March 2, 2022

Memorandum

TO: City of Philadelphia Water Department
FROM: Katherine Clupper, Managing Director, PFM Financial Advisors LLC
Peter Nissen, Managing Director, Acacia Financial Group, Inc.
RE: Interest Rate Assumptions for Financial Planning Purposes

Introduction

The purpose of this memorandum ("Memorandum") is to provide rationale and context for interest rate assumptions used by the Philadelphia Water Department ("PWD" or "Department") to prepare debt service budgets for fiscal years 2023 through 2027. This memorandum is submitted by PFM Financial Advisors, LLC ("PFM") and Acacia Financial Group, Inc. ("Acacia"), as financial advisors to the Department. The information herein is based upon PFM's and Acacia's knowledge of the Department's historical pricing results, as well as the overall municipal bond market.

Assumptions

The table below details the recommended assumptions to be used when budgeting debt service to be paid by PWD over the next five fiscal years. All series utilize a structure that pays a level amount of debt service each fiscal year.

City of Philadelphia Water Department Interest Rate Assumptions for Budgeted Debt Service			
Fiscal Year	**Term**	**Par (000)**	**Cost of Capital**
2023	30 years	$400,000	4.00%
2024	30 years	$390,000	4.50%
2025	30 years	$535,000	5.00%
2026	30 years	$700,000	5.00%
2027	30 years	$575,000	5.00%

Historical Pricing

Over the course of the previous five fiscal years (2018-2022), PWD has issued four series of new money bonds to fund various capital projects. A summary of those four series can be found below:

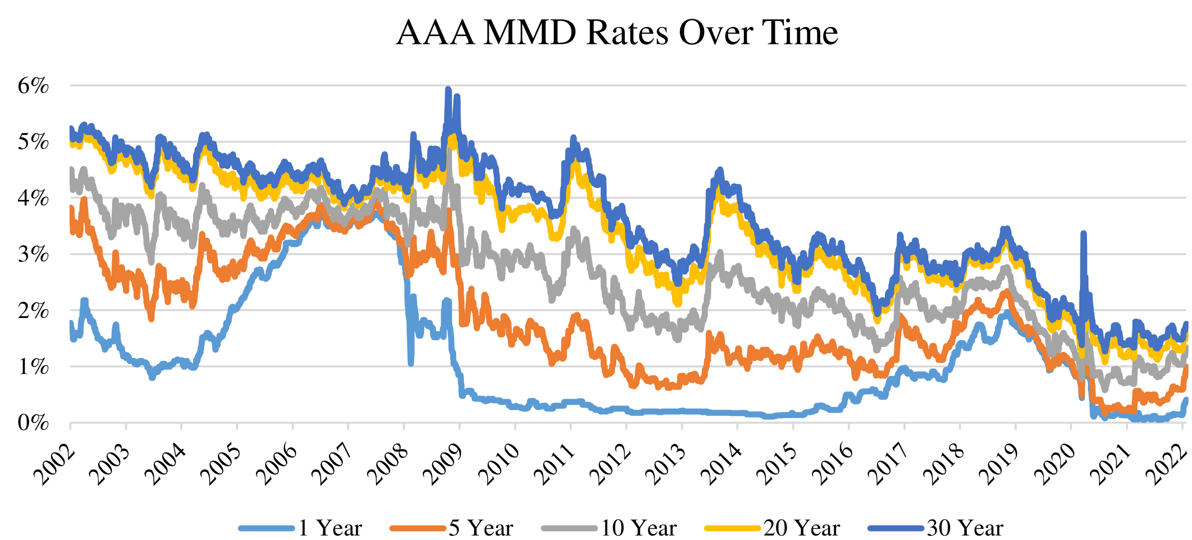
City of Philadelphia Water Department Historical Pricing Results				
Fiscal Year	Series	Maturities	Par (000)	Cost of Capital
2022	2021C	2023-2051	$231,930	2.81%
2021	2020A*	2035-2050	$170,605	3.24%
2020	2019B	2023-2054	$250,660	3.63%
2019	2018A	2019-2053	$276,935	4.39%

*Only reflects the new money portion of the Series 2020A Bonds

When determining the interest rates to be used in budgeting debt service to be paid by the Department over the next five fiscal years, PFM and Acacia believe it is relevant to consider recent pricing results as a guide with regards to current assumptions. All four of these series were issued on a tax-exempt basis with amortization schedules of at least 30 years. No series meeting these criteria was issued in fiscal year 2018.

Historical Interest Rates

The chart below illustrates the movement of the AAA MMD interest rates over the past twenty years.



While municipal rates are no longer at the all-time lows they have been over the past few years, they are still at relative lows when viewed through a wider historical lens. Nevertheless, dramatic shifts in rates across curve in a short period of time are not uncommon, as can be seen in the numerous peaks and valleys above. Additionally, the general market consensus for future rates is higher owing to comments from the Federal Reserve indicating multiple forthcoming short term rate increases to combat inflationary pressures.

Conclusion

PFM and Acacia both consider the assumed rates and terms used when determining the budgeted debt service for fiscal years 2023 through 2027, which increases from 4.00% to 5.00% over the course of the projections, are reasonable while remaining on the conservative side. The latter is important not only to provide a cushion within the budgeted cashflows, but also because, notwithstanding current market sentiment, no one can predict with certainty the direction of interest rates across the municipal bond market, a fact highlighted by the change of the cost of capital by 1.58% between the issuance of Series 2018A and Series 2021C. The term of thirty years and level debt service calculations represent conservative assumptions and are generally viewed as best practices when financing projects with useful lives similar to those of PWD.