1/2029	7/1/2038	6,000,000.00	100.000	0.00

The “Mandatory Redemptions” calculations and debt service will only load into the prior workspace, is stored separately from the bond debt service, and cannot be edited. We will only be considering the “Mandatory Redemptions” debt service from 1/1/2022 forward.

For an advanced refunding, AAA rated securities will be selected and placed in an escrow account where they will generate sufficient revenues to pay the “Mandatory Redemptions” debt service. The new bond issue must generate enough production to pay the cost of issuance (underwriter’s discount), bond insurance, and the cost of the securities for the escrow (this tutorial only).

What is an Advanced Refunding – Refinancing an Existing Bond Issue

An advanced refunding involves an old bond issue (“Refunded Bonds”) that the issuer wishes to refinance by issuing a new bond issue (the “Refunding Bonds”). The proceeds from the new bond issue pay expenses and the cost of the securities for an escrow, which generates enough revenue to pay the old bonds debt service (redeemed to one or more call dates). Visually it looks like this:



The securities purchased for the escrow are government securities and often SLGS (State and Local Government Series). SLGS can be purchased in denominations of \$100 and have a maximum interest payable from the United States Treasury. SLGS can be purchased at rates lower than the maximum interest rate because the escrow yield is restricted to the arbitrage yield of the new bonds. Investing the bond proceeds in an escrow yielding higher interest than the arbitrage yield of the new bonds is considered a windfall and is not acceptable according to US government arbitrage regulations.

The New Refunding Bonds will have their own interest rates and once the bonds are structured with maturity amounts and coupons, the Arbitrage Yield on the new bonds is the maximum yield on the escrow securities used to pay for the Existing Mandatory Bond Redemption debt service.

Report – New Refunding Bonds

Use the “Data/Modify” menu item and “Clear Current and Prior Bonds” submenu item so that both current and prior workspaces are empty. Use the “Load” menu item and the “Current Bond Issue” submenu to load the New Bond Issue, which we previously saved. Use the “Load” menu item and the “Prior Bond Issue Debt Service” submenu to load the “Prior Mandatory Redemptions Debt Service”) into the prior workspace. The New issue delivery date is 7/15/2021, so we will be refunding \$10,000,000 in Bond Principal Amount of the Existing Mandatory Redemptions Bond Issue.

Let structure the New Bond Issue. Using the “Calculate” menu item and “Solve Current for Bond Maturity Amounts” submenu item, select the “Level Debt Service” solution option. The “Debt Service Schedule” of the new bonds will be displayed as follows:

State and Local Governments
Municipal Debt Analysis
2021 Series A Refunding Bonds
Delivery: July 15 2021

Debt Service Schedule

Date	Principal	Coupon	Yield	Interest	Period Total	Fiscal Total
1/1/2022				62,255.00	62,255.00	
7/1/2022	450,000.00	0.7500	0.7500	62,255.00	512,255.00	574,510.00
1/1/2023				60,567.50	60,567.50	
7/1/2023	455,000.00	0.8000	0.8000	60,567.50	515,567.50	576,135.00
1/1/2024				58,747.50	58,747.50	
7/1/2024	460,000.00	0.8500	0.8500	58,747.50	518,747.50	577,495.00
1/1/2025				56,792.50	56,792.50	
7/1/2025	465,000.00	0.9000	0.9000	56,792.50	521,792.50	578,585.00
1/1/2026				54,700.00	54,700.00	
7/1/2026	465,000.00	0.9500	0.9500	54,700.00	519,700.00	574,400.00
1/1/2027				52,491.25	52,491.25	
7/1/2027	470,000.00	1.0000	1.0000	52,491.25	522,491.25	574,982.50
1/1/2028				50,141.25	50,141.25	
7/1/2028	475,000.00	1.0500	1.0500	50,141.25	525,141.25	575,282.50
1/1/2029				47,647.50	47,647.50	
7/1/2029	480,000.00	1.1000	1.1000	47,647.50	527,647.50	575,295.00
1/1/2030				45,007.50	45,007.50	
7/1/2030	485,000.00	1.1500	1.1500	45,007.50	530,007.50	575,015.00
1/1/2031				42,218.75	42,218.75	
7/1/2031	490,000.00	1.2000	1.2000	42,218.75	532,218.75	574,437.50
1/1/2032				39,278.75	39,278.75	
7/1/2032	500,000.00	1.2500	1.2500	39,278.75	539,278.75	578,557.50
1/1/2033				36,153.75	36,153.75	
7/1/2033	505,000.00	1.3000	1.3000	36,153.75	541,153.75	577,307.50
1/1/2034				32,871.25	32,871.25	
7/1/2034	510,000.00	1.3500	1.3500	32,871.25	542,871.25	575,742.50
1/1/2035				29,428.75	29,428.75	
7/1/2035	520,000.00	1.4000	1.4000	29,428.75	549,428.75	578,857.50
1/1/2036				25,788.75	25,788.75	
7/1/2036	525,000.00	1.4500	1.4500	25,788.75	550,788.75	576,577.50

Report – New Refunding Bonds (continued)

The remaining “Debt Service Schedule” of the new bonds will be displayed as follows:

1/1/2037				21,982.50	21,982.50	
7/1/2037	530,000.00	1.5000	1.5000	21,982.50	551,982.50	573,965.00
1/1/2038				18,007.50	18,007.50	
7/1/2038	540,000.00	1.5500	1.5500	18,007.50	558,007.50	576,015.00
1/1/2039				13,822.50	13,822.50	
7/1/2039	550,000.00	1.6000	1.6000	13,822.50	563,822.50	577,645.00
1/1/2040				9,422.50	9,422.50	
7/1/2040	560,000.00	1.6500	1.6500	9,422.50	569,422.50	578,845.00
1/1/2041				4,802.50	4,802.50	
7/1/2041	565,000.00	1.7000	1.7000	4,802.50	569,802.50	574,605.00
10,000,000.00				1,524,255.00	11,524,255.00	
				4,842.06	4,842.06	
10,000,000.00				1,519,412.94	11,519,412.94	

Dated: 07/1/2021 and Delivery: 07/15/2021

Bond Years	109,020.000
Average Coupon	1.39814254
Average Life	10.902000
N I C %	1.488767
T I C %	1.491492
Weighted N I C %	1.488767
Weighted Bond Years	109,020.000
Weighted Average Life	10.902000

Bond Insurance

0.250000 % of (Total Debt Service - Accrued) = \$28,798.53

The “Debt Service Schedule” summary information at the bottom of the report shows a TIC of 1.491492%. The TIC includes the underwriters discount and bond insurance, but we need the arbitrage yield for the escrow (the maximum investment rate for the escrow securities), which does not include the underwriters discount and bond insurance.

Select the “Calculate” menu item and the “Present Value Calculations” submenu item to manually calculate the arbitrage yield. We are going to present value the “Current Bond Issue” (the default), to the present value date of 7/15/2021 (the delivery date) (the default). Enter the present value amount of 10000000 in the second input box.

Your page should look like:

Calculate

Present Value Calculations

Present Value Calculations based on the following:

Current Bond Issue

Present Value Date

7/15/2021

Enter Present Value Rate as %
(to Solve for the PV Amount)

Enter Present Value Amount
(to Solve for the PV Rate)

\$10,000,000.00

Report – New Refunding Bonds (continued)

We are going to present value discounting the New Bond Issue debt service to a present value amount of \$10,000,000. Press the “Calculate” button on the page to perform the calculations.

Your page should look like this:

State and Local Governments Municipal Debt Analysis 2021 Series A Refunding Bonds Present Value Date 7/15/2021			
Present Value Rate:		1.3959368112 %	
Present Value Amount:		\$10,000,000.00	
Total Cash Flows:		\$11,524,255.00	
Date	Future Value Cash Flows	Present Value Factors	Present Value @ 1.3959368112 %
1/1/2022	62,255.00	0.9936060685	61,856.95
7/1/2022	512,255.00	0.9867190811	505,451.78
1/1/2023	60,567.50	0.9798798294	59,348.87
7/1/2023	515,567.50	0.9730879828	501,692.54
1/1/2024	58,747.50	0.9663432124	56,770.25
7/1/2024	518,747.50	0.9596451922	497,813.54
1/1/2025	56,792.50	0.9529935980	54,122.89
7/1/2025	521,792.50	0.9463881080	493,818.22
1/1/2026	54,700.00	0.9398284027	51,408.61
7/1/2026	519,700.00	0.9333141647	485,043.37
1/1/2027	52,491.25	0.9268450789	48,651.26
7/1/2027	522,491.25	0.9204208322	480,911.83
1/1/2028	50,141.25	0.9140411141	45,831.16
7/1/2028	525,141.25	0.9077056156	476,673.66
1/1/2029	47,647.50	0.9014140305	42,950.13
7/1/2029	527,647.50	0.8951660543	472,332.13
.	.	.	.
.	.	.	.
.	.	.	.
1/1/2038	18,007.50	0.7953376781	14,322.04
7/1/2038	558,007.50	0.7898249495	440,728.25
1/1/2039	13,822.50	0.7843504313	10,841.68
7/1/2039	563,822.50	0.7789138586	439,169.16
1/1/2040	9,422.50	0.7735149685	7,288.44
7/1/2040	569,422.50	0.7681534998	437,403.89
1/1/2041	4,802.50	0.7628291930	3,663.49
7/1/2041	569,802.50	0.7575417907	431,649.21
	11,524,255.00		10,000,000.00

The present value calculations show a discount rate of 1.3959368112%. This is the arbitrage yield for the escrow (the maximum investment rate for the escrow securities).

Estimate the Cost of the Escrow Securities

We can estimate the present value cost of the securities for the escrow by present valuing the Mandatory Redemptions debt service using a present value rate of 1.3959368112.

Still using the “Calculate” menu item and the “Present Value Calculations” submenu item, change the dropdown box at the top from “Current Bond Issue” to “Prior Bond Issue”. We have the Mandatory Redemptions debt service loaded in the prior workspace. Enter the present value date of “7/15/2021” and a “Present Value Rate” of 1.3959368112 and press the “Calculate” button.

This gives us a present value amount of \$10,219,272.09 which is an estimated cost of the securities, provided we can obtain a yield of 1.3959368112%.

Your page should look like:

The screenshot shows the 'Present Value Calculations' window. At the top left is an orange 'Calculate' button. The title is 'Present Value Calculations'. Below the title, it says 'Present Value Calculations based on the following:' followed by a dropdown menu set to 'Prior Bond Issue'. There is a 'Present Value Date' field with '7/15/2021' entered. Below this are two input fields: 'Enter Present Value Rate as % (to Solve for the PV Amount)' with '1.39593681' entered, and 'Enter Present Value Amount (to Solve for the PV Rate)' which is empty. An orange 'Export to PDF' button is centered below the inputs. Underneath, the following text is displayed: 'State and Local Governments', 'Municipal Debt Analysis', '2021 Series A Refunding Bonds', and 'Present Value Date 7/15/2021'. A summary section shows: 'Present Value Rate: 1.3959368112 %', 'Present Value Amount: \$10,219,272.09', and 'Total Cash Flows: \$11,032,500.00'. At the bottom is a table with four columns: 'Date', 'Future Value Cash Flows', 'Present Value Factors', and 'Present Value @ 1.3959368112 %'. The table contains 16 rows of data, with the final row showing a total of \$11,032,500.00 for cash flows and \$10,219,272.09 for present value.

Date	Future Value Cash Flows	Present Value Factors	Present Value @ 1.3959368112 %
1/1/2022	122,500.00	0.9936060685	121,716.74
7/1/2022	622,500.00	0.9867190811	614,232.63
1/1/2023	118,750.00	0.9798798294	116,360.73
7/1/2023	618,750.00	0.9730879828	602,098.19
1/1/2024	115,000.00	0.9663432124	111,129.47
7/1/2024	615,000.00	0.9596451922	590,181.79
1/1/2025	110,000.00	0.9529935980	104,829.30
7/1/2025	610,000.00	0.9463881080	577,296.75
1/1/2026	105,000.00	0.9398284027	98,681.98
7/1/2026	605,000.00	0.9333141647	564,655.07
1/1/2027	100,000.00	0.9268450789	92,684.51
7/1/2027	600,000.00	0.9204208322	552,252.50
1/1/2028	95,000.00	0.9140411141	86,833.91
7/1/2028	6,595,000.00	0.9077056156	5,986,318.54
	11,032,500.00		10,219,272.09

This estimate says that the cost of the escrow securities should be \$10,219,272.09, provided current SLGS rates can yield 1.3959368112%.

SLGS Rates - Escrow Securities

SLGS rates can be obtained from the US Treasury at the following link:

<https://www.treasurydirect.gov/GA-SL/SLGS/selectSLGSDate.htm>

As of 7/15/2021, the SLGS yields are too low, and the following chart shows the rate paid by SLGS for years 1 to 7 (the length of the bond redemptions debt service).

We will not be able to purchase SLGS securities to get a yield of 1.3959368112%.

SLGS TABLE FOR USE ON July 15, 2021

Demand Deposit Rate

Annualized Effective Rate	Daily Factor
0.03%	0.000000822

Time Deposit Rate

From (Year-Month)	Through (Year-Month)	Rate
00-01	ONLY	0.04%
00-02	ONLY	0.04%
00-03	ONLY	0.04%
00-04	ONLY	0.04%
00-05	ONLY	0.04%
00-06	ONLY	0.04%
00-07	ONLY	0.04%
00-08	ONLY	0.04%
00-09	ONLY	0.04%
00-10	ONLY	0.05%
00-11	ONLY	0.05%
01-00	ONLY	0.06%
01-01	ONLY	0.07%
01-02	ONLY	0.09%
01-03	ONLY	0.10%
01-04	ONLY	0.11%
01-05	ONLY	0.13%
01-06	ONLY	0.14%

SLGS Rates - Escrow Securities (continued)

01-07	ONLY	0.16%
01-08	ONLY	0.17%
01-09	ONLY	0.19%
01-10	ONLY	0.20%
01-11	ONLY	0.22%
02-00	ONLY	0.23%
02-01	ONLY	0.25%
02-02	ONLY	0.27%
02-03	ONLY	0.28%
02-04	ONLY	0.30%
02-05	ONLY	0.32%
02-06	ONLY	0.33%
02-07	ONLY	0.35%
02-08	ONLY	0.36%
02-09	ONLY	0.38%
02-10	ONLY	0.40%
02-11	ONLY	0.41%
03-00	ONLY	0.43%
03-01	ONLY	0.44%
03-02	ONLY	0.46%
03-03	ONLY	0.48%
03-04	ONLY	0.49%
03-05	ONLY	0.51%
03-06	ONLY	0.52%

SLGS Rates - Escrow Securities (continued)

03-07	ONLY	0.54%
03-08	ONLY	0.55%
03-09	ONLY	0.57%
03-10	ONLY	0.58%
03-11	ONLY	0.60%
04-00	ONLY	0.61%
04-01	ONLY	0.63%
04-02	ONLY	0.64%
04-03	ONLY	0.66%
04-04	ONLY	0.67%
04-05	ONLY	0.69%
04-06	ONLY	0.70%
04-07	ONLY	0.72%
04-08	ONLY	0.73%
04-09	ONLY	0.74%
04-10	ONLY	0.76%
04-11	ONLY	0.77%
05-00	ONLY	0.79%
05-01	ONLY	0.80%
05-02	ONLY	0.82%
05-03	ONLY	0.83%
05-04	ONLY	0.85%
05-05	ONLY	0.86%
05-06	ONLY	0.87%

SLGS Rates - Escrow Securities (continued)

05-07	ONLY	0.89%
05-08	ONLY	0.90%
05-09	ONLY	0.91%
05-10	ONLY	0.93%
05-11	ONLY	0.94%
06-00	ONLY	0.95%
06-01	ONLY	0.96%
06-02	ONLY	0.98%
06-03	ONLY	0.99%
06-04	ONLY	1.00%
06-05	ONLY	1.01%
06-06	ONLY	1.02%
06-07	ONLY	1.04%
06-08	ONLY	1.05%
06-09	ONLY	1.06%
06-10	ONLY	1.07%
06-11	ONLY	1.08%
07-00	ONLY	1.09%
07-01	ONLY	1.10%
07-02	ONLY	1.10%
07-03	ONLY	1.11%
07-04	ONLY	1.12%
07-05	ONLY	1.13%
07-06	ONLY	1.14%

These SLGS rates are too low to provide an escrow yield of 1.3959368112%.

We can structure an escrow with these SLGS rates, but it will provide an unacceptable yield and the refunding would not be recommended.

CONTINUING WITH THE REFUNDING ANALYSIS

To benefit from this refunding analysis, let's assume that we can obtain a SLGS investment yield of 1.3959368112% to pay the Mandatory Redemptions debt service. From our previous analysis of present valuing the Mandatory Redemptions debt service at 1.3959368112%, we obtained a present value amount of \$10,219,272.09.

Let's use Micromuni Sizing to determine the size of the New Refunding Bond Issue.

Micromuni Sizing – New Refunding Bonds

Using the “Products” menu item and “Micromuni Sizing” submenu item we will leave Micromuni Debt and use Micromuni Sizing to determine the size of the New Bond issue. You can open Micromuni Sizing in the same browser window or you can open Micromuni Sizing in a new browser tab.

While in Micromuni Sizing, use the “Load” menu item and the “Current Bond Issue” submenu item to load the New Refund Bonds that were created in Micromuni Debt.

Note: The underwriters discount and bond insurance were already entered as part of the bond issue.

Using the “Input” menu item and the “Uses of Funds” submenu item enter one item for the Cost of the Escrow securities.

Your input page should look like this:

Save

Uses of Funds

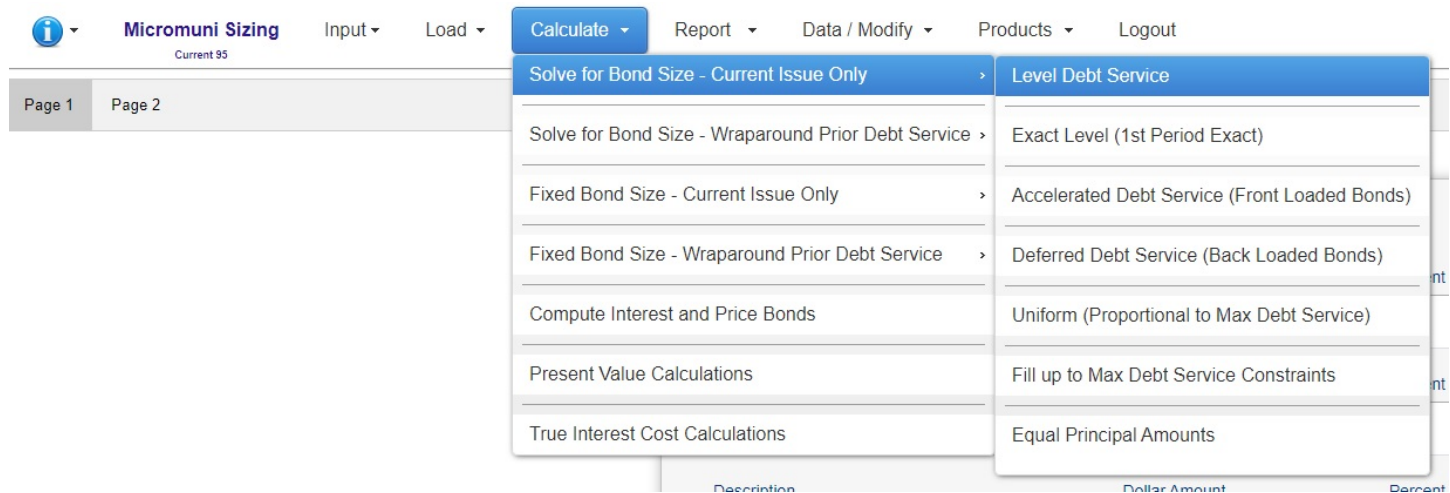
Description	Dollar Amount	Percent
Cost of Escrow	\$10,219,272.09	

Be certain to press the **“SAVE”** button.

Micromuni Sizing – New Refunding Bonds (continued).

Using the “Calculate” menu item and “Solve for Bond Size – Current Issue Only” submenu item, select the “Level Debt Service” solution option. Micromuni Sizing will perform some iterations to determine the size of the New Bond issue.

Your page should look like:



When the solution is complete, Micromuni Sizing will display a Sources and Uses of funds report as follows:

State and Local Governments	
Municipal Debt Analysis	
2021 Series A Refunding Bonds	
Delivery: 07/15/2021	
Sources of Funds	
Par Amount of Bonds	\$10,320,000.00
+Premium / -Discount	0.00
Accrued Interest	4,996.54
Total Sources of Funds	\$10,324,996.54
Uses of Funds	
Bond Insurance	29,719.13
Underwriters Discount	72,240.00
Cost of Escrow	10,219,272.09
Contingency	3,765.32
Total Uses of Funds	\$10,324,996.54

The New Bond Issue size is \$10,320,000. Remember, this assumes that we can get securities for the escrow that will yield 1.3959368112%. Now let's compare the New Bond Issue to the Existing Bond issue that is being refunded.

Calculate ▾

Report ▾

Data / Modify ▾

Products ▾

Logout

State and Local Municipal 2021 Series

Delinquent

Micromuni Debt

Micromuni Refund

Micromuni Sizing

Sources of Funds

Par Amount of Bonds	\$10,320,000.00
+Premium / -Discount	0.00
Accrued Interest	4,996.54
Total Sources of Funds	\$10,324,996.54

Uses of Funds

BondInsurance	29,719.13
Underwriters Discount	72,240.00
Cost of Escrow	10,219,272.09
Contingency	3,765.32
Total Uses of Funds	\$10,324,996.54

Micromuni Debt should still have the new bond issue key loaded in the current workspace. Using the “Load” menu item and the “Prior Debt Service” submenu item, load the prior workspace with the original Existing Bond Issue.

Use the “Report” menu item and the “Debt Service Savings” submenu item to display the debt service savings from the potential refunding. Your report should look like this:

State and Local Governments Municipal Debt Analysis 2021 Series A Refunding Bonds Delivery: July 15, 2021							
Debt Service Savings Details							
Date	Principal	Coupon	Interest	Current Debt Service	Prior Debt Service	Debt Service Savings	Fiscal Savings
1/1/2022			64,241.25	64,241.25	122,500.00	58,258.75	
7/1/2022	465,000.00	0.7500	64,241.25	529,241.25	622,500.00	93,258.75	151,517.50
1/1/2023			62,497.50	62,497.50	118,750.00	56,252.50	
7/1/2023	470,000.00	0.8000	62,497.50	532,497.50	618,750.00	86,252.50	142,505.00
1/1/2024			60,617.50	60,617.50	115,000.00	54,382.50	
7/1/2024	475,000.00	0.8500	60,617.50	535,617.50	615,000.00	79,382.50	133,765.00
1/1/2025			58,598.75	58,598.75	110,000.00	51,401.25	
7/1/2025	480,000.00	0.9000	58,598.75	538,598.75	610,000.00	71,401.25	122,802.50
1/1/2026			56,438.75	56,438.75	105,000.00	48,561.25	
7/1/2026	480,000.00	0.9500	56,438.75	536,438.75	605,000.00	68,561.25	117,122.50
1/1/2027			54,158.75	54,158.75	100,000.00	45,841.25	
7/1/2027	485,000.00	1.0000	54,158.75	539,158.75	600,000.00	60,841.25	106,682.50
1/1/2028			51,733.75	51,733.75	95,000.00	43,266.25	
7/1/2028	490,000.00	1.0500	51,733.75	541,733.75	595,000.00	53,266.25	96,532.50

The report continues on the next page.

Micromuni Debt – New Bond Issue Savings Analysis (continued).

We skipped years 2029 – 2037, but you should receive exact summary information.

You will notice that the fiscal savings is significant in the earlier years and declines to only \$20,847.50 in year 2038. The last three years are a loss as the Existing Bond issue no longer existed. However, the total gross savings is only \$129,852, but, on a present value basis, the “Net Present Value Savings” is \$368,189.81. Not that significant and we assumed that we could receive a higher yield on the escrow.

Since SLGS rates are too low, refinancing the Existing Bond Issue is not a good option.

Lastly, with a lower escrow yield, the new bond issue size would be higher and there would potentially be no savings at all.

1/1/2038			18,576.25	18,576.25	9,000.00	-9,576.25	
7/1/2038	560,000.00	1.5500	18,576.25	578,576.25	609,000.00	30,423.75	20,847.50
1/1/2039			14,236.25	14,236.25		-14,236.25	
7/1/2039	565,000.00	1.6000	14,236.25	579,236.25		-579,236.25	-593,472.50
1/1/2040			9,716.25	9,716.25		-9,716.25	
7/1/2040	575,000.00	1.6500	9,716.25	584,716.25		-584,716.25	-594,432.50
1/1/2041			4,972.50	4,972.50		-4,972.50	
7/1/2041	585,000.00	1.7000	4,972.50	589,972.50		-589,972.50	-594,945.00
10,320,000.00			1,572,647.50	11,892,647.50	12,022,500.00	129,852.50	129,852.50
			4,996.54	4,996.54			
10,320,000.00			1,567,650.96	11,887,650.96			

Dated: 07/1/2021 and Delivery: 07/15/2021

Bond Years	112,485.000
Average Coupon	1.39809530
Average Life	10.899709
N I C %	1.488738
T I C %	1.491462
Weighted N I C %	1.488738
Weighted Bond Years	112,485.000
Weighted Average Life	10.899709

Bond Insurance
0.250000 % of (Total Debt Service - Accrued) = \$29,719.13

Net Present Value Savings at: 1.491462% Equals \$368,189.82

3.567731% of Par of the Current Issue

3.875682% of Par of the Prior Issue

Summary

Tutorial Completed

Congratulations! You have successfully completed the Micromuni Debt and Micromuni Sizing tutorial.

If you have any questions about this tutorial or of the use of Micromuni Debt, please feel free to contact Financial Management Systems, Inc at:

Phone: (425) 881-8687

Email: fms@micromuni.com

Thank you for being a loyal Micromuni customer.