PHILADELPHIA WATER DEPARTMENT
STATEMENT NO. 2

BEFORE THE
PHILADELPHIA WATER, SEWER AND STORM WATER RATE BOARD

In the Matter of the Philadelphia Water Department's Proposed Change in Water, Wastewater and Stormwater Rates and Related Charges	Fiscal Years 2021 - 2022

Direct Testimony

of

Melissa La Buda

on behalf of

The Philadelphia Water Department

Dated: February 2020

TABLE OF CONTENTS

I. INTRODUCTION AND PURPOSE OF TESTIMONY

Q1. PLEASE STATE YOUR NAME AND POSITION WITH THE PHILADELPHIA WATER DEPARTMENT.

A1. My name is Melissa La Buda. My position with the Philadelphia Water Department, also referred to in my testimony as PWD or the Department, is Deputy Commissioner of Finance.

Q2. WHAT ARE YOUR JOB RESPONSIBILITIES?

A2. As Deputy Commissioner of Finance, I have overall responsibility for the Department's financial, accounting and budgetary functions, including overseeing the budget, accounting for financial activities, issuing financial reports, and developing the debt issuance requirements. In connection with debt financings, I participate in meetings with rating agencies with respect to the credit ratings on Water & Wastewater System debt. I also led the Department's efforts related to the Cost of Service study for the current and prior general rate proceedings.

Q3. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND RELEVANT WORK EXPERIENCE.

A3. I received a Bachelor of Science Degree in Business Administration from Bloomsburg University of Pennsylvania in 1995. I joined the Department as an Assistant Deputy Commissioner in October 2013**.** I was elevated to my current position in August 2014**.** Before joining the Department, I worked for a global financial institution where I served as an investment banker to public power and combined utility systems. Prior to that position, I worked for Public Financial Management, Inc. A more detailed description of my relevant work experience is set forth in my resume which accompanies my testimony as Schedule ML-1.

Q4. PLEASE DESCRIBE THE PURPOSE OF YOUR DIRECT TESTIMONY.

A4. The purpose of my testimony is to: (1) provide an overview of the financial condition of the Department and the reasons the Department is requesting rate relief; (2) describe the applicable ratemaking and financial requirements, including the updated Financial Plan that the Department is requesting the Rate Board to approve; (3) explain the Department's ratemaking methodology, development of revenue requirements, projected increase in revenue requirements and need for additional revenue; (4) discuss the proposed changes in Stormwater Management Service Charge Credits and the Stormwater Management Fee in Lieu Charge; and (5) provide background information on prior rate proceedings.

Q5. PLEASE IDENTIFY THE SCHEDULES THAT ACCOMPANY YOUR DIRECT TESTIMONY.

A5. The following schedules accompany my testimony.

Schedule ML-1: Resume of Melissa LaBuda

Schedule ML-2: Financial Plan

Schedule ML-3: Bond Counsel Memorandum

Schedule ML-4: Rating Agency Reports

Schedule ML-5: Water Fund Projection Summary

Schedule ML-6: Financial Advisors Memorandum

II. FINANCIAL CONDITION OF THE DEPARTMENT

Q6. PLEASE DESCRIBE CHANGES IN THE DEPARTMENT'S FINANCIAL POSITION SINCE THE 2018 GENERAL RATE CASE.

A6. The Department's financial condition has deteriorated, since the last rate case. As the Rate Board will recall, additional revenues sufficient to generate a 1.33% rate increase in FY 2019 and an additional 1.2% increase in FY 2020 were authorized in 2018. PWD revenue requirements, however, have increased significantly above the level of authorized revenues**.**

Since the last rate case, the Department has experienced and continues to experience an increased level of expenditures related to workforce costs, services, chemicals, and materials/supplies compared with final 2018 rate case projections**.** During this same period, PWD revenue projections have remained basically flat, consistent with final 2018 rate case projections**.** This means, with exception of certain offsets related to power costs, indemnities and the one-time release of debt reserve funds, PWD is in a financial hole**.**

To be sure, this situation must change — not only to address the above deficiency, but to also address prospective needs related to financing our capital program. That is why rate relief is urgently needed.

Q7. PLEASE SPECIFICALLY DESCRIBE THE CHANGES IN THE FINANCIAL POSITION ALLUDED TO IN YOUR PRIOR RESPONSE.

A7. The Department has experienced several major cost increases that it cannot continue to absorb without additional revenues if the Department is going to maintain its financial status and current favorable bond ratings**.** For example, costs related to services, excluding electricity and gas, have increased from $157 million in Fiscal Year 2018 to $168 million in Fiscal Year 2019**.** The Fiscal Year 2019 total of $168 million is greater than the final 2018 rate case projection of $150 million. The Department's chemical costs have increased from $21.8 million in Fiscal Year 2018 to $22.1 million in Fiscal Year 2019**.** The Fiscal Year 2019 chemical cost exceeds the final 2018 rate case projection for the same period**.** The Department's materials, equipment and supply costs, excluding chemicals, have increased from $28 million in Fiscal Year 2018 to $31 million in Fiscal Year 2019**.** The Fiscal Year 2019 costs exceed the final 2018 rate case projection for the same period**.**

<u>Fiscal Year 2020 Review</u>

The Department is continuing to experience cost increases in Fiscal Year 2020 as compared to the final 2018 rate case and include:

- Workforce costs have increased from prior rate case projection of $281 million to $288 million.
- Services, excluding electricity and gas, have increased from prior rate case projection of $154 million to $178 million.
- Materials, equipment & supplies, excluding chemicals, have increased from prior rate case projection of $28 million to $31 million.
- Chemicals have increased from prior rate case projection of $21 million to $22

million.

- General Fund reimbursement has increased from prior rate case projection of $6.8 million to $7.7 million.

The total cost increase in the above noted categories is $30 million higher than prior rate case projections.

The Department can partially offset the increases by projected withdrawal from the rate stabilization fund of $21.8 million and decreases in indemnitees and electricity / gas costs which total $5 million. However, the largest off-set to the cost increases is a non-recurring revenue from a release from the debt service reserve account. This non-recurring revenue item totals $18 million.

Q8. WHY IS PWD'S FINANCIAL CONDITION RELEVANT TO THE CURRENT RATE CASE?

A8. The Department's Fiscal Year 2019 financial results, as compared to the prior rate case projections, demonstrate a pattern of increased expenses above prior rate case levels which are continuing into Fiscal Year 2020 and beyond**.** Expense levels above rate case projections require the Department to draw down reserves and / or attempt to implement a one-time solution until the Department is able to request rate relief**.**

The Department's financial condition is always a major concern to rating agencies and investors**.** It is particularly concerning, however, given the Department's plans to access the capital markets to finance its sizeable and increasing Capital Improvement Program.

Q9. PLEASE EXPLAIN THE DEPARTMENT'S FUTURE PLANS TO ACCESS THE CAPITAL MARKETS.

A9. The Department expects to finance its Capital Improvement Program during the FY 2021 and FY 2022 (the "Rate Period") with (i) debt issuances totaling $845 million; (ii) current revenues (i.e. coverage); and (iii) possibly alternate sources of funding, including loans or grants.[1] The City anticipates that all of the above debt to be in the form of new money revenue bonds issued in several transactions, as necessary**.** Bond issuance projections for the Rate Period are shown in the direct testimony of Black & Veatch**.** (See PWD Statement 7A, p.22).

Q10. HAS THE DEPARTMENT TAKEN STEPS TO MAKE FINANCING ITS CAPITAL PROGRAM MORE ECONOMICAL?

A10. Yes. PWD has taken advantage of low interest rates to reduce debt service expenses and the associated debt burden on ratepayers.

New Debt Issuance:

On August 14, 2019, the City issued $250,660,000 in new money revenue bonds, designated as City of Philadelphia, Pennsylvania-Water and Wastewater Revenue Bonds, Series 2019B ("the 2019B Bonds"). The proceeds were designated to finance a portion of the Department's capital program and to pay the cost of issuance. The 2019B bonds were structured with maturities from November 1, 2023 to November 1, 2027 and from November 1, 2043 to November 1, 2054. This transaction was achieved with historically low interest rates, helping the City deliver necessary improvements to Department rate

[1] The City may from time to time receive state or federal grants, but any such amounts are immaterial for purposes of this discussion.

payers at a lower cost. By achieving interest rates 0.6% less than the most recent previous Water & Wastewater Revenue borrowing, the City was able to save $14 million dollars in relative costs.

Refinancing Debt:

On February 27, 2019, the City entered into a Forward Purchase Contract and Bond Committee Determination for the issuance and purchase of certain City of Philadelphia, Pennsylvania, Water and Wastewater Revenue Refunding Bonds, Series 2020 (Forward Delivery), to be issued on October 7, 2020 (the “2020 Bonds”). The proceeds of the 2020 Bonds will be used to refund all or a portion of the City’s outstanding Water and Wastewater Revenue Bonds, Series 2011A. The refunding will produce savings derived in fiscal years 2021 through 2041 producing a total net present value savings of approximately $10.1 million.

On February 27, 2019, the City issued $68,335,000 in refunding revenue bonds, designated as City of Philadelphia, Pennsylvania-Water and Wastewater Revenue Refunding Bonds, Series 2019A. The proceeds were designated to refinance debt comprised of certain Water and Wastewater Revenue Bonds of the City. The refunding produced savings that will be derived in fiscal years 2020 through 2041 producing a total net present value savings of approximately $2.9 million.

Q11. DOES THE DEPARTMENT'S FINANCIAL PLAN ADDRESS THE NECESSITY OF MAINTAINING ITS CURRENT CREDIT RATINGS AND FINANCIAL METRICS?

A11. Yes. The Department's updated Financial Plan, as discussed later in my testimony, is designed to maintain the Department's current credit rating. The most recent credit ratings, received in July 2019, in connection with the issuance of the City's Water and Wastewater Revenue Bonds, Series 2019B are as follows: Moody's, A1, "stable outlook"; S&P, A+, "stable outlook"; and Fitch, A+, "stable outlook". The most recent rating reports are attached to my testimony as Schedule ML-4.

Credit ratings are important because the Department, like most utilities, is required to make significant capital infrastructure improvements each year for new and replacement assets**.** As noted in the Department's Financial Plan, approximately 90% of the Department's capital costs will be funded with sizeable debt issuance. Credit ratings are a critical component in determining the cost of debt as the ratings signal the Department's ability and willingness to meet financial obligations, notably including the repayment of its debt in full and on time. A downgrade of the credit ratings would result in an increase in the Department's borrowing costs and necessitate higher rate increases over time.

Approval of the requested rate increase together with the policies and metrics stated in the Financial Plan will ensure that there is no deterioration in cash and liquidity and will place PWD on a more sustainable financial path. Notably, in July 2019, S&P expressed concern that the Department relies on periodic draws on its Rate Stabilization Fund (RSF) to support operations. S&P's concern was mitigated, in part, by the fact that the

Department's projections do not indicate the balance of the RSF dropping below $135 million.

The requested rate increase together with the Financial Plan will help the Department to satisfy the rating agency's expectations. In July 2019, Moody's noted that continued rate increases are required to support debt and capital plan. In doing so, Moody's explained that financial projections showed the need for additional rate increases through fiscal year 2022. S&P also expressed that the Department will need to keep making consistent rate adjustments and controlling its overall costs. Fitch echoed the expectation that consistent rate action will be needed to support operations and planned capital spending.

III. REASONS FOR RATE RELIEF

Q12. IS OBTAINING RATE RELIEF KEY TO MEETING THE OBJECTIVES OF THE FINANCIAL PLAN.

A12. Yes. I already outlined that cost increase in certain categories is more than $30 million higher than prior rate case projections. Those are not the only increases. For example, the requested rate increase also reflects the need to clean four digesters per year, placing the cleaning on a once in every five-year cycle. That need is $10 million higher than prior projections. All of the projected increases, even with the proposed offsets, shows the need for rate increase so that the Department can meet the objectives of the Financial Plan.

While the Rate Board's rate support has been constructive in allowing the Department to maintain stable finances, any wavering for necessary rate increases will be met with a negative reaction. These reactions include credit ratings downgrades and capital markets access deterioration

Q13. PLEASE DESCRIBE WHAT WILL HAPPEN TO THE DEPARTMENT'S FINANCIAL METRICS IN THE ABSENCE OF PROPOSED RATE RELIEF.

A13. The Department is concerned that insufficient level of rate relief will be met with a negative reaction by the credit rating agencies. Such a reaction could take the form of a credit rating downgrade or market access deterioration. Municipal credit ratings are generally slow to rise and, often go down quickly. Thus, it is critical to assure rating agencies and investors of the long-term commitment to the cost recovery and stability of the Department's finances.

Bond investors also react to any failure to support needed rate increase. While PWD has been able to maintain access at low cost borrowing levels for the present, there is certainly no guarantee that this will continue without rate relief. And given the frequency of the Departments borrowing needs, it is critical to maintain confidence in the rate setting process.

Q14. WHY IS IT ESSENTIAL THAT THE RATE BOARD GRANT RATE RELIEF?

A14. The full requested rate increase is needed to improve the Department's deteriorated financial position, to pay for the day to day operating needs of the Department and to fund its ongoing capital improvement program**.** As such, the approval of the requested rate increases ensures funding for safety and reliability of the system**.** Additionally, the Rate Board's approval is essential for the Department to meet its enumerated goals and metrics of (i) senior debt service coverage of 1.3 times; (ii) pay-go funding goal of 20% of capital program; and (iii) maintaining liquidity at $150 million.

Q15. WHAT LEVEL OF INCREASED REVENUES IS BEING REQUESTED?

A15. The Department is requesting annual revenue increases to generate approximately $36 million in Fiscal Year 2021 and an additional $38 million in Fiscal Year 2022 with proposed effective dates starting September 1 of each year**.** In addition, the Department is proposing to make withdrawals from the Rate Stabilization Fund over the same period totaling $8.5 million to absorb some of the projected cost increases and protect rate payers from rising rates.

Q16. OVER WHAT PERIOD OF TIME ARE THE INCREASED REVENUES BEING REQUESTED?

A16. The Department is requesting increased revenues based on forecasted revenue requirements for Fiscal Years 2021 and 2022. This two-year rate period is consistent with the Rate Board's prior rate determinations in the 2016 and 2018 general rate proceedings. As discussed in the direct testimony of Black & Veatch, AWWA's "Principles of Water Rates, Fees, and Charges Manual of Water Supply M1" (the "AWWA Manual" or the "M1 Manual") is an industry manual, which was utilized in the cost of service study (See

PWD Statement 7A, page 6)**.** The M1 Manual acknowledges that government-owned utilities may use multi-year rate periods and phase in rates over the rate period**.**

IV. RATE-MAKING AND FINANCIAL REQUIREMENTS

Q17. PLEASE DESCRIBE THE REQUIREMENTS OF THE HOME RULE CHARTER WITH RESPECT TO RATEMAKING.

A17. The Philadelphia Home Rule Charter ("Charter") was amended in 2012 to allow City Council to establish, by ordinance, an independent ratemaking body responsible for fixing and regulating rates and charges for water and wastewater services (now known as the Water, Sewer and Storm Water Rate Board, and herein referred to as the "Board" or "Rate Board"), and open and transparent processes and procedures for fixing and regulating those rates and charges, including ratemaking standards (hereinafter, the "Rate Ordinance"). The Charter requires that the Board fix and regulate rates and charges for supplying water, wastewater, and stormwater services in accordance with standards established by City Council. Such standards must enable the City to yield from rates and charges an amount at least equal to operating expense and debt service requirements on any debt incurred or about to be incurred for water supply, sewage and sewage disposal purposes**.** It further provides that in computing operating expenses, there shall be a proportionate charge for all services performed for the Department by all officers, departments, boards or commissions of the City. (See Charter, Section 5-801.)

Q18. PLEASE SUMMARIZE THE STANDARDS OF THE RATE ORDINANCE WITH REGARD TO ESTABLISHING NEW RATES AND CHARGES.

A18. The Rate Ordinance was enacted and became effective on January 20, 2014, and its substantive provisions are set forth as part of Section 13-101 of the Philadelphia Code**.** Section 13-101(2) of the Philadelphia Code requires the Department to develop a comprehensive plan ("Financial Stability Plan" or "Financial Plan") in which the Department forecasts capital and operating costs and expenses and corresponding revenue requirements. The Financial Stability Plan must: (i) forecast capital and operating costs and expenses and corresponding revenue requirements; (ii) identify the strengths and challenges to the Department's overall financial status including the Water Department's credit ratings, planned and actual debt service coverage, capital and operating reserves and utility service benchmarks; and (iii) compare PWD to similar agencies in peer cities in the United States. The Department must submit an updated Financial Stability Plan to City Council every four years and update the plan prior to proposing revisions in rates and charges. The Department's current Financial Plan is attached to my testimony as Schedule ML-2.

Section 13-101(4) of the Philadelphia Code, entitled "Standards for Rates and Charges," contains the ratemaking standards established by City Council and applicable to this rate proceeding. This provision, among other things, requires the Board to establish rates and charges sufficient to fund budgeted operating expense and annual debt service obligations from current revenues and to comply with rate covenants and the debt service reserve requirement. It further requires that the rates and charges be developed in accordance with sound utility rate making practices and consistent with industry standards for water, wastewater and stormwater utilities (including standards published by the American

Water Works Association and the Water Environmental Federation). Paragraphs (e) and (f) of Section 13-101(4) require special rates and charges to be established for certain categories of customers. As explained in the direct testimony of Black & Veatch, the proposed rates comply with these requirements. (See PWD Statement 7A page 26 to 29)

In addition, Section 13-101(4)(b)(i) of the Philadelphia Code requires the Board to: (i) fully consider the Water Department's Financial Plan, (ii) determine the extent to which current revenue should fund capital expenditures and the minimum level of reserves to be maintained during the rate period based on all relevant information presented including, but not limited to, peer utility practices, best management practices and projected impacts on customer rates, and (iii) set forth such determinations in the Board's written report.

Q19. WHAT ADDITIONAL REQUIREMENTS ARE APPLICABLE TO RATE SETTING?

A19. In the 1989 General Bond Ordinance, the City covenanted with the bondholders that it will impose, charge and collect rates and charges in each Fiscal Year sufficient to produce annual net revenues which are at least 1.20 times the debt service requirements, excluding the amounts required for subordinated bonds (as defined in the 1989 General Bond Ordinance). In addition, the City's covenants to its bondholders require that net revenues in each fiscal year must be equal to 1.00 times (A) annual debt service requirements for such fiscal year, including the amounts required for subordinated bonds, (B) annual amounts required to be deposited in the debt reserve account, (C) the annual principal or redemption price of interest on General Obligation Bonds payable, (D) the annual debt service requirements on interim debt, and (E) the annual amount of the deposit to the Capital Account (less amounts transferred from the Residual Fund to the

Capital Account). In this testimony, these covenants are referred to collectively as the "Rate Covenants."

Further, pursuant to the 1989 General Bond Ordinance, the City will, at a minimum, impose, charge and collect in each Fiscal Year such water and wastewater rents, rates, fees and charges and shall yield Net Revenues (defined for purposes of this covenant particularly, calculated to exclude any amounts transferred from the Rate Stabilization Fund to the Revenue Fund in, or as of the end of, such Fiscal Year) which will be equal to at least 0.90 times Debt Service Requirements for such Fiscal Year (excluding principal and interest payments in respect of Subordinated Bonds and transfers from the Rate Stabilization Fund).

A failure by the Department (City) to comply with any provision of its revenue bonds or with any Bond Covenant constitutes an event of default as defined under the 1989 General Bond Ordinance (a "Covenant Default"). In the event of a Covenant Default, a bondholder of any of the Department's revenue bonds will be entitled to all the remedies provided under the First Class City Revenue Bond Act (the "Act"). Upon such event, the holders of 25% in aggregate principal amount of the affected series of the Department's revenue bonds may appoint a trustee to represent such bondholders to exercise remedies. Such trustee may, and upon the written request of the holders of 25% in aggregate principal amount of such revenue bonds must, sue the City at law or in equity to enforce the rights of the aforesaid bondholders including, among others, their right to require the City to impose and collect sufficient rates, as required under the 1989 General Bond Ordinance, if the City has failed to do so.

Additional information on the Bond Covenants is provided in the Bond Counsel Memorandum attached to my testimony as Schedule ML-3.

Q20. HAS THE DEPARTMENT PREPARED A FINANCIAL STABILITY PLAN AS REQUIRED BY THE RATE ORDINANCE?

A20. Yes, the Department updated its Financial Plan prior to initiating this rate proceeding. The updated Financial Plan is attached to my testimony as Schedule ML-2**.**

Q21. PLEASE DESCRIBE THE CONTENTS OF DEPARTMENT'S FINANCIAL PLAN.

A21. The Financial Plan contains four major sections which provide the information required by the Rate Ordinance. The first section summarizes information on financial results versus projections**.**

The second section of the Financial Plan describes the Department's goals and key policies with respect to capital funding from current revenues, debt service coverage, debt issuance and cash revenues. As explained in this section, the Department proposes no changes to the financial metrics approved by the Rate Board in its Rate Determination in the 2018 general rate proceeding. Projections of future costs and revenue requirements and the strengths and challenges to the Department's overall financial status, including planned debt service coverage, debt issuance, and cash reserves are also addressed in this section.

The third section of the Financial Plan is a peer utility review and includes a comparison of credit ratings, financial metrics for revenue and debt, debt service coverage, reserve levels, debt to revenue ratios, affordability and asset conditions.

The fourth section presents total Revenue & Revenue Requirements and establishes how much money the utility needs to meet its fiscal year operating and capital obligations.

Q22. PLEASE DESCRIBE THE COMPONENTS OF THE FINANCIAL PLAN FOR WHICH APPROVAL IS REQUESTED.

A22. PWD is requesting that the Rate Board approve the specific financial metrics of the Financial Plan previously approved by the Rate Board in the prior general rate proceeding**.** These consist of: (i) target funding of at least 20% of the Department's capital program from current revenues; (ii) keeping a Senior Debt Service Coverage Ratio of 1.30x as a target for the rate period; (iii) maintaining $150 million as the combined target for cash reserves in the Rate Stabilization and Residual Funds**.**

Q23. WHY IS PWD REQUESTING THAT THE RATE BOARD REAFFIRM THE FINANCIAL METRICS APPROVED IN THE 2018 RATE DETERMINATION?

A23. As discussed previously and in my testimony during the 2018 general rate proceeding, the rating agency reports have noted the Department's relatively large capital improvement plan and heavy reliance on long-term debt to fund its capital program, as well as the Department's relatively low coverage levels compared to its peers. The fundamental ratemaking philosophy for most financially stable municipal utilities is to provide safe and reliable service at rates that recover all current costs, plus a margin in excess of current costs. This margin, also referred to as coverage, is a municipal utility's only real alternative to issuing debt to fund a portion of the capital program costs. Using current revenues to fund capital expenditures is necessary to improve debt service coverage to industry standards and is just and reasonable as a principle of both finance and ratemaking. From both an operational and a credit rating perspective it is essential for the Department to sustain debt service coverage levels significantly above the minimum levels required by the Rate Covenants to provide rating agencies and bondholders comfort that the Department is not continually operating at the edge of an event that would cause a violation of the Rate Covenants.

As also noted in the memorandum from bond counsel, the 1989 General Bond Ordinance dictates the priority of payment and the flow of revenues collected from rates in and out of the funds and accounts of the Water Fund. There is never a guarantee that the Department's revenues will be sufficient in the future to cover the revenue requirements used to establish rates and charges. Given the required flow of funds under the General Bond Ordinance, any shortfall will impact the amount of revenue that can be used to fund the Capital Improvement Program before it impacts any other element of the revenue requirement.

Maintaining adequate cash reserves in funds such as the Department's Rate Stabilization and Residual Funds is a standard element of ratemaking for municipal utilities. This allows a municipal utility to deal with contingencies and help such utilities demonstrate the financial stability necessary to achieve and maintain good credit rating. Additional information in support of these financial policies regarding maintaining adequate cash reserves in the rate stabilization and residual fund and certain financial metrics is provided in the memorandum from the Department's financial advisor, attached to my testimony as Schedule ML-6.

Reaffirming these financial metrics (20% pay go target, 1.30 times Senior Debt Service Coverage Ratio, and maintaining a $150 million combined target in the Rate Stabilization and Residual Fund) not only memorializes these goals along with resulting rate increases, but also assists the Department with its persuasion of the rating agencies to maintain or improve the Department's ratings.

V. RATE-MAKING METHODOLOGY

Q24. ON WHAT BASIS DOES THE DEPARTMENT ESTABLISH RATES AND CHARGES?

A24. The Department's rates are set using the cash basis of accounting. Under this basis, revenues are recorded on a receipt basis, except revenues from other governments and interest. Expenditures are recognized and recorded as expenses at the time they are paid or encumbered, except debt service which are recorded when paid.

Q25. WHAT SPECIFIC RATEMAKING METHODOLOGIES AND POLICIES APPLY TO THE DEPARTMENT, AS A MUNICIPAL UTILITY?

A25. The Department is one of the operating departments of the City and is a "government-owned utility" as defined in AWWA's M1 Manual. For government-owned utilities, the initial measure of whether revenues under existing rates are adequate is made to determine whether such revenues are sufficient to meet the utility's cash requirements for the study period. The Department has no shareholders and does not pay a dividend or rate of return to the City as the owner of the water and wastewater systems. Virtually all the funds needed to run the operations of the Department come from ratepayers or from proceeds of debt borrowing.

The cost of borrowing must be paid by ratepayers. Therefore, the rates and charges are set by determining the appropriate levels of cash, debt service coverage and other financial metrics necessary to enable the Department to pay its bills and maintain efficient access to the capital markets at reasonable rates.

VI. DEVELOPMENT OF REVENUE REQUIREMENTS

Q26. HOW DOES THE DEPARTMENT DETERMINE THAT A RATE INCREASE IS NECESSARY?

A26. The Department initially develops projected revenue requirements for future fiscal years in the same manner as in the two previous general rate proceedings before the Rate Board. The Department's approved operating budget for Fiscal Year 2020 is used as a starting point for developing projected revenues and expenses anticipated as of Fiscal Years 2021 and 2022**.** The Department's rate consultant, Black & Veatch, then used the budget data with specific adjustments as inputs to its financial cost-of-service model it developed to determine appropriate rates and charges for the Department.

Various City departments and agencies provide operational support to the Department, for which they receive a direct appropriation at the beginning of each Fiscal Year ("Direct Appropriation") or interfund transfer during the Fiscal Year from the Water Department's operating budget. These departments include: the Revenue Department (Water Revenue Bureau or "WRB") for meter reading, billing and collection services; the Law Department for legal services; the Department of Public Property for the rental of office space and parking; the Office of Fleet Management for vehicle acquisition, fuel, and vehicle maintenance; the Office of Innovation and Technology for communications and computer support services; the Procurement Department for services related to the acquisition of goods and services; the Office of the Director of Finance for fringe benefits, indemnities and support services; the Sinking Fund Commission for the payment of debt service; the Philadelphia Fire Department for inspection and testing of City fire hydrants and inspection of industrial facilities required under the City's Municipal Separate Storm Sewer System (MS4) Permit from the Pennsylvania Department of Environmental Protection; the Office of Sustainability for energy procurement services; the Office of Transportation and Infrastructure; and the Rate Board**.**

Q27. HOW DOES THE DEPARTMENT DETERMINE ITS ANNUAL OPERATING BUDGET?

A27. The Department, like all other City departments, submits a proposed budget for the following year to the Office of the Director of Finance Budget Bureau and the City's Managing Director's Office for consideration and inclusion in the Mayor's proposed annual operating budget. The Department began preparation of its operating budget for Fiscal Year 2020 in August 2018, when each of the Department's divisions and the Water Revenue Bureau submitted their budget proposals setting forth their estimated obligations for Fiscal Year 2020**.** Revenue estimates were prepared by the Water Revenue Bureau under the direction of the City's Office of the Director of Finance and the Department**.** I, with the assistance of the Financial Planning, Budget and Rates team and with the support of the Water Commissioner, reviewed all the budget proposals of the various Water Department divisions and the Water Revenue Bureau. On or about January 4, 2019, the Water Department submitted its proposed Fiscal Year 2020 budget proposal to the City's Budget Bureau. The Mayor then submitted the Department's proposed budget as part of the City's proposed operating budget for Fiscal Year 2020, which was submitted to City Council on or about March 7, 2019**.** The City's Fiscal Year 2020 annual operating budget was approved by City Council on June 13, 2019 and signed by the Mayor on June 18, 2019 and amended during December 2019**.**

Q28. HOW DOES THE WATER DEPARTMENT DEVELOP ITS CAPITAL IMPROVEMENT PROGRAM AND CAPITAL BUDGET?

A28. The Water Department updates its Capital Improvement Program and capital budget annually as part of its annual budget process. The Department began preparing its capital budget request for Fiscal Year 2020 in September 2018. The budget was approved by the City Planning Commission and the Mayor's Office and included in the City's capital budget for Fiscal Year 2020, Five-Year Financial and Strategic Plan for Fiscal Years 2020-2024, and Capital Program for Fiscal Years 2020-2025, all of which were submitted to City Council for adoption. The City's capital budget for FY 2020 and its capital program for Fiscal Years 2020 through 2025 were approved by City Council on June 13, 2019 and signed by the Mayor on June 18, 2019**.**

Q29. WHAT IS THE WATER FUND?

A29. The Water Fund is an accounting convention established pursuant to the Charter for accounting for the assets, liabilities, revenues, expenses, and Rate Covenant compliance for the City's water and wastewater systems. The operations of the Water Department are accounted for in the Water Fund, which is an enterprise fund of the City**.**

Q30. HOW ARE THE CITY'S ACCOUNTING AND FINANCIAL POLICIES APPLIED TO THE WATER FUND ACCOUNTS?

A30. For purposes of rate setting, calculating compliance with the Rate Covenant and debt service coverage and budgeting, the Water Fund accounts are maintained on a cash basis of accounting, also referred to as the "Legally Enacted Basis." Under this basis, revenues are recorded on a receipt's basis, except revenues from other governments and interest, which are accrued as earned**.**

Q31. HOW ARE PROJECTIONS DEVELOPED FOR THE WATER FUND?

A31. Schedule ML-5, attached to my testimony, is the Water Fund Projection Summary for the Water Operating Fund. The column labeled "FY'18 Year-End Final" summarizes the Department's final revenues, obligations/appropriations, adjustments and balances for Fiscal Year 2018**.** The column labeled "FY'19 Year-End Preliminary" contains the same preliminary (unaudited) information for Fiscal Year 2019. The column labeled "FY'20 Black &Veatch Projected Budget" summarizes the same information as budgeted for the Department in the City's Fiscal Year 2020 annual operating budget, updated as part of the cost of service study reflecting various spend factors and other adjustments. As explained by the testimony of Black & Veatch, for purposes of developing projections for Fiscal Years 2021 and 2022, further adjustments were made to the budgeted data, where necessary, to ensure that the projections are representative of the amounts that the Department expects to experience during the Rate Period.

Q32. HOW IS SCHEDULE ML-5 USED IN THE RATE FILING?

A32. The schedule ML-5 bridges the presentation differences between Black & Veatch schedules and the City's Water Fund budgetary schedules.

VII. PROJECTED INCREASED REVENUE REQUIREMENTS

Q33. WHAT ARE THE REASONS FOR THE DEPARTMENT'S INCREASED REVENUE REQUIREMENTS?

A33. The main reasons for the Department's need for additional revenues include: (1) higher cost of infrastructure maintenance; (2) reduced water consumption; and (3) unavoidable increases in work force costs. Another factor driving the need for rate relief includes increases in the cost of various chemicals used in the water treatment process.

Q34. PLEASE EXPLAIN WHY MAINTENANCE COSTS FOR INFRASTRUCTURE ARE INCREASING.

A34. The Department has experienced cost increases related to workforce costs, general maintenance and repairs. These costs are driven by a variety of factors including general economic conditions. In particular, the Department has experienced significant cost increases related to cleaning of the 20 anaerobic digester tanks located at the Water Pollution Control plants.

The current costs to clean four digesters is in excess of $13.7 million dollars which exceeds Fiscal Year 2019 costs by $10 million. The Department must implement a reasonable and practical time frame to clean the digester tanks. The Department's rate increase reflects the need to clean four digesters per year, placing the cleaning on a once in every five-year cycle.

Q35. DOES THE CITY POLICY MANDATING THE SHIFT IN CERTAIN SPENDING FROM THE CAPITAL BUDGET TO THE OPERATING BUDGET IMPACT REVENUE REQUIREMENTS DURING THE RATE PERIOD?

A35. As I noted in my testimony in the 2018 general rate proceeding, under City-wide budgeting and accounting policies, PWD is no longer able to procure certain vehicle types with capital funds and must instead use operating funds. The additional operating cost related to this change totaled approximately $3 million as of the 2018 rate proceeding and as of Fiscal Year 2019 totaled approximately $3.1 Million. The Fiscal Year 2020 budget reflects $4 Million of which all is expected to be spent. In PWD's budgets for the rate period, the Department also will be required to fund certain critical maintenance and repair projects at its treatment plants through its operating budget. These projects include the dredging of a raw water basin, electrical repairs, masonry repairs, digester cleaning and corrosion protection for piping. Additional employee costs previously paid through the capital budget also must be shifted to the operating budget. This process started with Fiscal Year 2019 and will continue for the next few years.

Q36. PLEASE DESCRIBE HOW INCREASING WORK FORCE COSTS IMPACT REVENUE REQUIREMENTS.

A36. The Department's payments to the Municipal Pension Fund continue to increase. Fiscal Years 2019, 2018, and 2017 payments were approximately $65.0 million, $62.6 million, and $61.0 million, respectively. The estimated payment for Fiscal Year 2020 is $67.3 million and the proposed payment for Fiscal Year 2021 is $69.2 million. This is an increasing cost the Department does not control and is unavoidable.

Payments from the Water Fund to the City's General Fund for the Water Fund's allocable share of principal and interest payments on the City's Pension Bonds for Fiscal Years 2019, 2018, and 2017 were approximately $14.3 million per year. These payments are expected to remain $14.3 million in Fiscal year 2020 and Fiscal Year 2021.

During Fiscal Year 2020, the Department started reimbursing the Fire Department for the functional testing of Department's fire hydrants. This work-force cost is expected to total approximately $3 million in Fiscal Year 2020.

Q37. PLEASE EXPLAIN ANY DECREASES IN BILLED WATER CONSUMPTION AND ASSOCIATED REVENUES.

A37. A review of historical water usage per account, performed by Black &Veatch, shows a continued decline in usage per account from 2015 to 2019 for 5/8-inch meter General Service Customers of about 1.4% annually. This finding is consistent with decreasing consumption patterns reported by other water utilities in the region**.** For example, in a recent proceeding before the Pennsylvania Public Utility Commission, a water utility serving suburban counties around Philadelphia reported that annual water sales have fallen by 1.3% annually since 2011.[2]

[2] See AP Statement No. 1, Direct Testimony of William C. Packer on behalf of Aqua Pennsylvania, Inc., PUC Docket No. R-2018-3003068, available at: http://www.puc.state.pa.us/about_puc/search_results.aspx and at: http://www.puc.state.pa.us//pcdocs/1582240.pdf

VIII. PROPOSED CHANGES IN STORMWATER MANAGEMENT SERVICE CREDIT AND FEE IN LIEU CHARGE

Q38. PLEASE DESCRIBE THE DEPARTMENT'S PROPOSED CHANGES IN THE STORMWATER MANAGEMENT SERVICE (SWMS) CREDIT.

A38. In 2019, PWD engaged various stakeholders in a facilitated process to consider changes to rate structure in three areas: water quantity charges, stormwater credits and incentives, and recovery of pension related expenses. One of the alternatives presented for adjusting stormwater credits was to revise credit eligibility to align the credit criteria with the Department's stormwater regulations. Currently, the stormwater regulations require properties subject to the regulations to manage the first 1.5 inches of stormwater runoff, while the credit program requires management of only the first 1 inch of stormwater runoff. Attendees and commenters generally agreed with revising the credit program to increase the credit eligibility threshold from 1 inch to 1.5 inches of stormwater managed to align the credit program with the regulations. However, some suggested that projects already receiving credit for 1 inch of stormwater runoff be grandfathered into the credit program.

As part of this rate proceeding and based on the comments received during the alternative rate analysis, PWD is proposing to revise Section 4.5 of Rates and Charges to align the stormwater credit eligibility criteria with the regulations. The proposed change, if approved, would require properties receiving impervious area (IA) management credit for managing stormwater runoff to manage the first 1.5 inches of stormwater runoff. Properties for which PWD has received credit applications before September 1, 2020, would be grandfathered and thus be allowed to receive IA credit under the credit eligibility requirements in effect before that date.

In addition, PWD is proposing to revise Section 4.5(c)(1)(i) of Rates and Charges to clarify the types of stormwater management practices that are eligible for Impervious Area Reduction (IAR) adjustments. IAR adjustments result in a direct reduction of billable impervious area on a parcel and must meet the requirements in the Stormwater Management Service Charge Credits and Appeals Manual (the "Manual"). The Manual limits IAR adjustments to three types of stormwater management practices, tree canopy cover, roof leader/downspout disconnection, and pavement disconnection. The proposed revisions to Section 4.5(c)(1)(i) are proposed to clarify that only these three stormwater management practices qualify for IAR adjustments**.**

Q39. PLEASE DESCRIBE THE DEPARTMENT'S PROPOSED CHANGES IN THE STORMWATER MANAGEMENT FFE IN LIEU CHARGE.

A39. The Department is proposing to change the Stormwater Management Fee in Lieu Charges in Section 8.2 of Rates and Charges from $15 per square foot of earth disturbance to $25 per square foot based on the total directly connected impervious Area within the limits of earth disturbance. This change is being made to reflect more recent data on the cost to the Department to construct and maintain similar stormwater management projects. In addition, the Department is proposing to delete portions of Section 8.2 that are covered by the Department's current stormwater regulations.

IX. PRIOR RATE PROCEEDINGS

Q40. PLEASE SUMMARIZE RECENT CHANGES IN RATES AND CHARGES APPROVED BY THE RATE BOARD.

A40. The present proceeding is the fifth rate proceeding and third general rate proceeding before the Rate Board. The Rate Board issued rate determinations on June 6, 2016 and July 12, 2018 in the two prior general rate proceedings. The Rate Board also conducted a special rate proceeding from October to December of 2016 as a result of an ordinance adopted on June 28, 2016, which required the Rate Board to establish special discounted rates for eligible community gardens. In 2019, the Rate Board conducted a TAP-R (Tiered Assistance Program Rate Rider Surcharge Rate) Reconciliation Proceeding to implement an annual adjustment to TAP-R under a reconciliation procedure approved by the Rate Board in its July 12, 2018 Rate Determination.

In the 2016 general rate proceeding, the Rate Board approved rate increases necessary to recover an additional $89 million in revenues in Fiscal Years 2017 and 2018, reflecting an average annual revenue increase of about 4.5% over those two years. In the 2018 general rate proceeding, the Rate Board approved rate increases necessary to recover an additional $24.5 million in revenues in Fiscal Years 2019 and 2020, reflecting annual revenue increases of 1.33% for Fiscal Year 2019 and 1.2% additional increase for Fiscal Year 2020. The increase for Fiscal Year 2020 was reduced slightly as a result of the annual adjustment approved by the Rate Board in the 2019 TAP-R Reconciliation Proceeding. For a typical residential customer with a 5/8-inch meter and using 500 cubic feet of water per month, the average monthly bill increased from $66.50 on September 1, 2017, to $66.98 on September 1, 2019, or less than 1% annually over the past two years.

Q41. PLEASE COMPARE THE PROJECTED REVENUE REQUIREMENTS IN THE 2018 GENERAL RATE CASE WITH THE ACTUAL RESULTS.

A41. **Revenues**

Fiscal Year 2019 revenues were in-line with 2018 rate case projections with a variance of 0.60%**.**

Operating Expenses and Liquidated Encumbrances

During Fiscal Year 2019 operating expenses were higher than 2018 rate case projections in several main categories including services, materials, supplies and equipment, chemicals, and reimbursements to the General Fund**.** The increased operating expenses for the categories noted above versus final 2018 rate case projections total approximately $22,815,000.

These increases were partially off-set by Fiscal Year 2019 operating expenses with results that were lower than 2018 rate case projections including electricity, gas, and indemnities**.** The lower than expected operating expenses for the above noted categories totals approximately $4,670,000.

Liquidated Encumbrances which reduce operating expenses were higher than 2018 rate case projections by approximately $7,760,000. The combined impact of the operating expenses and increased liquidated encumbrances versus 2018 rate case projections totaled a net higher cost to the rate base of $10,390,000.

Debt Service Payments

During Fiscal Year 2019 debt service payments were lower than 2018 rate case projections by approximately $7,940,000.

Capital Account Deposits

Fiscal Year 2019 capital account deposits were higher than 2018 rate case results by approximately $3,236,000.

X. CONCLUSION

Q42. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A42. Yes, it does.

Melissa La Buda

melissa.labuda@phila.gov

Education

Bloomsburg University of Pennsylvania
Bloomsburg, Pennsylvania
Bachelor of Science in Business Administration May 1995

Organizations / Affiliations

American Water Works Association (AWWA)
Financial Community Advisory Group
2019

National Association of Clean Water Agencies (NACWA)
Finance Workgroup
2016 to Present

Professional Experience

City of Philadelphia, Philadelphia Water Department, Philadelphia, Pennsylvania
Deputy Water Commissioner, Chief Financial Officer, 2015-present
Assistant Deputy Water Commissioner, 2013-2014

- Responsible for the Water Department's financial management, including: accounting, budget, rates and charges, debt management, grant management, capital program funding, audit, procurement, contract management, and risk.
- Provide financial oversight for an $800 million Operating Budget, plus a $400 million Capital Budget, and establish protocols to monitor long-term budget stability.
- Provide expert witness testimony to legislative and regulatory matters to various agencies on behalf of the Department
- Manage a team of 60 professionals that perform necessary financial operations in support of the Water Department and its 2,000+ employees
- Led the development of a long-range financial planning model and Cost Allocation Plan
- Implemented the creation of standard operating procedures for the Finance and Accounting Units

Morgan Stanley, Inc., New York, New York
Fixed Income Division, Public Finance Department – Vice President, 2005-2013

- Provided investment banking services to some of the country's largest public utility systems, including origination, structuring and execution of a variety of municipal debt transactions
- Helped solve complex financing challenges and led the financing for over $25 billion of municipal debt
- Structured and marketed various financing and refinancing options to municipal debt issuers.
- Worked on all aspects of business development, development of product marketing materials, responses to request for proposals, rating agency and investor materials.
- Demonstrated relationship development expertise that resulted in expansion of the Firm's municipal client base, increasing revenues.
- Led marketing, structuring and execution of the South Carolina Public Service Authority's ("Santee Cooper") Series 2012ABC Transaction.

Public Financial Management, Inc., New York, New York
Financial Advisory - Senior Managing Consultant, 2001-2005

- Analyzed, structured and executed municipal debt transactions for Utility and Transportation issuers. Worked independently and as a team member on all aspects of transactions including complex modeling, marketing, structuring, pricing, execution and documentation.
- Performed pre- and post-pricing analysis. including analysis of comparable transactions, market conditions and overall plan of finance objectives. Created rating agency presentations and written marketing materials for existing clients.
- Provided structuring and analytical advice to MEAG Power, JEA, Energy Northwest, BATA, MBTA, and ACTA on debt restructuring and new money issuance totaling in excess of $6 billion of debt.
- Analyzed and structured the State of Wisconsin $1.7 billion Pension Obligation Bonds

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melissa.labuda@phila.gov

Morgan Stanley Investment Management, West Conshohocken, Pennsylvania
Marketing Services - Associate, 1999-2001

- Created product proposal responses for Morgan Stanley Investment Management's investment services, specifically for high yield, emerging market debt and investment grade fixed income products.

Public Financial Management, Inc., Harrisburg, Pennsylvania
Asset Management Group - Trader, 1996-1999

- Facilitated daily trading of a $1 billion dollar short-term investment grade, pooled fixed income portfolio.
- Assisted in management of individual portfolios for California and Pennsylvania local governments.

Dauphin Deposit Bank & Trust Co., Harrisburg, Pennsylvania
Private Asset Management - Analyst, 1995-1996

- Gained familiarity with handling of stock and bond trading from retail and institutional perspective.

Schedule ML -2

PHILADELPHIA WATER DEPARTMENT

FY2018 & FY2019 Summary & Five-Year Plan
Financial Projections Plan FY20 to FY25

PREPARED BY: MELISSA LA BUDA, PWD DEPUTY COMMISSIONER, FINANCE / JANUARY 2020

The Financial Plan Supports the PWD Vision, Mission and Values

PWD's vision is **"to be America's model 21st century urban water utility** – one that fully meets the complex responsibilities and opportunities of our time and our environment."

TABLE OF CONTENTS

PWD MISSION

The primary mission of the Philadelphia Water Department is to plan for, operate, and maintain both the infrastructure and the organization necessary to purvey high quality drinking water, to provide an adequate and reliable water supply for all household, commercial, and community needs, and to sustain and enhance the region's watersheds and quality of life by managing wastewater and stormwater effectively. In fulfilling its mission, the utility seeks to be customer-focused, delivering services in a fair, equitable, and cost-effective manner, with a commitment to public involvement. Having already served the City and region for nearly two centuries, the utility's vision for the future includes an active role in the economic development of Greater Philadelphia and a legacy of environmental stewardship.

FY2018 & FY2019 Financial Results

- FY2018 & FY2019 Revenue & Expense Summary
- Debt Service Coverage
- Capital Funding
- Rating Agency Summary

PWD Ended FY2019 in-line with Projections

REVENUES

System-generated revenue results (excluding transfers from Rate Stabilization Fund) were nearly equal to projections:

- +0.63% variance from 2018 rate case projections

OBLIGATIONS

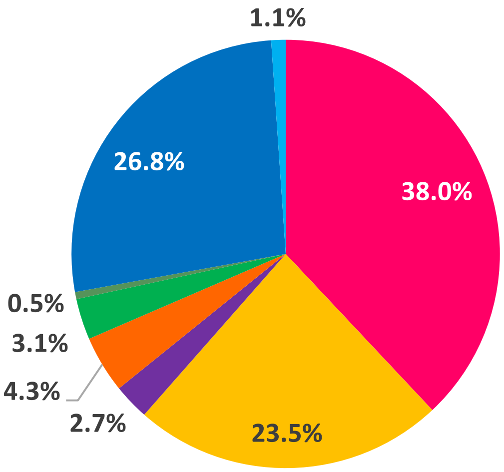
Actual expense results exceeded projections by 1.5% from the projections. The main reason for differences are related to:

- Maintenance at treatment plants,
- Advanced Metering Infrastructure, and
- Customer service and repair programs

Note: Expense results above exclude transfers and liquidated encumbrances. Because of the performance of revenues and the higher than projected expense levels, the Net Revenues available for debt service were lower than projected.

FY2019 Expense Summary

Projected vs. Unaudited Final



	EXPENSE CATEGORY	FY19 PROJECTED ($000s)	FY19 UNAUDITED FINAL ($000s)	VARIANCE
38.0%	Workforce Costs	270,874	271,047	0.06%
23.5%	Services	150,160	167,556	11.58%
2.7%	Electricity and Gas	22,180	19,336	-12.82%
4.3%	Materials , Equipment & Supplies	28,295	30,793	8.83%
3.1%	Chemicals	20,527	22,115	7.74%
0.5%	Indemnities	5,642	3,816	-32.36%
26.8%	Capital Program - Debt Service Payments	198,847	190,908	-3.99%
1.1%	General Fund Reimbursement	6,591	7,752	17.62%
	TOTAL	**$703,116**	**$713,323**	**1.45%**

Actual expense results over projections by 1.45%

The largest deviations (%) from projections were from: Services, Electricity & Gas, Indemnities and Materials.

PHILADELPHIA WATER DEPARTMENT

FY2019 Transfers & Liquidations

Transfers	FY19 Projected	FY19 Final	Variance
Capital Program (Deposits to Capital Account)	59,729,000	**62,964,743**	5.42%
Rate Stabilization Fund Withdrawal	3,277,000	**4,321,032**	31.86%

Liquidated Encumbrances	FY19 Projected	FY19 Final	Variance
Liquidated Encumbrances	($22,664,000)	**($30,420,600)**	-34.2%

PHILADELPHIA WATER DEPARTMENT

FY2019 Debt Service Coverage & Capital Funding

FY2019 Debt Service Coverage Results

	FY2019 Projected	FY2019 Unaudited Final
Revenue Bonds Debt Service Coverage	1.30x	**1.33x**
Total Debt Service Coverage	1.16x	**1.18x**

FY2019 Capital Funding Results

	Total Transfer to Capital Account	Total Expenditures for Capital	%	20% Goal Met?
FY2019 Proposed	$59.7 million	$328.3 million	18.2%	N
FY2019 Final	$62.9 million	$311.8 million	20.2%	Y

PHILADELPHIA WATER DEPARTMENT

Cash Balances, Rate Stabilization and Residual Funds

In FY 2019, the Water Department's year-end Rate Stabilization Fund and total cash reserve balances were lower than projected.

Cash Balances

Fiscal Year	Residual Fund*	Rate Stabilization Fund*	Total Cash Reserves
2019 Projected	$15.1 million	$185.7 million	**$200.8 million**
2019 Final	$15.9 million	$179.8 million	**$195.7 million**

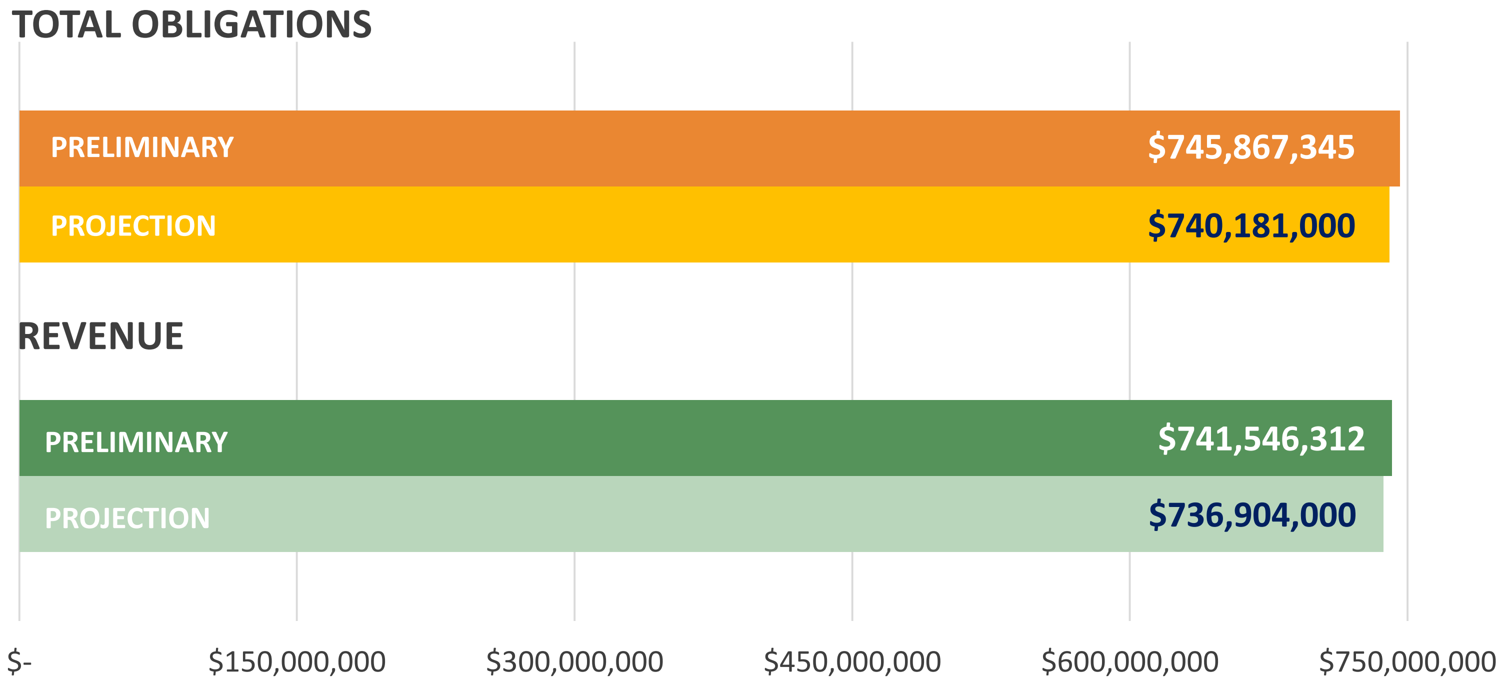
*year-end balance

Sources: PWD Financial Statements, FY2019 & FY2020 Rate Case FINAL Tables (Black & Veatch)

PHILADELPHIA WATER DEPARTMENT

FY2019 Preliminary Results

Actuals vs. Projections



***Note**: Revenue totals presented exclude revenues from the Rate Stabilization Fund. Obligations include transfers to the Rate Stabilization Fund and liquidated encumbrances.*

PHILADELPHIA WATER DEPARTMENT

PWD Ended FY2018 in-line with Projections

REVENUES

System-generated revenue results (i.e., excluding transfers from Rate Stabilization Fund) were nearly equal to projections:

- **(0.31**%) variance from the rate case projections

OBLIGATIONS

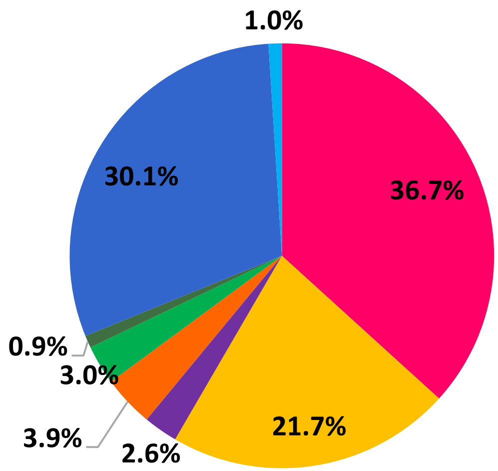
Actual expense results exceeded rate case projections by 2.50% from the rate case projections. The main reason for differences are related to:

- Professional Services – Consent Order & Agreement

Note: Expense results above exclude transfers and liquidated encumbrances. Because of the performance of revenues and higher than projected expense levels, the Net Revenues available for debt service were lower than projected.

FY2018 Expense Summary

FY2018 Projected vs. Final



	EXPENSE CATEGORY	FY18 PROJECTED ($000s)	FY18 FINAL ($000s)	VARIANCE
36.7%	Workforce Costs	261,853	266,154	1.64%
21.7%	Services	142,909	156,997	9.86%
2.6%	Electricity and Gas	21,991	18,858	-14.25%
3.9%	Materials , Equipment & Supplies	28,136	28,306	0.60%
3.0%	Chemicals	20,527	21,771	6.06%
0.9%	Indemnities	5,141	6,779	31.87%
30.1%	Capital Program - Debt Service Payments	220,026	218,483	-0.70%
1.0%	General Fund Reimbursement	6,431	7,319	13.81%
	TOTAL	707,014	724,667	2.5%

Actual expense results exceed projections by 2.5%

- Workforce and Consent Order & Agreement costs accounted for the highest amount of spending variance.
- The largest deviations (%) from projections related to Services, Indemnities and Reimbursements to the General Fund.

PHILADELPHIA WATER DEPARTMENT

FY2018 Transfers & Liquidations

Transfers	FY18 Projected	FY18 Final	Variance
Capital Program (Deposits to Capital Account)	$ 62,442,000	**$ 63,680,675**	+2.0%
Debt Refinancing Transfers	$ 19,000,000	**$ 18,765,332**	-1.2%
Rate Stabilization Fund Withdrawal	$ 12,200,000	**$ 24,629,567**	+101.9%

Liquidated Encumbrances	FY18 Projected	FY18 Final	Variance
Liquidated Encumbrances	($23,829,000)	**($32,413,215)**	-36.0%

FY2018 Debt Service Coverage & Capital Funding

FY2018 Debt Service Coverage Results

	FY2018 Projected	FY2018 Final
Revenue Bonds Debt Service Coverage	1.37	**1.38**
Total Debt Service Coverage	1.24	**1.19**

FY2018 Capital Funding Results

	Total Transfer to Capital Account	Total Expenditures for Capital	%	20% Goal Met?
FY2018 Proposed	$62.4 million	$ 318 million	19.6%	N
FY2018 Final	$ 63.7 million	$231 million	28.0%	Y

source: PWD Financial Statements , Rate Compliance Schedule, Black & Veatch Financial Plan Tables

PHILADELPHIA WATER DEPARTMENT

Cash Balances, Rate Stabilization and Residual Funds

In FY 2018, the Water Department's year-end Rate Stabilization Fund and total cash reserve balances were lower than projected.

Cash Balances

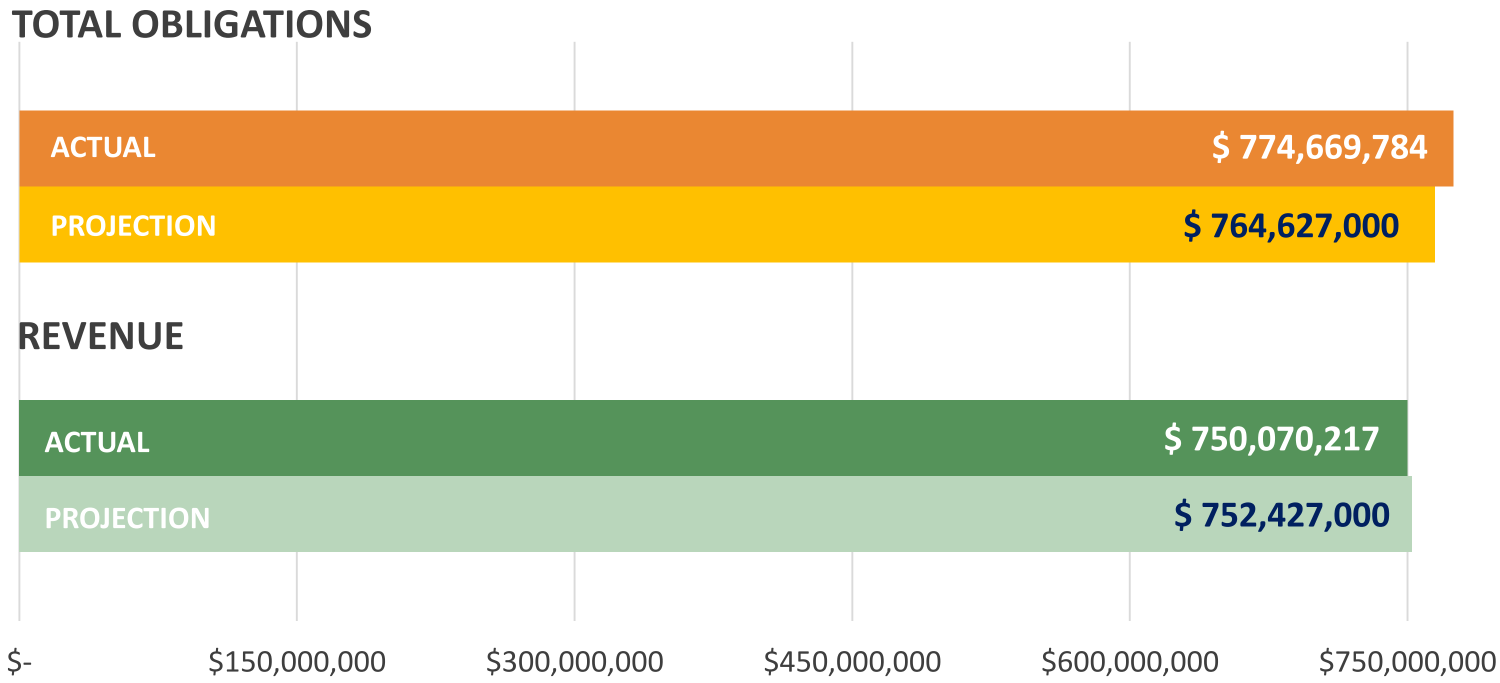
Fiscal Year	Residual Fund*	Rate Stabilization Fund*	Total Cash Reserves
2018 Projected	$ 15.0 million	$ 189.0 million	**$ 204.0 million**
2018 Final	$ 15.4 million	$ 178.8 million	**$ 194.2 million**

*year-end balance

Sources: PWD Financial Statements, FY2019 & FY2020 Rate Case FINAL Tables (Black & Veatch)

FY2018 Final Results

Actuals vs. Projections



***Note**: Revenue totals presented exclude revenues from the Rate Stabilization Fund. Obligations include transfers to the Rate Stabilization Fund and liquidated encumbrances.*

Key Policy Outlook

- Capital Funding
- Debt Service Coverage
- Debt Issuance
- Cash Reserves

PWD Policy Goals

PWD is focusing on four key financial policies to guide the strategic financial actions for the utility:

- **Capital Funding from Current Revenues:** Transition to 20% funding of capital program from current revenues.
- **Debt Service Coverage:** Maintain 1.30x debt service coverage for senior debt.
- **Debt Issuance:** Relieve cash flow pressure and better align debt payments, over the lifetime of assets, through strategic debt amortization.
- **Cash Reserves:** Utilizing cash reserves to absorb unexpected costs and offset the level of rate increases.

Capital Funding from Current Revenues

Over the next few years, PWD is not projected to meet its goal of funding at least 20% of its capital program from current revenues. Transfers to the Capital Account must increase, over time, to achieve the 20% goal.

	Cash Funded Capital (000s)	Total Expenditures for Capital (000s)	%
FY2020	$62,865	$355,787	**17.7%**
FY2021	$58,830	$435,911	**13.5%**
FY2022	$62,369	$508,928	**12.3%**
FY2023	$70,394	$513,328	**13.7%**
FY2024	$74,422	$568,514	**13.1%**
FY2025	$84,967	$555,538	**15.3%**

source: PWD Financial Statements , Rate Compliance Schedule, Black & Veatch Financial Plan Tables

Debt Service Coverage

PWD will maintain 1.30x debt service coverage for revenue bonds. In coming years, PWD will adjust coverage to balance the Capital Program funding from current revenues target of 20% with the rate increase level and overall leverage.

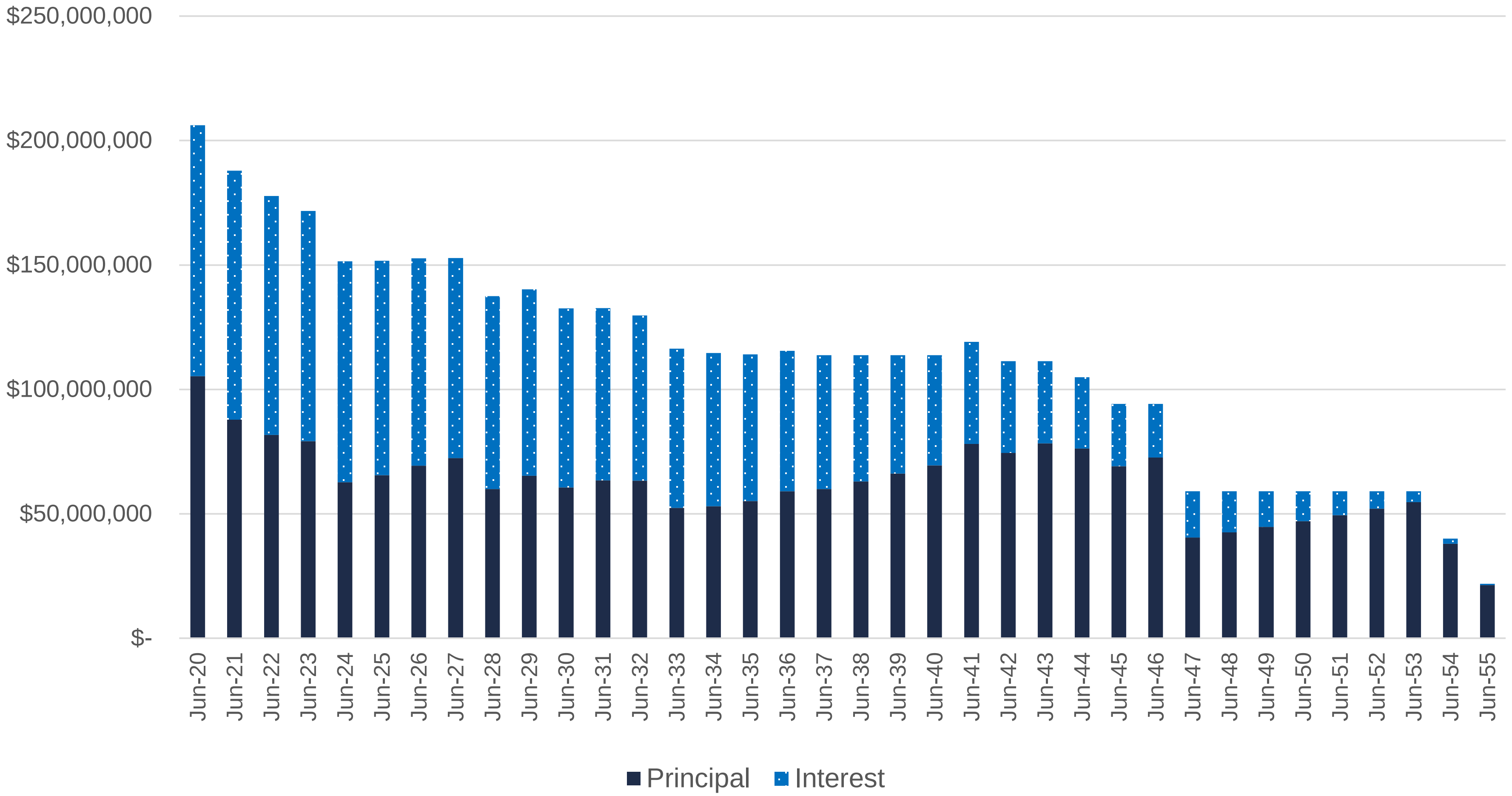
	PROJECTED					
	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025
Revenue Bonds Debt Service Coverage	1.3x	1.3x	1.3x	1.3x	1.3x	1.3x
Total Coverage	1.14x	1.13x	1.12x	1.13x	1.13x	1.13x

source: Rate Compliance Schedule

PHILADELPHIA WATER DEPARTMENT

Debt Issuance

Through strategic debt amortizations, PWD plans to relieve cash flow pressure and better align debt payments over the lifetime of assets.



Cash Reserves

- PWD is strategically utilizing cash reserves to offset the level of future rate increases.
- PWD is transitioning to a **$135M RSF balance (by 2023)** to cover annual expenditures when the revenues are less than projected. This serves as protection to ratepayers and bondholders.
- PWD has targeted a minimum balance of **$15M in the Residual Fund**, which contains the remaining revenues after all other payments are made.

Projected Cash Balances

Fiscal Year	**Residual Fund** Year-End Balance	**Goal Met?**	**Rate Stabilization Fund** Year-End Balance	**Goal Met?**	**Total Cash Reserves**
2020	$15,073	**Y**	$156,089	**Y**	$171,162
2021	$15,039	**Y**	$148,184	**Y**	$163,223
2022	$15,014	**Y**	$147,561	**Y**	$162,575
2023	$15,063	**Y**	$138,541	**Y**	$153,604
2024	$15,007	**Y**	$143,116	**Y**	$158,123
2025	$15,003	**Y**	$135,388	**Y**	$150,391

sources: Rate Case FINAL Tables (Black & Veatch)

Peer Utility Review

- Peer Utilities and Rating Distribution
- PWD Current Credit Rating
- Peer Utility Financial Metrics
- Peer Utility Asset Condition
- Affordability Comparison
- Presentation Summary

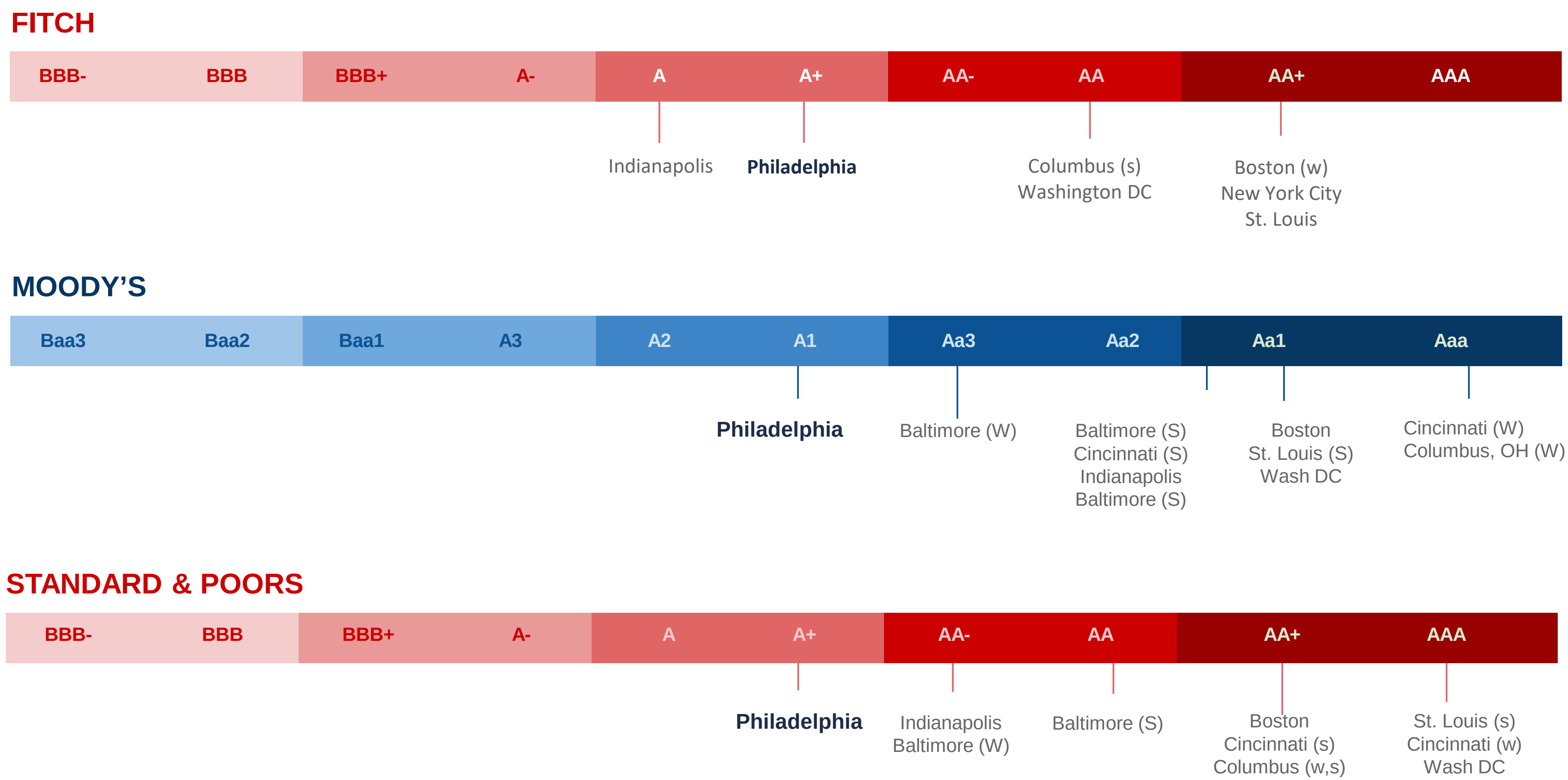
Peer Utilities

The utilities identified as peers for this comparison are mid-size to large utilities serving formerly industrial cities in the Northeast and Midwestern US.

City	Utility	Total Operating Revenue ($000s)	Population Served	# Accounts
Philadelphia	**Philadelphia Water Department**	**$726,942**	**1.6M (w) 2.3M (s)**	**480,000 (w) 545,000 (s)**
Baltimore	Baltimore (City of MD) Water Enterprise	$178,367	1.8M	402,988
	Baltimore (City of MD) Sewer Enterprise	$258,386		
Boston	Boston Water and Sewer Commission	$363,057	0.7M	90,000
Cincinnati	Greater Cincinnati Water Works	$161,835	1.0M	241,000
	Metropolitan Sewer District - Greater Cincinnati	$291,400	0.8M	
Columbus, OH	City of Columbus, OH Water Enterprise	$198,213	1.2M	274,000
	City of Columbus, OH Sewer Enterprise	$267,662		
Indianapolis	Indianapolis Citizens Energy Group	$207,235	0.3M	317,200
St. Louis	St. Louis Metropolitan Sewer District	$368,293	1.3M	426,000
New York	New York City Municipal Finance Authority	$3,859,737	8.6M	835,000
Washington, DC	District of Columbia Water & Sewer Authority	$684,502	2.3M	127,700

Rating Distribution of Peer Utilities

PWD's long-term credit standing falls within "A" for all three major credit rating agencies. Most of PWD's peer utilities are ranked in the 'AA' category.



Key: (w): water only, (s): sewer only

PWD Current Credit Rating

PWD maintains credit ratings in the "A" category across all three rating agencies:

	Fitch[1]	Moody's[2]	S&P[3]
	A+ **Rated: Stable Outlook (8/2019)**	**A1** **Rated: Stable Outlook (8/2019)**	**A+** **Rated: Stable Outlook (8/2019)**
STRENGTHS	• Consistency in annual rate setting to achieve 1.3x DSC and healthy liquidity • Essential service provider to large and diverse regional service area • Satisfactory financial performance; sound historical finances • Stable operations and robust system capacity	• Strong current financial position, with revenues supported by its large and diverse service area • Healthy cash reserves	• Broad and diverse service base and rates viewed as affordable • Strong operational and financial management policies that integrate capital and financial planning • Extremely strong liquidity
CHALLENEGES	• Insufficient rate recovery in timely manner still a key rating factor for future • Recent escalation in capital program costs through 2024 • Relatively weak income levels in the City	• Sizeable consent order and the system's aging infrastructure require significant capital investment going forward • A1 rating incorporates expectation of substantial future debt issuance to support the department's capital improvement plan.	• Considerable improvement in debt service coverage • Service area expansion/ revenue growth beyond expected rate increases
POSITIVE CREDIT IMPACT ITEMS	• Continued sound management and stable operations • Consistent annual rate increases	• Considerable improvement in debt service coverage • Service area expansion/ revenue growth beyond expected rate increases	• Financing performance exceed projections

1. Source: Fitch Ratings. Fitch Rates Philadelphia (PA) Water & Wastewater Revs 'A+'; Outlook Stable – August 2019
2. Source: Moody's Investor's Report. Philadelphia Water & Sewer Enterprise, PA New Issue Report – August 2019
3. Source: S&P Global Ratings – Philadelphia Water Sewer Ratings Direct Report – August 2019

PHILADELPHIA WATER DEPARTMENT

Peer Financial Metrics

Listed below are summary financial metrics for revenue and debt for the selected peer utilities.

PEER CITY	TOTAL OPERATING REVENUE ($000s)	NET FUNDED DEBT ($000s)	TOTAL LONG TERM DEBT ($000s)	DEBT TO REVENUE	DEBT RATIO (%)
Philadelphia	**726,942**	**1,624,268**	**1,824,493**	**42.0**	**52.3**
Baltimore (w)	178,367	857,076	893,969	44.4	48.3
Baltimore (s)	258,386	1,134,871	1,189,765	42.5	32.9
Boston (w)*	363,057	407,797	513,197	18.4	26.6
Cincinnati (w)	161,835	423,070	556,074	51.0	25.9
Cincinnati (s)	291,400	847,485	915,386	60.7	40.8
Columbus (w)	198,213	886,000	886,000	46.5	57.9
Indianapolis	207,235	854,834	939,185	56.0	75.5
New York	3,859,737	29,679,007	30,015,402	60.3	96.9
St. Louis (s)	368,293	1,470,946	1,526,275	58.7	41.7
Washington, DC	684,502	3,211,259	3,273,034	5.2	46.0

Key: (w): water only, (s): sewer only

Net Funded Debt = all interest-bearing debt less Cash and Cash Equivalents

Debt to Revenue = net long-term debt less debt service reserve funds divided by most recent year's operating revenues.

Source: Moody's Investor Services. *Figures represent 2018, except Boston, which shows 2017 financials.

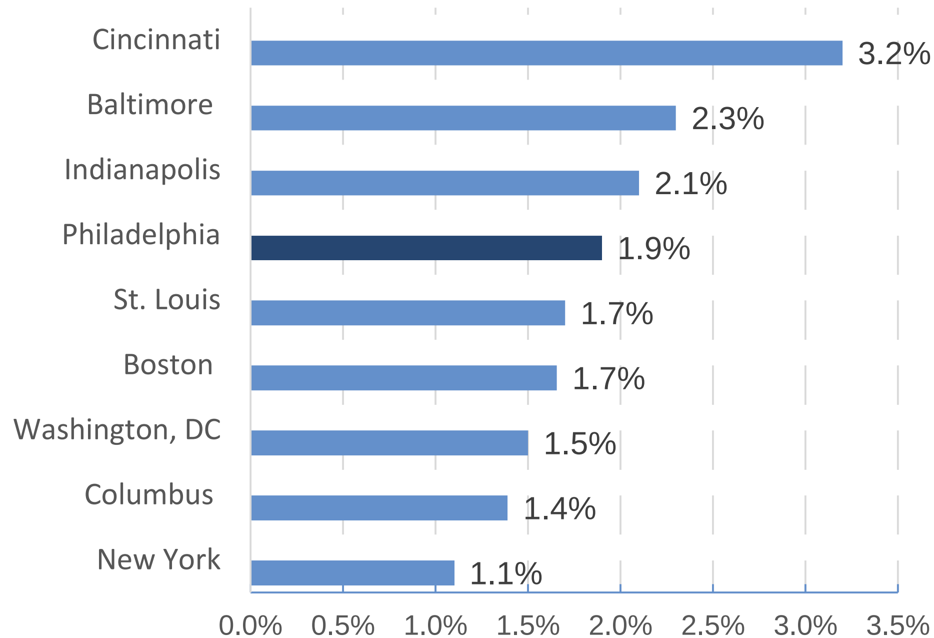
PHILADELPHIA WATER DEPARTMENT

Affordability Comparison

Comparison of the MHI (median household income) for the populations served by the selected peer utilities.

PEER CITY	MEDIAN HOUSEHOLD INCOME AS % OF NATIONAL AVG	MONTHLY BILL
Cincinnati	59.3%	$96.09
St. Louis	63.0%	$91.40
Philadelphia	**66.2%**	**$73.05[1]**
Indianapolis	72.8%	$78.43
Baltimore	76.0%	$88.97
Columbus	80.6%	$57.32
New York	94.2%	$51.67
Boston	101.1%	$85.55
Washington, DC	126.5%	$98.06

COMBINED BILL AS % OF EACH CITY'S MHI

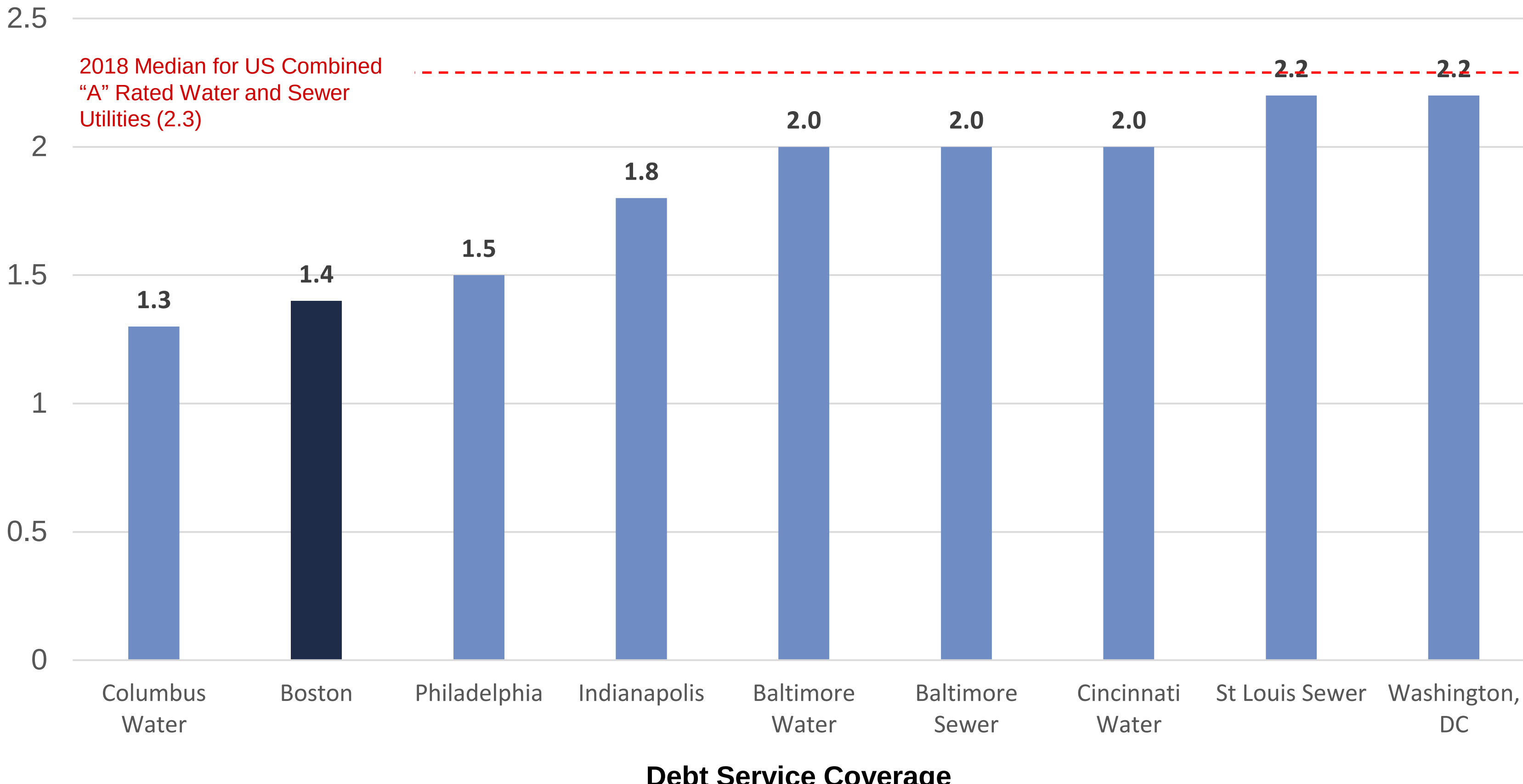


1. FY21 proposed rates - will be updated when more current figures are available
2. Source: Moody's Investor Services, 2017 Census. Figures represent 2013-2017 median household income statistics, in 2017 dollars.

PHILADELPHIA WATER DEPARTMENT

Annual Debt Service Coverage

PWD has modest debt service coverage compared to peer utilities and is below median coverage for other "A" water and sewer rated utilities.

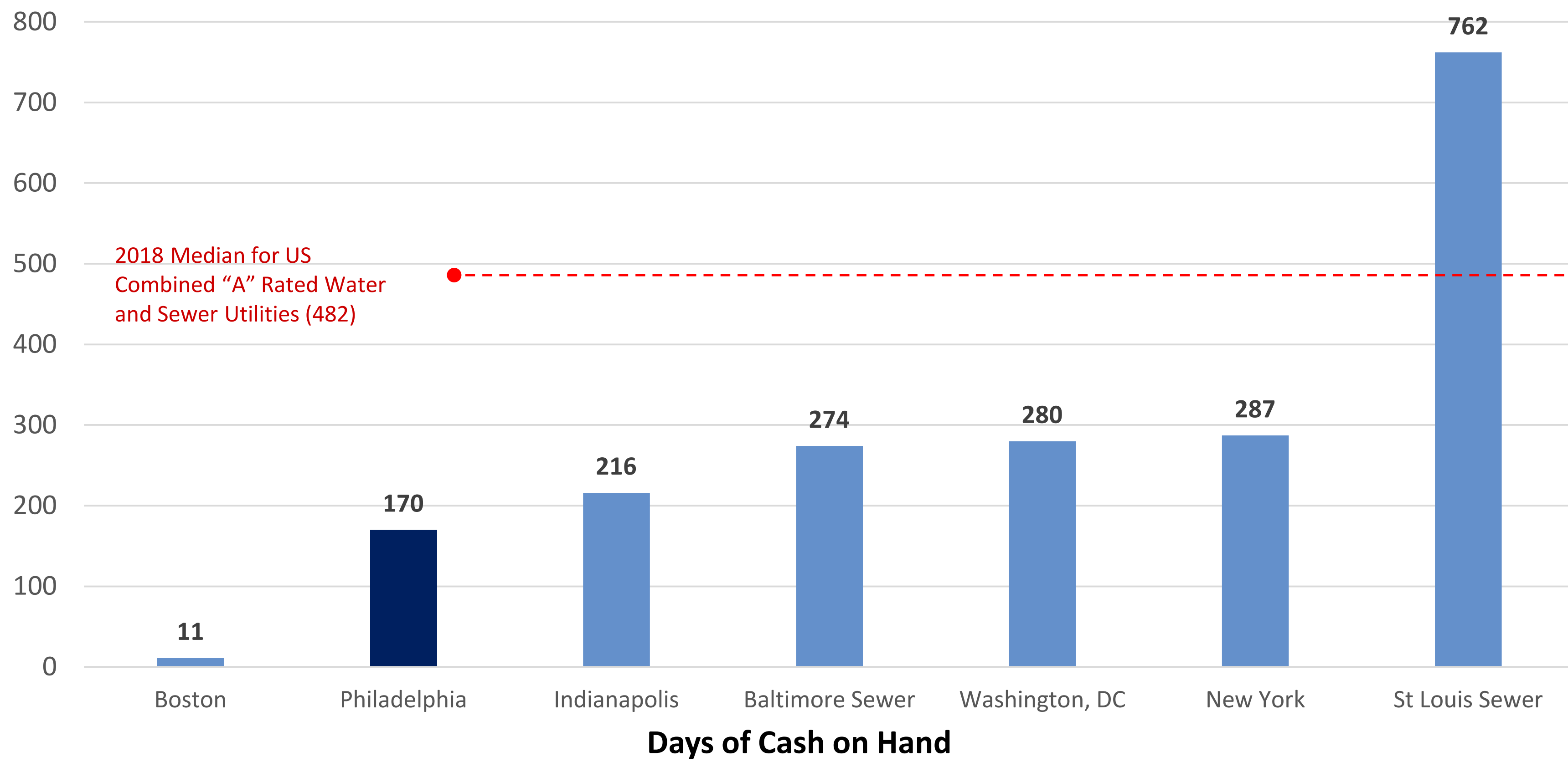


Source: Moody's Investor Services. Fiscal 2019 data not available

Note: Annual debt service coverage is defined as *"most recent year's net revenue divided by most recent year's debt service, expressed as a multiple."* (source: Moody's US Municipal Utility Revenue Debt Rating Methodology – October 19, 2017, Moody's Water and Sewer: US Medians – December 2019)

PWD Reserve Levels vs. Peer Utilities

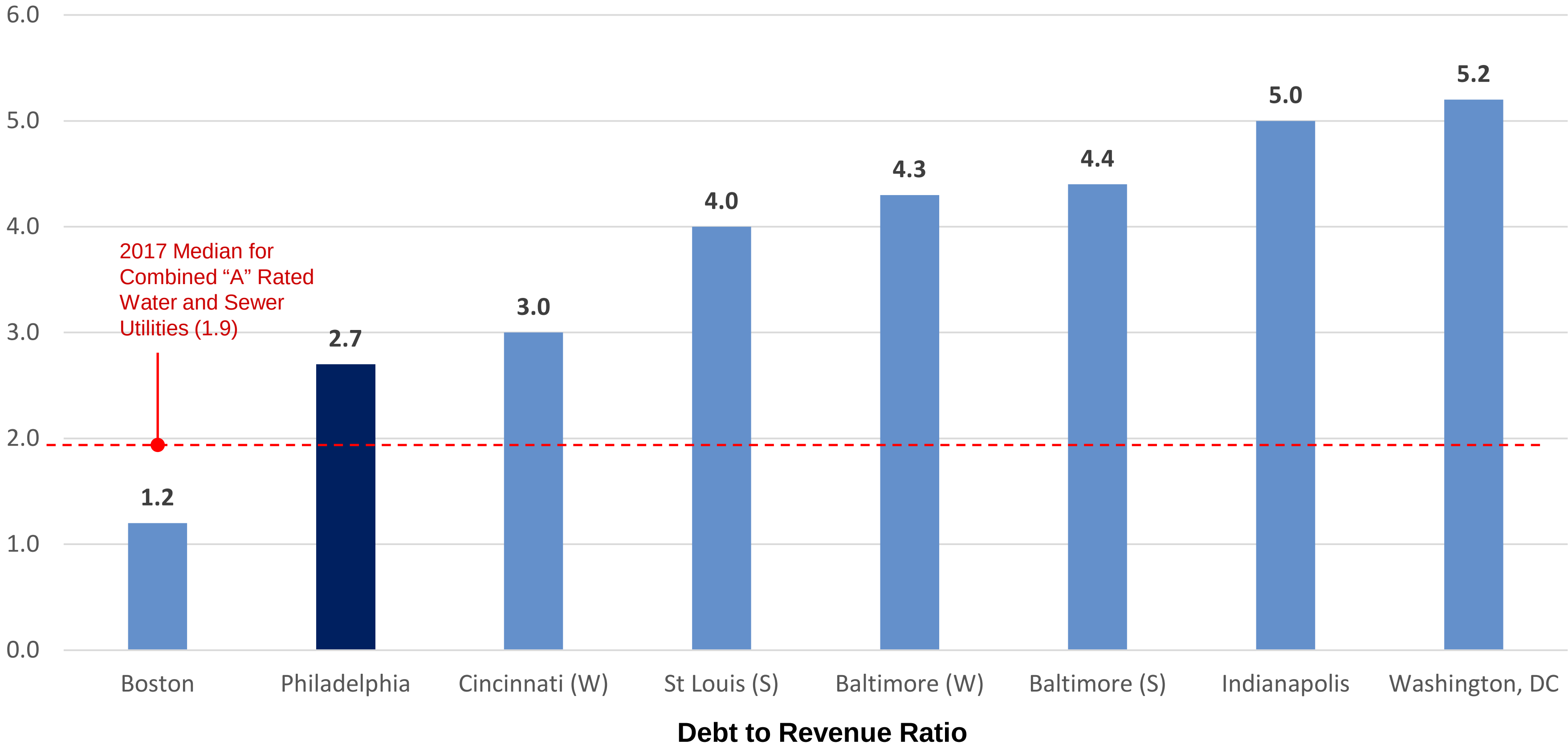
PWD has modest reserves compared to peer utilities and falls below the median for "A" rated water and sewer utilities.



Source: Moody's Municipal Water and Sewer Utilities Report 2020 Outlook, December 2019.. Days of cash on hand information was not available for the following entities: Baltimore Water Enterprise, Greater Cincinnati Water Works, and City of Columbus, OH Water Enterprise.
NOTE: Days on cash is defined as the number of days that an organization can continue to pay its operating expenses, given the amount of cash available

Debt to Revenue Ratio

Despite increases in capital spending, PWD has a low debt to revenue ratio compared to peer utilities. PWD's current debt to revenue ratio is modestly higher than the median for other "A" rated utilities.



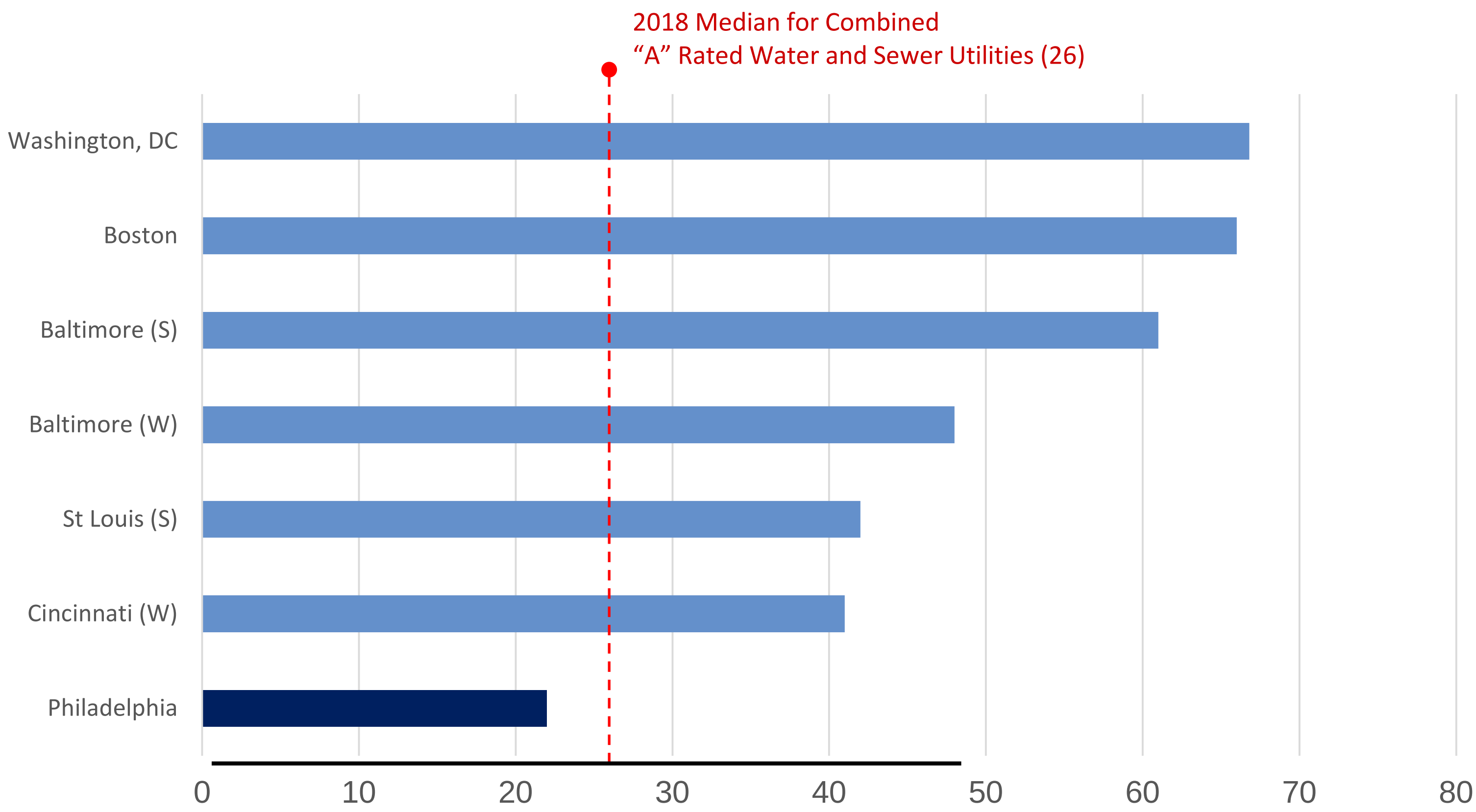
Key: (w): water only, (s): sewer only

Source: Moody's Investor Services. Figures represent FY2017 estimates. NOTE: Debt to revenue is defined as *"net debt divided by most recent year's operating expenses, expressed as a multiple."* Net debt is a utility's long-term debt subtracted by debt service reserve funds. (source: Moody's US Municipal Utility Revenue Debt Rating Methodology – October 19, 2017, Moody's Water and Sewer: US Medians – May 2019)

PHILADELPHIA WATER DEPARTMENT

Asset Condition

PWD's infrastructure has a shorter remaining useful life compared to other utilities, which indicates more investment will be needed to maintain the system.



Key: (w): water only, (s): sewer only

Source: Moody's Investor Services.

NOTE: Asset condition is defined as "*net fixed assets divided by most recent year's depreciation, expressed in years*". (source: Moody's Water and Sewer: US Medians – December 4, 2019)

Summary

- PWD is focused on achieving four key financial objectives related to (i) pay-go funding for capital program, (ii) maintaining current debt service coverage, and (iii) strategic debt amortization and (iv) effective utilization of cash reserves.

- PWD has begun to address key financial objectives by effectively managing debt service coverage, maintaining liquidity and transitioning to its 20% target for the percentage of capital projects funded by current revenues.

- PWD does not compare favorably with many of its peer utilities (e.g., financial reserves, DSC).

- To improve its peer comparison, the PWD needs to bolster its financial metrics for the best alignment between debt service coverage and reserves

- PWD must strategically use its reserves to protect ratepayers

FY20 – FY25 Projections

FY20-FY25 Projected Revenue and Revenue Requirements

TABLE C-1: PROJECTED REVENUE AND REVENUE REQUIREMENTS
Base and TAP-R Surcharge Rates
(in thousands of dollars)

Line No.	Description	2020 (c)	2021	2022	2023	2024	2025
	OPERATING REVENUE						
1	Water Service - Existing Rates	280,747	277,861	275,363	272,903	270,460	268,028
2	Wastewater Service - Existing Rates	444,265	444,209	441,805	438,760	435,677	432,609
3	Total Service Revenue - Existing Rates	725,012	722,070	717,168	711,663	706,137	700,637
	Additional Service Revenue Required						
	Year / Percent Increase / Months Effective						
4	FY 2021 6.11% 10		36,104	43,832	43,496	43,160	42,826
5	FY 2022 6.12% 10			38,079	46,193	45,836	45,481
6	FY 2023 6.71% 10				43,691	52,996	52,585
7	FY 2024 6.72% 10					46,280	56,135
8	FY 2025 6.73% 10						49,021
9	Total Additional Service Revenue Required	-	36,104	81,911	133,381	188,272	246,047
10	Total Water & Wastewater Service Revenue	725,012	758,174	799,079	845,043	894,410	946,684
	Other Income (a)						
11	Other Operating Revenue	37,728	19,516	19,437	19,352	19,267	19,184
12	Debt Reserve Fund Interest Income	-	-	-	-	-	-
13	Operating Fund Interest Income	985	1,035	1,089	1,089	1,177	1,169
14	Rate Stabilization Interest Income	1,681	1,532	1,486	1,436	1,412	1,396
15	Total Revenues	765,405	780,257	821,091	866,919	916,266	968,433
	OPERATING EXPENSES						
16	Total Operating Expenses	(518,271)	(534,165)	(552,364)	(571,485)	(590,284)	(608,717)
	NET REVENUES						
17	Transfer From/(To) Rate Stabilization Fund	21,883	7,905	622	9,021	(4,575)	7,728
18	NET REVENUES AFTER OPERATIONS	269,017	253,997	269,349	304,455	321,406	367,443
	DEBT SERVICE						
	Senior Debt Service						
	Revenue Bonds						
19	Outstanding Bonds	(196,266)	(177,586)	(167,288)	(161,204)	(140,923)	(140,987)
20	Pennvest Parity Bonds	(10,631)	(10,765)	(11,080)	(13,611)	(13,611)	(13,611)
21	Projected Future Bonds	-	(7,000)	(28,788)	(59,345)	(92,657)	(128,031)
22	Total Senior Debt Service	(206,897)	(195,351)	(207,155)	(234,161)	(247,191)	(282,629)
23	TOTAL SENIOR DEBT SERVICE COVERAGE (L18/L22)	1.30 x	1.30 x	1.30 x	1.30 x	1.30 x	1.30 x
24	Subordinate Debt Service	-	-	-	-	-	-
25	Transfer to Escrow	-	-	-	-	-	-
26	Total Debt Service on Bonds	(206,897)	(195,351)	(207,155)	(234,161)	(247,191)	(282,629)
27	CAPITAL ACCOUNT DEPOSIT	(27,065)	(29,230)	(31,569)	(34,094)	(36,822)	(39,767)
28	TOTAL COVERAGE (L18/(L22+L24+L27))	1.14 x	1.13 x	1.12 x	1.13 x	1.13 x	1.13 x
	RESIDUAL FUND						
29	Beginning of Year Balance	15,666	15,073	15,039	15,014	15,063	15,007
30	Interest Income	153	150	150	150	150	149
	Plus:						
31	End of Year Revenue Fund Balance	35,055	29,416	30,625	36,200	37,394	45,047
32	Deposit for Transfer to City General Fund (b)	1,922	1,920	2,107	2,330	2,616	2,977
	Less:						
33	Transfer to Construction Fund	(35,800)	(29,600)	(30,800)	(36,300)	(37,600)	(45,200)
34	Transfer to City General Fund	(1,922)	(1,920)	(2,107)	(2,330)	(2,616)	(2,977)
35	Transfer to Debt Service Reserve Fund	-	-	-	-	-	-
36	End of Year Balance	15,073	15,039	15,014	15,063	15,007	15,003
	RATE STABILIZATION FUND						
37	Beginning of Year Balance	177,971	156,089	148,184	147,561	138,541	143,116
38	Deposit From/(To) Revenue Fund	(21,883)	(7,905)	(622)	(9,021)	4,575	(7,728)
39	End of Year Balance	156,089	148,184	147,561	138,541	143,116	135,388

(a) Includes other operating and nonoperating income, including interest income on funds and accounts transferable to the Revenue Fund. Includes Debt Service Reserve Fund Release in FY 2020.

(b) Transfer of interest earnings from the Bond Reserve Account to the Residual Fund as shown in Line 32 to satisfy the requirements for the transfer to the City General Fund shown on Line 34.

(c) FY 2020 beginning balance is estimated based on preliminary FY 2019 results.


SEAL OF THE CITY OF PHILADELPHIA
PHILADELPHIA
WATER
DEPARTMENT

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MEMORANDUM

TO	City of Philadelphia Water Department
FROM	Valarie J. Allen
DATE	February 5, 2020
RE	Flow of capital and operating funds under the City of Philadelphia Restated General Water and Wastewater Revenue Bond Ordinance of 1989, as amended (the "General Bond Ordinance")

In connection with the rate proceedings currently being undertaken by the City of Philadelphia Water Department ("Water Department"), you have asked us, as bond counsel to the Water Department, to prepare for submission a discussion of the legally permitted applications, including without limitation the operating and capital expenditure, of Project Revenues and other moneys credited to the Water and Wastewater Funds established under the General Bond Ordinance. We have prepared and we attach that discussion, entitled "Flow of Funds and Permitted Expenditure and Other Uses Under the Restated General Water and Wastewater Revenue Bond Ordinance of 1989, as amended," to this memorandum. The discussion attached supersedes in all respects the discussion entitled "Flow of Funds Under Restated General Water and Wastewater Revenue Bond Ordinance of 1989, as amended" dated February 5, 2018.

Ballard Spahr LLP was bond counsel to the Water Department at the time and participated in the drafting of the General Bond Ordinance. Since 1958, Ballard Spahr LLP has been listed continuously as a nationally recognized bond counsel firm in *The Bond Buyer's Municipal Marketplace* (the Red Book). I have served on Ballard's bond counsel team for the Water Department since 2007. I am a partner in the firm and co-chair the firm's public finance practice group. I am resident in our Philadelphia offices, where I practice exclusively in the area of public finance law.

Flow of Funds and Permitted Expenditures and Other Uses Under the Restated General Water and Wastewater Revenue Bond Ordinance of 1989, as amended

Prepared by Ballard Spahr LLP
Bond Counsel

February 5, 2020

Ballard Spahr LLP

TABLE OF CONTENTS

Page

Section 1. ***INTRODUCTION AND BACKGROUND***

The treatment and application of revenues and other moneys of the City of Philadelphia (the "*City*"), relating to the its water system and wastewater system (together, the "*System*"), are governed by a legal structure created under Pennsylvania law, namely, the statutes and ordinances known as the Philadelphia Home Rule Charter[1] (the "*City Charter*"), the First Class City Revenue Bond Act[2] (the "*Revenue Bond Act*") and the Restated General Water and Wastewater Revenue Bond Ordinance of 1989 (as amended and supplemented, the "*General Bond Ordinance*"). This paper focuses primarily on the General Bond Ordinance, the provisions of which control, among other things, (1) the flow of funds or moneys generated by and otherwise related to the System, and (2) City's ability to obtain capital to invest in the infrastructure necessary to keep the System in good working condition.

The City Charter endows the Water Department with the duty and power to, among other things, (1) operate, maintain, repair, construct and improve the City's water supply and sewage disposal systems and facilities, and (2) impose and collect rates and charges sufficient to pay the costs of operating, maintaining, repairing, constructing and improving such systems and facilities.[3] In order for the Water Department to keep the System in good working condition and meet its mandate, it must repair replace, and improve critical infrastructure on a regular basis. As noted in the annotations to the relevant provisions of the City Charter, paying the ongoing costs associated with the repair, construction and improvement of water and sewer infrastructure represent major capital investments by the City, the undertaking of which requires authorization by City Council. The Revenue Bond Act provides the City Council with the authority to finance these capital costs through the issuance of debt payable solely from revenues generated by or otherwise received for the System. City Council authorizes the City to make operating and capital expenditures, incur debt, and fund reserves for the System pursuant the General Bond Ordinance.

The City finances capital expenditures for the System primarily through (1) the incurrence of debt through the issuance of water and wastewater revenue bonds ("*Bonds*") and (2) the accumulation of revenues generated by the System and deposited to the Capital Account.[4] The General Bond Ordinance facilitates both of these methods for obtaining capital, but not simply by providing the mechanics for issuing bonds and accumulating revenues. The General Bond Ordinance is a contract between the City and its Bondholders concerning how the repayment of debt and other financing activities of the Water Department will be performed and controlled. It originally was enacted during a period when the City was financially distressed. The financial, operational, procedural and other covenants made by the City in the General Bond Ordinance generally reflect what was required by investors, rating agencies, and bond insurers and other credit enhancers at that time in order for the City to be able to sell its Bonds in the market and achieve an affordable cost of capital for its ratepayers.

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[1] Philadelphia Home Rule Charter adopted by the electors of the City of Philadelphia on April 17, 1951, as amended.

[2] The First Class City Revenue Bond Act approved October 18, 1972 (Act No. 234, 53 P.S. § 15901 to 16924) as from time to time amended.

[3] City Charter §5-800, §5-801.

[4] The City may from time to time receive state or federal grants, but any such amounts are immaterial for purposes of this discussion.

In 2018, the City amended the General Bond Ordinance (by Bill No. 171110-A, passed by Council on April 12, 2018 and signed by the mayor on April 24, 2018, the "2018, Amending Ordinance") The new provisions reflect, among other things, the increased credit strength of the Water Department and the Water Fund and the modern demands of the investor market. The amendments contained in the "2018 Amending Ordinance" are referred to as the "2018 Amendments" herein. Certain of the 2018 Amendments will not become effective until at least 67% of all holders of the City's water and wastewater revenue bonds have consented to them. The City has been accumulating consent from bondholders of water and wastewater revenue bonds sold by the City subsequent to the date of the 2018 Amendments, but as of this date 67% of bondholders' consent has not been obtained. The affected 2018 Amendments are referred to as the "Pending 2018 Amendments" herein.

Section 2. ***PURPOSES OF GENERAL BOND ORDINANCE***

The General Bond Ordinance was enacted by the City for the purpose of:

- Authorizing the issuance from time to time by the City of debt in the form of water and wastewater revenue bonds ("*Bonds*"), payable solely from revenues attributable to the City's water and wastewater systems (the "*System*"), to pay capital costs of the System;

- Establishing a contract and security agreement between the City and holders of Bonds (and credit providers for Bonds) under which the City, for so long as any Bond or related obligation is outstanding, (a) covenants, among other things, to pay the Bonds and related obligations and (b) pledges security to holders of the Bonds (and credit providers for Bonds); and

- Establishing a system of funds and accounts with a fiscal agent, for the benefit of the holders of Bonds (and credit providers for Bonds), to facilitate and control the segregation, deposit, holding, investment, transfer and expenditure of all Project Revenues (defined below) and all other moneys related to the System, including for the payment of the Bonds.

Section 3. ***SECURITY INTERESTS IN PROJECT REVENUES AND WATER AND WASTEWATER FUNDS***

This section discusses the sources of payment and security for Bonds, as governed by the General Bond Ordinance. "Revenue bonds" are so called because they are payable only from a particular stream of revenues. In the case of Water and Wastewater Revenue Bonds, they are payable from "Project Revenues", i.e., revenues generated by and collected in respect of the System (as more particularly defined below). Under the General Bond Ordinance, the City has covenanted that it will expend Project Revenues only in support of the System and in a specified order of priority; and the City has granted to U.S. Bank National Association, as fiscal agent under the General Bond Ordinance (together with its successors and assigns, the "*Fiscal Agent*"), for the benefit of all Bondholders (other than holders of

Subordinated Bonds)[5] a first lien on and security interest in all Project Revenues and amounts in the Water and Wastewater Revenue Funds (other than the Rebate Fund)[6].

3.1 Deposit of Project Revenues, Segregation of Water and Wastewater Funds

In order to preserve and protect Bondholders' sole source of payment and security – Project Revenues – the General Bond Ordinance provides for strict controls on the collection, deposit, segregation and disbursement of Project Revenues. The City must cause all Project Revenues received by it to be deposited into the Revenue Fund upon receipt; and the Fiscal Agent must, upon receipt of Project Revenues, deposit them into the Revenue Fund. Under the General Bond Ordinance, "*Project Revenues*" is defined to include:

> all rents, rates, fees and charges imposed or charged for the connection to, or use or product of or services generated by the System to the ultimate users or customers thereof, all payments under bulk contracts with municipalities, governmental instrumentalities or other bulk users, all subsidies or payments payable by Federal, State or local governments or governmental agencies on account of the cost of operation of, or the payment of the principal of or interest on moneys borrowed to finance costs, chargeable to the System, all grants, payments and contributions made in aid or on account of the System exclusive of grants and similar payments and contributions solely in aid of construction and all accounts, contract rights and general intangibles representing the foregoing.
> (GBO Section 2.01)

The Funds and accounts established under the General Bond Ordinance must be held separate and apart from all other funds and accounts of the City and the Fiscal Agent. The moneys in such Funds and accounts may not be commingled with, loaned or transferred among themselves, or with or to any other funds or accounts of the City, except as expressly permitted in the General Bond Ordinance.
(GBO Section 4.05(a))

3.2 Pledge of Project Revenues

The City has pledged and granted a lien on and security interest in all Project Revenues to the Fiscal Agent, for the equal and ratable security and payment of all Bonds (other than Subordinated Bonds). Financing statements have been filed with the Secretary of State of the Commonwealth of

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[5] The Fiscal Agent must hold and apply such security interests, in trust, for the equal and ratable benefit and security of all present and future Holders of Bonds (other than Subordinated Bonds) issued pursuant to the provisions of the General Bond Ordinance and each Supplemental Ordinance, without preference, priority or distinction of any one Bond over any other Bond (other than Subordinated Bonds); provided however, that the pledge of the General Bond Ordinance may also be for the benefit of a Credit Facility and Qualified Swap, or any other person who undertakes to provide moneys for the account of the City for the payment of principal or redemption price of and interest on any Series of Bonds (other than Subordinated Bonds), on and equal and ratable basis with Bonds, to the extent provided by any Supplemental Ordinance or Determination.

[6] The Rebate Fund is established for the purpose of paying to the United States Treasury the amount required to be rebated pursuant to Section 148(f) of the Code. All amounts in the Rebate Fund, including income earned from investment of amounts in the Rebate Fund shall be held free and clear of the lien created by the General Bond Ordinance

Pennsylvania in respect of such pledge and grant of security interest.
(GBO Section 4.02)

3.3 *Pledge of Funds and Accounts*

The City has pledged and granted a lien on and security interest in all amounts on deposit in or standing to the credit of the funds and accounts (other than the Rebate Fund) established in Section 4.04 of the General Bond Ordinance, together with interest earnings on amounts in such funds and accounts (other than the Rebate Fund) to the Fiscal Agent, for the equal and ratable security and payment of all Bonds (other than Subordinated Bonds). Financing statements have been filed with the Secretary of State of the Commonwealth of Pennsylvania in respect of such pledge and grant of security interest.
(GBO Section 4.02)

The funds and accounts established under Section 4.04 of the General Bond Ordinance and held by the Fiscal Agent include the Revenue Fund; the Sinking Fund, and within the Sinking Fund the Debt Service Account, Debt Reserve Account and Charges Account; the Subordinated Bond Fund; the Rate Stabilization Fund; the Residual Fund; the Construction Fund, and within the Construction Fund the Bond Proceeds Account, Capital Account and Existing Projects Account; and the Rebate Fund. In addition, under certain conditions in connection with the issuance of one or more Series of Bonds, the City may establish additional funds or accounts to be held for the benefit of one or more Series of Bonds, as set forth in Supplemental Ordinances.
(GBO Section 4.04)

Section 4. ***INTRODUCTION TO FUNDS AND ACCOUNTS AND THEIR PURPOSES***

This Section lists the funds and accounts established under the General Bond Ordinance and summarizes the purposes for which moneys in each fund or account may be used.

4.1 *Revenue Fund*

All Project Revenues initially are deposited into the Revenue Fund for payment of Operating Expenses; and then remaining Project Revenues are transferred to the other funds and accounts established under the General Bond Ordinance, as described in ***Section 5***, below. Other moneys may be transferred or deposited into the Revenue Fund at the City's direction, as described below.
(*GBO Section 4.06*)

4.2 *Sinking Fund*

The Sinking Fund is a consolidated fund for the equal and proportionate benefit of the holders of all Bonds (other than Subordinated Bonds) Outstanding from time to time. Money deposited in the Sinking Fund may be used only to pay debt service and redemption price on Bonds (other than Subordinated Bonds) and other obligations related to Bonds (other than Subordinated Bonds). It consists of three accounts: the Debt Service Account, the Debt Reserve Account and the Charges Account, which are described below.
(*GBO Section 4.07*)

Debt Service Account

Money in the Debt Service Account of the Sinking Fund is used to pay debt service and redemption price on Bonds (other than Subordinated Bonds) and related obligations. The Fiscal Agent, as directed by the City, pays (i) by each interest payment date for any Bonds (other than Subordinated Bonds) the amount for the interest payable on such day, (ii) by each principal payment, prepayment or redemption date for any Bonds (other than Subordinated Bonds) the amount payable on such date, and (iii) by the respective due dates the amounts, if any, due under any Swap Agreements or Credit Facilities. *(GBO Section 4.07)*

Debt Reserve Account

Money in the Debt Reserve Account of the Sinking Fund is used primarily to cure deficiencies in the Debt Service Account to ensure timely payment of debt service (and other obligations of the City that are payable from the Debt Service Account). If the money in the Debt Service Account is insufficient to pay the debt service or redemption price on any Bond or other obligation payable from the Debt Service Account when due (including under Swap Agreements and Credit Facilities), the Fiscal Agent must transfer from the Debt Reserve Account into the Debt Service Account the amount of such deficiency.

The money and investments in the Debt Reserve Account must be held and maintained in an amount equal at all times to the Debt Reserve Requirement, as defined under the General Bond Ordinance. The Debt Reserve Requirement is generally met through the deposit of Bond proceeds each time Bonds (other than Subordinated Bonds) are issued. The amount of such deposit is the amount necessary to ensure that the Debt Reserve Requirement will be met upon the issuance of such Bonds.

There are two exceptions to the requirement described in the preceding paragraph to deposit Bond proceeds into the Debt Reserve Account at the time of issuance. The Supplemental Ordinance under which the Bonds are issued may permit the City, in lieu of making such a deposit at the time of issuance, either (i) to accumulate from Project Revenues of a reserve of such amount in respect of such Bonds over a period of not more than three Fiscal Years after the issuance and delivery of such Bonds, then the full payment of the annual deposits required under such Supplemental Ordinance will meet the Debt Reserve Requirements of the General Bond Ordinance in respect of such Bonds, or (ii) in lieu of the required deposits into the Debt Reserve Account, the City may cause to be deposited into the Debt Reserve Account a surety bond or an insurance policy payable to the Fiscal Agent for the account of the Bondholders and any Qualified Swap or an irrevocable letter of Credit in an amount equal to the difference between the Debt Service Requirement and the remaining sums, if any, then on deposit in the Debt Reserve Account.
(GBO Section 4.09)

Certain of the Pending 2018 Amendments provide for the creation of subaccounts within the Debt Reserve Account whereby amounts in each such subaccount would secure and inure to a specific Series of Bonds only. The creation of such a Series subaccount (each, a "Series Debt Reserve Subaccount") will have to be authorized under the Supplemental Ordinance that authorizes the issuance of the subject Series of Bonds. Each Series Debt Reserve Subaccount will have its own Series Debt Reserve Requirement separate from the common Debt Reserve Requirement.[7]

[7] The Pending 2018 Amendments will add the following two definitions to the General Bond Ordinance.

Charges Account

The Fiscal Agent pays out of the Charges Account to the appropriate payees any fees, expenses and other amounts due under any Credit Facility with respect to Bonds (other than Subordinated Bonds), to the extent such amounts are not paid from the Debt Service Account.
(GBO Section 4.07)

4.3 Subordinated Bond Fund

Any money in the Subordinated Bond Fund will be used to pay the principal of, redemption premium, if any, and interest on Subordinated Bonds and make payments due under any Credit Facilities and Exchange Agreements with respect to Subordinated Bonds. To date, the City has not issued any Subordinated Bonds.
(GBO Section 4.10)

4.4 Rate Stabilization Fund

The purpose of the Rate Stabilization Fund is to maintain liquidity in the Water and Wastewater Funds in satisfaction of financial covenants and otherwise for the financial health and operation of the water and sewer enterprise. The Water Commissioner will determine any transfer to be made between the Revenue Fund and the Rate Stabilization Fund, which transfer occurs as of June 30 of each Fiscal Year.
(GBO Section 4.13)

4.5 Construction Fund

Unless being used to fund a deficiency described in ***5.4*** or ***5.5*** below, Construction Fund moneys only may be used to pay capital expenditures, that is, to pay the costs of acquiring or constructing new assets and replacing or improving existing assets to maintain and expand the System. Please refer to ***5.3*** for additional information concerning qualified (capital) expenditures and limitations on the use of moneys deposited into the Construction Fund.

The Construction Fund consists of three accounts: the Bond Proceeds Account, the Capital Account and the Existing Projects Account. The purposes of the Bond Proceeds Account and the Capital

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"Series Debt Reserve Requirement" means, for any Series of Bonds, the amount, if any, required pursuant to a Supplemental Ordinance or Determination to be reserved and (if such amount is greater than zero dollars ($0)) deposited or maintained in the Series Debt Reserve Subaccount established for such Series of Bonds; provided that such amount may equal zero dollars ($0); and provided further that such amount may not exceed the lesser of (i) the greatest amount of Debt Service Requirements payable on such Series of Bonds in any one Fiscal Year and (ii) the maximum amount permitted to be financed with proceeds of such Series of Bonds permitted by Section 148(d)(1) the Code (or any successor provision).

"Series Debt Reserve Subaccount" means any subaccount of the Debt Reserve Account created, pursuant to a Supplemental Ordinance or Determination for a particular Series of Bonds, which Series of Bonds will not otherwise be secured by the Debt Reserve Account and for which a Series Debt Reserve Requirement applies.

Account are described below. The Existing Projects Account held unexpended proceeds of bonds issued for the System prior to the enactment of the General Bond Ordinance – which have since been expended – and is no longer in use.
(GBO Section 4.11)

Bond Proceeds Account

The Bond Proceeds Account holds proceeds of Bonds issued for "capital purposes" (and not for refunding purposes) under the General Ordinance, for disbursement according to established procedures of the City to pay the costs of new capital projects.

Capital Account

Moneys deposited into the Capital Account must be used for capital expenditures, or else to pay debt service in limited circumstances.[8] Specifically, such amounts may be applied to (i) payments for the cost of renewals, replacements and improvements to the System; (ii) payments into the Sinking Fund or into the Subordinated Bond Fund to cure a deficiency in one of the foregoing; or (iii) the purchase of Bonds if a Consulting Engineer first has certified to the City that amounts remaining on deposit in the Capital Account following the proposed purchase of Bonds will be sufficient to pay, the cost of renewals, replacements and improvements to the System projected to be payable during such Fiscal Year.

4.6 Residual Fund

As the Water and Wastewater Funds are a closed system, the Residual Fund is the last Fund into which Project Revenues are transferred from the Revenue Fund. Money in the Residual Fund may be used to pay Operating Expenses or debt service, or for almost any other purpose in support of the System, as described in ***5.2*** and ***5.4*** below. In addition, money in the Residual Fund may be used to fund a transfer to the City's General Fund limited to the "Net Reserve Earnings"[9] up to a maximum of $4,994,000. This annual transfer is often referred to as the "scoop" by the City.
(GBO Section 4.12)

4.7 Rebate Fund

The Rebate Fund is maintained for the purpose of paying to the United States Treasury the amount required to be rebated pursuant to Section 148(f) of the Code. All amounts in the Rebate Fund, including income earned from investment of amounts in the Rebate Fund must be held by the City free and clear of the lien created by the General Bond Ordinance.

Section 5. FLOW OF FUNDS UNDER THE GENERAL BOND ORDINANCE

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[8] Such moneys may be used for other very limited purposes only in the event of a deficiency in another Fund. *See* ***5.4*** and ***5.5*** for an explanation of such other purposes.

[9] "Net Reserve Earnings" means the amount of interest earnings during the Fiscal Year on amounts in the Debt Reserve Account and the Subordinated Bond Fund less the amount of interest earnings during the Fiscal Year on amounts in any such reserve funds and accounts giving rise to a rebate obligation pursuant to Section l48(f) of the Code.

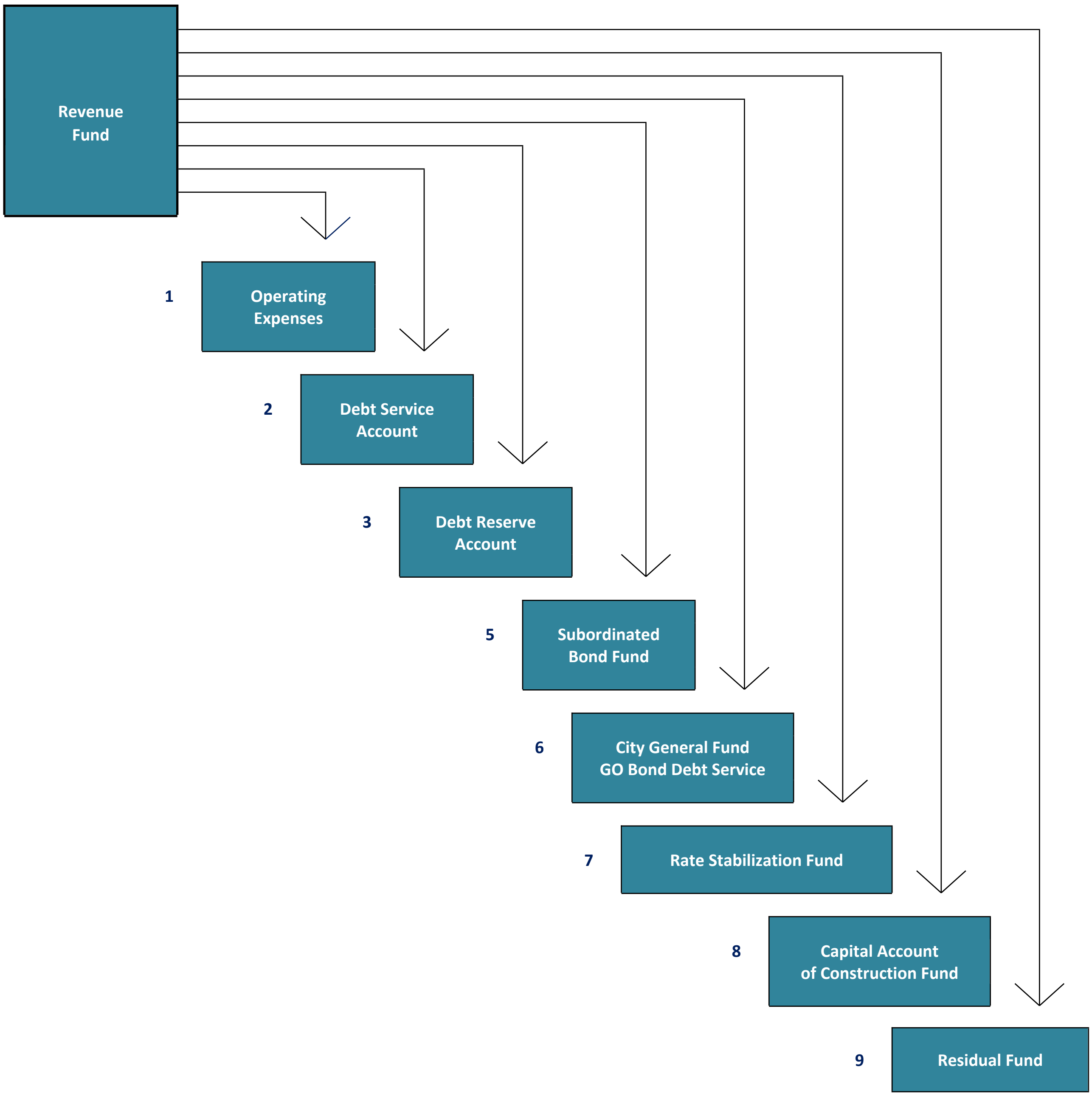
The General Bond Ordinance controls the City's and Fiscal Agent's ability to expend, disburse, transfer and invest Project Revenues and other moneys in the Water and Wastewater Funds and their accounts. This Section describes how and for what purposes such moneys flow in and out of those funds and accounts from time to time, in accordance with the provisions of the General Bond Ordinance.

5.1 *The Waterfall*

Project Revenues and other moneys (other than investment earnings) initially enter the Water and Wastewater Funds when they are deposited into the Revenue Fund. Moneys in the Revenue Fund are disbursed or transferred to the other funds and accounts in order of priority set forth in the General Bond Ordinance. This "flow of funds" often is described as a waterfall. Moneys flow out of the Revenue Fund and down to each fund or account to satisfy the purposes set forth in the General Bond Ordinance for such fund or account (e.g., such as payment of current obligations or replenishment of amounts that were withdrawn). Each of the funds and accounts into which water flows is often referred to as a "bucket" that catches moneys until it is filled, at which point moneys flow over it and down to the next bucket. ***Figure 5.1*** depicts this waterfall; and the number next to each of the boxes corresponds to the funds and accounts, or buckets, and purposes served with the moneys in those buckets.[10]

[10] There is no box numbered 4, as the referenced account, which may be established at the option of the City, has not been established.

Figure. 5.1
Water and Wastewater Revenue Funds "Waterfall"



The General Bond Ordinance requires that amounts in the Revenue Fund must be disbursed and applied in the following manner and order of priority.[11] *(GBO Section 4.06)*

1. Pay ***Operating Expenses*** in a timely manner.

2. Deposit into the ***Debt Service Account*** of the Sinking Fund amounts necessary for the Fiscal Agent to pay debt service and redemption price on Bonds (other than Subordinated Bonds), payments under a Swap Agreement, and payments or reimbursements under a Credit Facility, when due.

3. Deposit into the ***Debt Reserve Account*** the amount required to eliminate any deficiency therein.

4. Deposit into the any debt reserve account established within the Sinking Fund and not held for the equal and ratable benefit of all Bonds (other than Subordinated Bonds) the amount required to eliminate any deficiency therein.[12]

5. Deposit into the ***Subordinated Bond Fund*** the amount necessary to provide for the timely payment of the principal or redemption price of and interest on Subordinated Bonds, and forward to the paying agent in respect of bond anticipation notes (payable by exchange for, or out of the proceeds of the sale of Subordinated Bonds) the amount necessary to provide for the timely payment of interest thereon (to the extent not capitalized).

6. Pay to the City the amount necessary to provide for the timely payment of the principal or redemption price of and interest on ***General Obligation Bonds*** of the City issued to finance or refinance capital projects of the System.

7. Deposit into the ***Rate Stabilization Fund*** such amount as the Water Commissioner may determine.

8. Deposit into the ***Capital Account*** of the Construction Fund on June 20 of each Fiscal Year an amount equal to the sum of (i) the Capital Account Deposit Amount[13], (ii) the Debt Service Withdrawal[14] for the preceding Fiscal Year and (iii) the Operating Expense

[11] Notwithstanding the foregoing, nothing in the General Bond Ordinance will prevent the City from directing the transfer of amounts on deposit in in any fund or account established under General Bond Ordinance into the Rebate Fund in the amounts and at the times specified by the General Bond Ordinance.

[12] To date, no such account has been established for any Series of Bonds.

[13] "Capital Account Deposit Amount" means an amount equal to one percent (1.0%) of the depreciated value of property, plant and equipment of the System or such greater amount as shall be annually certified to the City in writing by a Consulting Engineer as sufficient to make renewals, replacements and improvements in order to maintain adequate water and wastewater service to the areas served by the System.

[14] "Debt Service Withdrawal" means the aggregate amount withdrawn from the Capital Account during a Fiscal Year and applied toward the payment of principal or redemption price of or interest on Bonds or toward the elimination of a deficiency in any reserve fund established for the benefit of Bonds.

Withdrawal[15] for the preceding Fiscal Year, less any amounts transferred during the Fiscal Year to such Capital Account from the Residual Fund.

9. Deposit all remaining amounts into the Residual Fund.

5.2 Other Deposits to the Revenue Fund

Project Revenues are the primary but not the sole source of moneys that flow into the Revenue Fund. For example, earnings on the investment of moneys held in certain Funds and accounts are transferred to the Revenue Fund, as provided by the General Bond Ordinance. Once in the Revenue Fund, these moneys again flow through the waterfall.

This Section describes the conditions under and purposes for which moneys, other than Project Revenues, are deposited into the Revenue Fund.

Debt Reserve Account Excess

The money and investments in the Debt Reserve Account must be held and maintained in an amount equal at all times to the Debt Reserve Requirement. The Debt Reserve Requirement is generally met through the deposit of Bond proceeds each time Bonds (other than Subordinated Bonds) are issued. The amount of such deposit is the amount necessary to ensure that the Debt Reserve Requirement will be met upon the issuance of such Bonds.

An excess in the Debt Reserve Account may arise when principal on Bonds is paid or prepaid. For example, when refunding Bonds are issued to refinance existing debt, amounts already on deposit in the Debt Reserve Account probably will be sufficient or even in excess of what is needed to meet the Debt Reserve Requirement as recalculated when the new Bonds are issued and the old Bonds paid. The General Bond Ordinance states that any money in the Debt Reserve Account in excess of the Debt Reserve Requirement must be transferred to the Revenue Fund at the written direction of the City. How such excess is subsequently disbursed from the Revenue Fund and applied will be limited to the extent that the transferred excess consists of tax-exempt Bond proceeds.[16]
(GBO Section 4.09)

Investment Earnings from Certain Funds and Accounts

All or a portion of the net earnings on deposit in the following funds and accounts are required under the General Bond Ordinance to be transferred or credited to the Revenue Fund. Such crediting typically occurs when the books are closed as of each Fiscal Year end.
(GBO Section 4.16)

1. Revenue Fund.

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[15] "Operating Expense Withdrawal" means the aggregate amount withdrawn from the Capital Account during a Fiscal Year and applied toward the payment of Operating Expenses.

[16] Under the Code, the use of tax-exempt bond proceeds will be limited to payment of debt service or redemption price on Bond and will not be eligible to pay Operating Expenses. There currently is pending in City Council a supplemental ordinance that would permit the City to apply Debt Reserve Account excess directly to the payment of debt service on or redemption of Bonds or, if such excess is not comprised of tax-exempt bond proceeds, to transfer such excess to the Residual Fund.

2. Rate Stabilization Fund.

3. Sinking Fund (except the Debt Reserve Account), to the extent not needed to pay Debt Service Requirements on Bonds (other than Subordinated Bonds).

4. Debt Reserve Account, to the extent that (i) the Debt Reserve Requirement is satisfied and (ii) the scoop in the maximum permitted amount already has been transferred to the City's General Fund.

5. Subordinated Bond Fund, to the extent not needed to pay Debt Service Requirements on Subordinated Bonds.

6. Construction Fund, to the extent any amount is not credited to the appropriate account of the Construction Fund.

Rate Stabilization Fund

As earlier described, as of June 30 or each Fiscal Year, the Water Commissioner may transfer from the Rate Stabilization Fund to the Revenue Fund the amount she determines.

5.3 Capital Expenses and Payments from Construction Fund

Construction Fund moneys are available primarily for payment of capital expenditures in respect of the System. For an expenditure to qualify as capital and payable from the Bond Proceeds Account or the Capital Account of the Construction Fund, it must satisfy the requirements contained in (i) State law, specifically the Revenue Bond Act and the General Bond Ordinance, (ii) the Water Department's standards for defining capital assets, which may be found in the City's Comprehensive Annual Financial Report Fiscal Year Ended June 30, 2018, Note 6, and (iii) with respect to tax-exempt Bond proceeds, the Federal tax law (the "Code")[17]. Essentially, capital expenditures are investments in the System, i.e., payment of costs of the acquisition or construction of new assets, or the replacement or improvement of existing assets, to maintain and expand the System. Except in the very limited circumstances described under ***5.4***, operating expenses are not payable from the Construction Fund.

Federal Tax Law Concerning Tax-Exempt Bonds

Tax-exempt bonds generally provide the lowest cost debt for the City to finance capital projects, because holders of tax-exempt bonds are permitted under the Code (and Pennsylvania income tax law) to exclude the interest earnings on their bonds from income for tax purposes. Holders then can pass all or a portion of those savings back to the City in the form of a reduced rate of interest as compared to a taxable loan. The exclusion from income and resulting reduced cost of borrowing described above constitute an indirect subsidy from the U.S. Treasury to the City to offset the City's infrastructure costs. As such, of the City's total System debt outstanding, all but a de minimis portion is funded from tax-exempt bonds.[18]

This federal subsidy is a scarce resource given for a singular purpose: to support state and local funding of public infrastructure. The distribution of this subsidy is heavily regulated to ensure that that

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[17] That is, the Internal Revenue Code of 1986, as amended, and the regulations promulgated thereunder.

[18] Pennvest loans are funded from tax-exempt bonds issued by Pennvest for the purpose of making such loans.

purpose is met. More specifically, the Code restricts the purposes for which proceeds of tax-exempt Bonds and any earnings thereon[19] may be expended to the acquisition, construction, improvement or equipping of facilities that are owned or controlled by the City and fulfill a governmental purpose. So tax-exempt Bond proceeds are used only to fund capital expenditures of the System. They may not be used to pay operating expenses of the Water Department.

Guidance under the Code for determining capital expenditures versus operating expenses is generally given in the context of a taxpayer who seeks a deduction in the current year, rather than a political subdivision not subject to paying federal tax. That said, in general, under the Code a project cost is capitalized if it purchases an asset with a useful life of more than one year or extends the life of an asset for at least an additional year.[20] Expenses that are ordinary and recurring are not capitalized.[21] Some capital expenditures specifically identified in the Code that we expect are applicable to the operation of the System include (without limitation) paying costs of acquisition or construction of new buildings or permanent improvements and equipment having a useful life substantially beyond the current year, as well as the cost of defending or perfecting title to property.[22] Costs of removal or retirement of a depreciable asset in connection with the construction, development, improvement or installation of a replacement asset is not capitalized as part of the cost of the replacement asset.[23] However, costs of demolishing a building must be capitalized into the value of the land on which it was located.[24]

State Law

First Class City Revenue Bond Act. The Revenue Bond Act contains comprehensive statutory authority for the City[25] to finance self-funding infrastructure through the issuance of special obligations of the City (i.e., revenue bonds or notes).[26] Under to the Revenue Bond Act, the City may finance "project costs" through the issuance of debt payable solely from revenues generated by such projects. For purposes of the Revenue Bond Act, "project costs" include all costs of construction or acquisition of a project with proper allowance for contingencies determined in accordance with generally accepted municipal accounting principles.[27] "Projects" include buildings, structures, facilities or improvements of a public nature, related estates in land, and related furnishings or equipment, which the City is authorized to

[19] Under the Code, investment earnings on tax-exempt bond proceeds (referred to as "investment proceeds") generally are treated as bond proceeds.

[20] *See INDOPCO Inc. v. Comr,* 503 U.S. 79 (1992).

[21] IRC § 162(a).

[22] *See* IRC § 263; Treas. Regs. §§ 1.263(a)-1 and 1.263(a)-2.

[23] *See* Rev. Rul. 2000-7 relating to IRC § 263.

[24] *See* IRC § 280C.

[25] The City of Philadelphia is the only first class city of the Commonwealth of Pennsylvania. *See* 53 P.S. § 12101 *et seq*.

[26] *See* Section 3 of the Revenue Bond Act.

[27] As defined in the Revenue Bond Act, the term "project costs" may include but is not limited to costs of preliminary studies, surveys, planning, testing and design work; fees and expenses of engineers, architects, financial advisors, attorneys and other experts engaged in connection with the project; financing costs including bond discount, interest on money borrowed to finance the project if capitalized and operating capital during construction and for one year after completion of the project; capitalized reserves, the repayment of temporary loans or the payment of bond anticipation notes made or issued in connection with the project, and any of the foregoing incurred or paid prior to as well as after the issuance of revenue bonds.

own, construct, acquire, improve, lease, operate, maintain or support, and in respect of which the City may reasonably be expected to receive project revenues.

General Bond Ordinance. The City enacted the General Bond Ordinance under authority granted under the Revenue Bond Act.[28] As such, the provisions of the General Bond Ordinance concerning the City's ability to finance and refinance projects with Bonds are entirely consistent with the provisions of the Revenue Bond Act.

The General Ordinance also establishes a Capital Account of the Construction Fund for purposes of accumulating moneys sufficient, at minimum, to pay project costs for renewals, replacements and improvements to the System as needed to maintain adequate water and wastewater service to the areas that the System serves.

Accounting Standards

The City's standards for defining capital assets may be found in Comprehensive Annual. Financial Report Fiscal Year Ended June 30, 2018, Note 6. Briefly summarized, capital assets include property, plant, equipment and infrastructure assets with an initial individual cost in excess of $5,000 and an estimated useful life in excess of three years.

5.4 Sources for Payment of Operating Expenses in Event of Revenue Fund Deficiency

The first priority for the Revenue Fund is timely payment of Operating Expenses. Operating Expenses must be paid first in order to ensure that the System continues to generate Project Revenues to repay debt and for all of the other purposes mandated by the General Bond Ordinance. To this end, to the extent that at any time amounts in the Revenue Fund are insufficient to pay Operating Expenses when due, the General Bond Ordinance provides for the use of moneys in certain other funds and accounts, including the Residual Fund, the Rate Stabilization Fund and the Capital Account of the Construction Fund, for this purpose.

From Residual Fund

Payment of Operating Expenses is the first purpose listed in the General Bond Ordinance for which moneys in the Residual Fund may be used.
(GBO Section 4.12(i))

Temporary Loans

The General Bond Ordinance permits the City to make temporary loans from the Residual Fund, Rate Stabilization Fund and Capital Account of the Construction Fund to the Revenue Fund if, at any time, amounts in the Revenue Fund are insufficient both to pay Operating Expenses and to make the transfers described in ***5.1*** above. Such loans are limited to the amount of any such deficiency. Such loans must be repaid when or before such loaned amounts are required by the Water Department for the purposes of the Fund making the loan. The terminology "temporary loan" connotes that the amounts transferred under these provisions of the General Bond Ordinance are not re-counted as revenues, and are

[28] *See* Section 4 of the Revenue Bond Act.

to be replenished not later than when they are needed for the purposes of the respective fund or account.
(GBO Section 4.05, 4.11)

5.5 *Sources for Payment of Debt Obligations in Event of Debt Service Account Deficiency*

The second priority for the Revenue Fund is the transfer of moneys to the Sinking Fund to ensure timely payment of debt service and redemption price on Bonds (other than Subordinated Bonds) and related obligations such as credit facility and swap payments. If at any time Project Revenues from the Revenue Fund are insufficient to make the necessary deposit into the Debt Service Account of the Sinking Fund in order to pay all principal or redemption price of and interest on Bonds (other than Subordinated Bonds) and related obligations when due, the General Bond Ordinance provides for the transfer by the Fiscal Agent to the Debt Service Account of amounts in other funds and accounts to pay such debt service and other obligations.

Debt Reserve Account of Sinking Fund

The City has directed the Fiscal Agent that if at any time the moneys in the Debt Service Account are insufficient to pay when due, the principal or redemption price of or interest on any Bond payable from the Debt Service Account then due (including under Swap Agreements and Credit Facilities), the Fiscal Agent must transfer amounts necessary to cure such deficiency from the Debt Reserve Account to the Debt Service Account.
(GBO Section 4.09)

Residual Fund

The City is permitted, at its discretion, to transfer amounts from the Residual Fund to the Debt Service Account.
(GBO Section 4.12(ii))

Capital Account of Construction Fund

Amounts deposited in the Capital Account may be applied to cure a deficiency in the Sinking Fund, or to purchase Bonds under certain conditions including, among other things, the prior receipt by the City of a certification by a Consulting Engineer that amounts that will remain on deposit in the Capital Account following the proposed purchase of Bonds will be sufficient to pay the cost of renewals, replacements and improvements to the System projected to be payable during such Fiscal Year.
(GBO Section 4.11)

Subordinated Bond Fund

If at any time the amount in Debt Service Account is insufficient and there not on deposit in the Debt Reserve Account, the Capital Account and the Residual Fund available moneys sufficient to cure such deficiency, then the Fiscal Agent must withdraw from the Subordinated Bond Fund and deposit into the Debt Service Account the amount necessary (or all the moneys in the Subordinated Bond Fund, if they are less than the amount necessary) to eliminate such deficiency.
(GBO Section 4.10)

5.6 *Other Permitted Transfers*

Temporary Loans to the Construction Fund

The General Bond Ordinance permits the City to make temporary loans from the Revenue Fund, Rate Stabilization Fund and Residual Fund to the Construction Fund if, at any time, amounts in the Construction Fund are insufficient to pay capital expenses due and payable. Such loans are limited to the amount of any such deficiency. Such loans must be repaid when or before such loaned amounts are required by the Water Department for the purposes of the Fund making the loan.
(GBO Section 4.05)

Other Purposes of the Residual Fund

As the Residual Fund is the last bucket in the waterfall, moneys on deposit there are permitted to be used or transferred to almost any of the other Water and Wastewater Funds. In addition to paying Operating Expenses as described above, amounts in the Residual Fund may be used as follows: to fund transfers to any fund or account established under the General Bond Ordinance or under a Supplemental Ordinance (other than the Revenue Fund and the Rate Stabilization Fund); to make payments required under any Exchange Agreement; for the payment of debt service or redemption price on any revenue bonds or notes issued under the Act but not under the General Bond Ordinance or on any general obligation debt of the City (the proceeds of which were applied m respect of the System); for the payment of amounts due under capitalized leases or similar obligations relating to the System; and to fund the transfer of the scoop to the City's General Fund as of June 30 of each Fiscal Year. Amounts in the Residual Fund may not be transferred to the Revenue Fund or the Rate Stabilization Fund.
(GBO Section 4.12)

Subordinated Bond Fund Deficiency

As mentioned previously, amounts deposited in the Capital Account may be used to pay the cost of renewals, replacements and improvements to the System, and to cure deficiencies in the Sinking Fund and purchase Bonds. In addition, the City may apply moneys in the Capital Account to cure a deficiency, if any, in the Subordinated Bond Fund. To date, the City has never issued Subordinated Bonds.
(GBO Section 4.11)

5.7 Credit of Investment Earnings in Funds and Accounts

The General Bond Ordinance controls how money in the funds and accounts established thereunder may be invested and, more particularly for this discussion, where earnings on such money must be credited. ***5.2*** above highlights only earnings that flow to the Revenue Fund. More broadly, earnings on amounts on deposit in:

(i) the Revenue Fund must be credited to the Revenue Fund;

(ii) the Sinking Fund (except as provided in (iii) below) (A) must be credited to the Sinking Fund to the extent needed to meet Debt Service Requirements in respect of Bonds (other than Subordinated Bonds) and (B) additional interest earnings must be credited to the Revenue Fund;

(iii) the Debt Reserve Account (A) must be credited to the Debt Reserve Account until such account is fully funded and (B) must then be credited to the Residual Fund up to the scoop, and any amount in excess of the scoop must then transferred to the Revenue Fund;

(iv) the Subordinated Bond Fund must be credited (A) to the Subordinated Bond Fund to the extent needed to meet Debt Service Requirements in respect of Subordinated Bonds and (B) additional interest earnings must be credited to the Revenue Fund or to such other fund or account established under the General Bond Ordinance as the City may direct pursuant to a Supplemental Ordinance;

(v) the Residual Fund, must be credited to the Residual Fund;

(vi) the Rate Stabilization Fund must be credited to the Revenue Fund;

(vii) the Construction Fund must be credited to the appropriate account of the Construction Fund or to the Revenue Fund, as the City directs; and

(viii) the Rebate Fund must be credited to the Rebate Fund.
(GBO Section 4.16)

GLOSSARY OF CERTAIN TERMS USED IN THE GENERAL BOND ORDINANCE

"Act" means The First Class City Revenue Bond Act approved October 18, 1972 (Act No. 234, 53 P.S. § 15901 to 16924) as from time to time amended.

"Bond" or "Bonds" means, upon and after issuance of the first Series of bonds under the General Bond Ordinance, if and to the extent Outstanding at any time, all Series of bonds authorized and issued under one or more supplemental ordinances amending and supplementing the General Bond Ordinance.

"Bond Committee" means the Mayor, City Controller and City Solicitor or a majority thereof.

"Bond Counsel" means a firm of nationally recognized bond counsel selected by the City.

"Bondholder" or "Holder" means any registered owner of Bonds or holder of Bonds issued in coupon form at the time Outstanding.

"Capital Account" means the Capital Account within the Construction Fund established in Section 4.04 of the General Bond Ordinance.

"Capital Account Deposit Amount" means an amount equal to one percent (1.0 %) of the depreciated value of property, plant and equipment of the System or such greater amount as shall be annually certified to the City in writing by a Consulting Engineer as sufficient to make renewals, replacements and improvements in order to maintain adequate water and wastewater service to the areas served by the System.

"Capital Appreciation Bonds" means any Bonds issued under the General Bond Ordinance which do not pay interest either until maturity or until a specified date prior to maturity, but whose Original Value increases periodically by accretion to a final Maturity Value.

"Charges Account" means the Charges Account established within the Sinking Fund to provide for the payment of fees under any Credit Facility to the extent payment of such fees are not otherwise provided.

"City" means the City of Philadelphia, Pennsylvania.

"City Controller" means the head of the City's auditing department as provided by the Philadelphia Home Rule Charter.

"City Solicitor" means the head of the City's law department as provided by the Philadelphia Home Rule Charter.

"Code" means the Internal Revenue Code of 1986, as amended, and the regulations promulgated thereunder. ·

"Construction Fund" means the Construction Fund established in Section 4.04 of the General Bond Ordinance.

"Consulting Engineer" means a nationally recognized Independent registered consulting engineer or a nationally recognized Independent Firm of registered consulting engineers, in either case having experience in the design and analysis of the operation of water and wastewater systems of the magnitude and scope of the System.

"Credit Facility" means any letter of credit, standby bond purchase agreement, line of credit, surety bond, insurance policy or other insurance commitment or similar agreement (other than a Qualified Swap or an Exchange Agreement) that is provided by a commercial bank, insurance company or other institution, with a current long term rating (or whose obligations thereunder are guaranteed by a financial institution with a long term rating) from Moody's and S&P not lower than a credit rating of any Series of Bonds which has no Credit Facility, to provide support for a Series of Bonds or for any issue of Subordinated Bonds, and shall include any substitute Credit Facility.[29]

"Debt Reserve Account" means the Debt Reserve Account of the Sinking Fund established in Section 4.04 of the General Bond Ordinance.

"Debt Reserve Requirement" means with respect to all Bonds, an amount equal to the lesser of (i) the greatest amount of Debt Service Requirements payable in any one Fiscal Year (except that such Debt Service Requirement will be computed as if any Qualified Swap did not exist and the Debt Service Requirements attributable to any Variable Rate Bonds may be based upon the fixed rate of interest as set forth in the Supplemental Ordinance or Determination for such Bonds), determined as of any particular date or (ii) the maximum amount to be financed with proceeds of Bonds permitted by Section 148(d)(1) the Code (or any successor provision).[30]

"Debt Service Account" means the Debt Service Account of the Sinking Fund established in Section 4.04 of the General Bond Ordinance.

"Debt Service Requirements," with reference to a specified period, means:

A. amounts required to be paid into any mandatory sinking fund established for the benefit of Bonds during the period;

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[29] The Pending 2018 Amendments, with the approval of the holders of 67% of all Bonds outstanding, will restate the definition of "Credit Facility" under the General Bond Ordinance to read as follows.

> "Credit Facility" means any letter of credit, standby bond purchase agreement, line of credit, surety bond, insurance policy or other insurance commitment or similar agreement (other than a Qualified Swap or an Exchange Agreement) that is provided by a commercial bank, insurance company or other institution.

[30] The Pending 2018 Amendments, with the approval of the holders of 67% of all Bonds outstanding, will restate the definition of "Debt Reserve Requirement" under the General Bond Ordinance to read as follows.

> "Debt Reserve Requirement" means (i) with respect to all Bonds outstanding (regardless whether interest thereon may be excluded from the gross income of the holder thereof for federal income tax purposes) (a) whose Debt Service Requirements are payable from the Sinking Fund (i.e., excluding Subordinated Bonds) and (b) that are of a Series for which the City has not created a Series Debt Reserve Subaccount, an amount equal to the greatest amount of Debt Service Requirements on such Bonds payable in any one Fiscal Year (except that such Debt Service Requirements will be computed as if any Qualified Swap did not exist and the Debt Service Requirements attributable to any Variable Rate Bonds may be based upon the fixed rate of interest as set forth in the Supplemental Ordinance or Determination for such Bonds) determined as of any particular date, and (ii) with respect to the amount to be deposited in the Debt Reserve Account, pursuant to the first paragraph of Section 4.09 hereof, in connection with the issuance of such a Series of Bonds, the lesser of (x) the amount necessary to comply clause (i) and (y) the maximum amount permitted to be financed with proceeds of Bonds permitted by Section 148(d)(1) the Code (or any successor provision)..

B. amounts needed to pay the principal or redemption price of Bonds maturing during the period and not to be redeemed at or prior to maturity through any sinking fund established for the benefit of Bonds;

C. in payable on Bonds during the period, with adjustment or capitalized interest or redemption through any sinking fund established for the benefit of Bonds; and

D. all net amounts, if any, due and payable by the City under a Qualified Swap during such period.

For purposes of estimating Debt Service Requirements for any future period, (i) any Option Bond outstanding during such period shall be assumed to mature on the stated maturity date thereof, except that the principal amount of y Option Bond tendered for payment and cancellation before its stated maturity date shall be deemed to accrue on the date required for payment pursuant such tender; and (ii) Debt Service Requirements on Bonds for which the City has entered into a Qualified Swap shall be calculated assuming that the interest rate on such Bonds shall equal the stated fixed or variable rate on the Qualified Swap or, if applicable and if greater such stated rate, the applicable rate for any Bonds issued in connection with the Qualified Swap adjusted, the case of a variable rate obligation, as provided in Section 5.01 of the General Bond Ordinance. Calculation of Debt Service Requirements with respect to Variable Rate Bonds shall be subject to adjustment as permitted by Section 5.01 of the General Bond Ordinance.[31]

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[31] The Pending 2018 Amendments, with the approval of the holders of 67% of all Bonds outstanding, will restate the definition of "Debt Service Requirements" to read as follows.

"Debt Service Requirements," with reference to a specified period, means:

A. amounts required to be paid into any mandatory sinking fund established for the benefit of Bonds during the period;

B. amounts needed to pay the principal or redemption price of Bonds maturing during the period and not to be redeemed at or prior to maturity through any sinking fund established for the Bonds;

C. interest payable on Bonds during the period, with adjustments for capitalized interest or redemption through any sinking fund established for the benefit of Bonds; and

D. all net amounts, if any, due and payable by the City under a Qualified Swap during such period.

For purposes of estimating Debt Service Requirements for any future period, (i) any Option Bond outstanding during such period shall be assumed to mature on the stated maturity date thereof, except that the principal amount of any Option Bond tendered for payment and cancellation before its stated maturity date shall be deemed to accrue on the date required for payment pursuant such tender; and (ii) Debt Service Requirements on Bonds for which the City has entered into a Qualified Swap shall be calculated assuming that the interest rate on such Bonds shall equal the stated fixed or variable rate on the Qualified Swap or, if applicable and if greater such stated rate, the applicable rate for any Bonds issued in connection with the Qualified Swap adjusted, the case of a variable rate obligation, as provided in Section 5.01 of the General Bond Ordinance. Calculation of Debt Service Requirements with respect to Variable Rate Bonds and Balloon Bonds shall be subject to adjustment as permitted by Section 5.01(c) of the General Bond Ordinance.

The term "Balloon Bonds" as used in this definition, will be a new definition added to the General Bond Ordinance via the aforementioned supplemental ordinance, and will mean any Series of Bonds, or any portion of a Series of Bonds, designated by a Determination as Balloon Bonds, (a) 25% or more of the principal payments (including mandatory sinking fund payments) of which are due in a single year, or (b) 25% or more of the principal of which may, at the option of the holder

“Debt Service Withdrawal” means the aggregate amount withdrawn from the Capital Account during a Fiscal Year and applied toward the payment of principal or redemption price of or interest on Bonds or toward the elimination of a deficiency in any reserve fund established for the benefit of Bonds.

“Determination” means a determination by the Bond Committee regarding certain matters relating to the issuance of a Series of Bonds, made pursuant to the General Bond Ordinance or the Supplemental Ordinance providing for the issuance of such Series of Bonds.

“Exchange Agreement” means, to the extent from time to time permitted by applicable law, any interest exchange agreement, interest rate swap agreement, currency swap agreement or other contract or agreement, other than a Qualified Swap, authorized, recognized and approved by a Supplemental Ordinance or Determination as an Exchange Agreement and providing for (i) certain payments by the City from the Residual Fund and (ii) payments by an entity whose senior long term debt obligations, other senior unsecured long term obligations or claims paying ability, or whose obligations under an Exchange Agreement are guaranteed by an entity whose senior long term debt obligations, other senior secured long term obligations or claims paying ability are rated not less than A3 by Moody’s, A- by S&P or A- by Fitch, or the equivalent the thereof by any successor thereto as of the date the Exchange Agreement is entered into; which payments by the City and counterparty are calculated by reference to fixed or variable rates and constituting a financial accommodation between the City and such counterparty.

“Fiscal Agent” means a bank or other entity designated as such pursuant to Section 7.01 of the General Bond Ordinance or its successor.

“Fiscal Year” means the fiscal year of the City.

“Fitch” means Fitch Investors Service and any successor thereto.

“General Bond Ordinance” means the Restated General Water and Wastewater Revenue Bonds Ordinance of 1989, as amended from time to time by one or more Supplemental Ordinances in-accordance with Article X of the General Bond Ordinance.

“General Obligation Bonds” means the general obligation bonds of the City issued and outstanding from time to time to finance improvements to the System and adjudged, pursuant to the Constitution and laws of the Commonwealth of Pennsylvania, to be self-sustaining on the basis of expected Project Revenues.

“Interdepartmental Charges” means the proportionate charges for services performed for the Water Department by all officers, departments, boards or commissions of the City which are required by the Philadelphia Home Rule Charter to be included in the computation of operating expenses of the Water Department.

“Operating Expenses” for any period means all costs and expenses of the Water Department necessary and appropriate to operate and maintain the System in good operating condition, and shall include, without limitation, salaries and wages, purchases of services by contract, costs of materials, supplies and expendable equipment, maintenance costs, costs of any property or the replacement thereof or for any work or project, related to the System, which is not properly chargeable to property, plant and

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or holders thereof, be redeemed at one time; provided, however that a Variable Rate Bond that is able to be redeemed at the option of the Holder shall not constitute a Balloon Bond.

equipment, pension and welfare plan and worker's compensation requirements, provisions for claims, refunds and uncollectible receivables and for Interdepartmental Charges, all in accordance with generally accepted accounting principles consistently applied, but Operating Expenses shall exclude depreciation, amortization, interest and sinking fund charges.

"Operating Expense Withdrawal" means the aggregate amount withdrawn from the Capital Account during a Fiscal Year and applied toward the payment of Operating Expenses.

"Outstanding," when used with reference to Bonds, means, as of any date, all Bonds heretofore or thereupon being authenticated and delivered under the Ordinance except (i) any Bonds cancelled by the Fiscal Agent at or prior to such date; (ii) Bonds (or portion of Bonds) for the payment or redemption of which moneys, equal to the principal amount, Accreted Value or redemption price thereof, as the case may be, with interest (except to the extent of any Capital Appreciation Bonds) to the date of maturity or redemption date, shall be held in trust under the Ordinance and set aside for such payment or redemption (whether at or prior to the maturity or redemption date), provided that if such Bonds (or portions of Bonds) are to be redeemed, notice of such redemption shall have been given as provided in Article VI of the Ordinance or provision satisfactory to the Trustee shall have been made for the giving of such notice; (iii) Bonds in lieu of or in substitution for which other Bonds shall have been authenticated and delivered pursuant to Article III or Section 6.06 of the General Bond Ordinance; and (iv) Bonds deemed to have been paid as provided in Section 11.01 of the General Bond Ordinance.

"Philadelphia Home Rule Charter" means the Philadelphia Home Rule Charter, as amended or superseded by any new home rule charter, adopted pursuant to authorization of the First Class City Home Rule Act approved April 21, 1949, P.L. 665 §1 et seq. (53 P.S. §13101 et seq.).

"Prior Ordinance" means the General Water and Sewer Revenue Bond Ordinance of 1974 approved May 16, 1974 as amended and supplemented from time to time.

"Project" shall have the meaning assigned to it in the Act, as the same may be amended from time to time.

"Project Revenues" means all rents, rates, fees and charges imposed or charged for the connection to, or use or product of or services generated by the System to the ultimate users or customers thereof. all payments under bulk contracts with municipalities, governmental instrumentalities or other bulk users, all subsidies or payments payable by Federal, State or local governments or governmental agencies on account of the cost of operation of, or the payment of the principal of or interest on moneys borrowed to finance costs, chargeable to the System, all grants, payments and contributions made in aid or on account of the System exclusive of grants and similar payments and contributions solely in aid of construction and all accounts, contract rights and general intangibles representing the foregoing.

"Qualified Swap" or "Swap Agreement: means, with respect to a Series of Bonds, any financial arrangement that (i) is entered into by the City with an entity that is a Qualified Swap Provider at the time the arrangement is entered into; (ii) provides that (a) the City shall pay to such entity an amount based on the interest accruing at a fixed rate on an amount equal to the principal amount of the Outstanding Bonds of such Series, and that such entity shall pay to the City an amount based on the interest accruing on a principal amount initially equal to the same principal amount as such Bonds, at either a variable rate of interest or a fixed rate of interest computed according to a formula set forth in such arrangement (which needs not be the same as the actual rate of interest borne by the Bonds) or that one shall pay to the other any net amount due under such arrangement or (b) the City shall pay to such entity an amount based on the interest accruing on the principal amount of the Outstanding Bonds of such Series at a variable rate of interest as set forth in the arrangement and that such entity shall pay to the City an amount based on interest accruing on a principal amount equal to the Outstanding Bonds of such Series at an agreed fixed rate (which shall not be the same as the rate on the Bonds) or that one shall pay to the other any net amount due under such agreement; and (iii) which has been designated in writing to the Fiscal Agent by the City as a Qualified Swap with respect to the Bonds.

"Qualified Swap Provider" means, with respect to a Series of Bonds, an entity whose senior long term debt obligations, other senior unsecured long term obligations or claims paying ability, or whose payment obligations under a Qualified Swap are guaranteed by an entity whose senior long term debt obligations, other senior unsecured long term obligations or claims paying ability, are rated (at the time the subject Qualified Swap is entered into) at least as high as Aa by Moody's, and *AA* by S&P, or the equivalent thereof by any successor thereto.

"Rate Stabilization Fund" means the Rate Stabilization Fund established in Section 4.04 of the General Bond Ordinance.

"Rebate Fund" means the Rebate Fund established in Section 4.04 of the General Bond Ordinance.

"Residual Fund" means the Residual Fund established in Section 4.04 of the General Bond Ordinance.

"Revenue Fund" means the Revenue Fund establish in Section 4.04 of the General Bond Ordinance.

"Series" when applied to Bonds means, collectively, all of the Bonds of a given issue authorized by Supplemental Ordinance, as provided in the General Bond Ordinance, and may also mean, if appropriate, a subseries of any Series if, for any reason, the City should determine to divide any Series into one or more subseries of Bonds.

"Subordinated Bond Fund" means the Subordinated Bond Fund established in Section 4.04 of the General Bond Ordinance.

"System" means the entire combined water system and wastewater system of the City, now existing and hereafter acquired by lease, direct control, purchase or otherwise or constructed by the City, including any interest or participation of the City in any facilities in connection with said System, together with all additions, betterments, extensions and improvements to said System or any part thereof hereafter constructed or acquired and together with all lands, easements, licenses and rights of way of the City and all other works, property or structures of the City and contract rights and other property or structures of the City and· eon tract rights and other tangible and intangible assets of the City now or hereafter owned or used in connection with or related to said System.

"Water and Wastewater Funds" means, collectively, the Revenue Fund, the Sinking Fund, the Subordinated Bond Fund, the Rate Stabilization Fund, the Residual Fund and the Construction Fund.

"Water Commissioner" means the head of the Water Department as provided by the Philadelphia Home Rule Charter.

"Water Department" means the Water Department of the City created pursuant to Section 3-100 of the Philadelphia Home Rule Charter.

Schedule ML-4

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
26 July 2019

Rate this Research

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Philadelphia (City of) PA Wtr. & Sew. Ent.

Update to credit analysis

Summary

Philadelphia Water and Sewer Enterprise, PA (or Philadelphia Water Department, "PWD" or "the department") (A1 stable), maintains a strong current financial position, with revenues supported by its large and diverse service area - primarily the city of Philadelphia (A2 stable) and its immediate suburbs. PWD's credit profile is moderated by a sizeable consent order and the system's aging infrastructure, both of which will require significant capital investment going forward.

PWD has expanded its capital improvement plans to encompass roughly $3.3 billion of spending over the next six years, about 80% of which will be funded with bond proceeds. While this is an extensive capital plan, we expect new money issuance will be accompanied by rate increases sufficient to maintain required coverage and liquidity. Further, PWD's current debt portfolio is structured with material debt service reductions in 2021, 2024 and 2033, and so additional debt can be supported while keeping annual servicing costs relatively level.

Credit strengths

» Proposed debt increases financially offset by debt service cliffs in 2021, 2024 and beyond

» Healthy cash reserves and formal reserve policy

» Large and diverse service area

» Closed-loop legal framework

Credit challenges

» Consent Order & Agreement and aging infrastructure necessitate hefty CIP and related debt issuance

» Possible rate limitations through rate board approval structure; continued rate increases are required to support debt and capital plan

Rating outlook

The outlook is stable given consistent historical results, and the expectation of a continued stable trend for the department's financial operations. Rate increases are requested in concert with increases to debt service, and there is a significant decline in the near-term debt service schedule, both of which should keep annual debt costs manageable. Engineer and financial consultant reports are required for bond authorization, also adding to operational stability and comprehensive debt planning.

Factors that could lead to an upgrade

» Considerable improvement in debt service coverage

» Service area expansion / revenue growth beyond expected rate increases

Factors that could lead to a downgrade

» Failure to increase rates commensurate with coverage requirements

» Material reductions in debt service coverage levels

» Notable deterioration in cash and liquidity

Key indicators

Exhibit 1

Philadelphia (City of) PA Wtr. & Sew. Ent.					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	24 years				
System Size - O&M (in $000s)	$429,239				
Service Area Wealth: MFI % of US median	71.18%				
Legal Provisions					
Rate Covenant (x)	1.20				
Debt Service Reserve Requirement	DSRF funded at MADS (Aaa)				
Management					
Rate Management	A				
Regulatory Compliance and Capital Planning	A				
Financial Strength					
	2014	2015	2016	2017	2018
Operating Revenue ($000)	$639,974	$676,867	$670,820	$715,949	$726,942
System Size - O&M ($000)	$354,686	$376,528	$364,197	$396,264	$429,239
Net Revenues ($000)	$289,495	$304,071	$312,473	$327,311	$310,215
Net Funded Debt ($000)	$1,716,239	$1,889,599	$1,746,224	$1,933,385	$1,624,268
Annual Debt Service ($000)	$204,570	$204,910	$219,300	$191,307	$202,338
Annual Debt Service Coverage (x)	1.4x	1.5x	1.4x	1.7x	1.5x
Cash on Hand	73 days	78 days	79 days	88 days	88 days
Debt to Operating Revenues (x)	2.7x	2.8x	2.6x	2.7x	2.2x

Source: Moody's Investors Service and Philadelphia Water Department audited financial statements

Profile

The Philadelphia Water & Sewer Enterprise provides water and sewer treatment service to the city of Philadelphia and some of its surrounding suburbs. PWD's customer base includes approximately 480,000 active water accounts and 545,000 active wastewater accounts.

Detailed credit considerations

Service area and system characteristics: Large, diverse urban service area

The Philadelphia Water and Sewer Enterprise benefits from its large, mostly urban base, which consists primarily of the city of Philadelphia. While the base also comes with certain drawbacks - namely substantially aged infrastructure, and a high poverty level in the city that necessitates subsidization of some utility customers - overall, the system's broad, diverse base is a positive to its credit profile.

The water system serves more than 1.5 million individuals through 480,000 active customer accounts and one wholesale account with Aqua Penn. The system maintains three treatment plants, which pull water from the Delaware (59% of water) and Schuykill (41% of water) rivers. These plants together have a rated treatment capacity of 546 MGD and a combined maximum source water withdrawal capacity of 680 MGD, well above the system's average and maximum daily water production of 227 MGD and 333 MGD, respectively, for 2018. The system’s water meets all standards set by the DEP and EPA.

The wastewater system serves a moderately larger area with 545,000 retail accounts (including 50,000 storm water only accounts) and 10 wholesale accounts with neighboring communities and authorities. These wholesale accounts contributed about 5% of overall revenues for fiscal 2017. The wastewater system infrastructure includes three treatment plants. These plants provide a combined average treatment capacity of 522 MGD and peak capacity of 1,059 MGD, again well above the average flow of 379 MGD in 2016.

The system maintains a long-term contract and lease with Philadelphia Municipal Authority to operate its Biosolids Recycling Center through fiscal 2028.

With a population of more than 1.57 million, Philadelphia is the sixth-largest city in the US. The population is growing, albeit slowly, largely due to national demographic trends favoring urban areas, as well as the appeal of the city's substantial mix of universities, hospitals, and other employers.

Among the system’s 10 largest customers - aside from the city itself, its school district, and its public housing authority - are the University of Pennsylvania (Aa1 stable), University of Pennsylvania Health System (Aa3 stable), Veolia Energy, Temple University (Aa3 stable), and the federal government, all of which provide stability and a healthy diversity to the local economy.

Philadelphia’s demographic profile remains below average, with median family income estimated at 69% of the Commonwealth and 71% of the US medians. Poverty has been flat at 25% – 26% since 2010. Unemployment spiked to 10% in 2009, and while that number has certainly improved, it remains above the state and national rates. As of May 2019, unemployment is 4.9% for the city, versus 3.8% for the Commonwealth as a whole and 3.4% for the US.

We utilize Philadelphia’s demographic statistics as a proxy for the system’s socioeconomic profile, however, the overall profile is somewhat stronger than these numbers, as it includes wealthier suburbs in Montgomery (Aaa stable), Bucks (Aaa negative), and Delaware (Aa1) counties.

Debt service coverage and liquidity: healthy liquidity and consistent debt service coverage

One of the department's most notable credit strengths is the stability of its finances. The department ended fiscal 2018 with senior lien debt service coverage of 1.53 times, which is consistent with coverage in the prior four years. The department's years of operating stability reflect strong budget and planning protocols, which we expect will continue as the department progresses in its capital improvement plans.

Moody's adjusted net revenues of $310 million are down slightly year over year, despite a 5.5% increase to operating revenue, largely due to increased spending for personnel costs and benefits. Favorably, debt service has remained level over the last five years.

Moody's evaluates coverage based on generally accepted accounting principles with a few adjustments, while the department reports figures on a “legally enacted” basis that is more cash-focused. These two bases often differ from year-to-year. According to the department's calculation, senior-lien coverage, on a legally enacted basis, was 1.38 times for fiscal 2018, an improvement from 1.31 times coverage the year prior and 1.24 times coverage in 2016.

As noted, the department's long term capital plans include significant additional debt. Despite this, management continues to project a senior lien coverage target of 1.30 times going forward. These projections include revenue increases of 8.15% in 2021 and 5.75% in 2022, though the most recently approved increased were much lower. The ability to meet coverage targets will depend on future rate approvals, which are now subject to a rate board process. Favorably, the department has a history of outperforming budgeted figures. As a further positive, debt service will continue to decline in the medium term. While the department has indicated that new money debt issuance will likely keep debt service flat-to-increasing at current levels, adjustments could be made to the schedule of future issuance in the event that sufficient rate increases are not realized.

LIQUIDITY

The department maintains ample liquidity. As part of its transition to a rate board, management formalized reserve policies outside the indenture requirements, to ensure that liquidity remains strong. PWD's Water Sewer and Stormwater Board has adopted a formal policy to maintain at least $150 million in the Rate Stabilization and Residual Funds. Additionally, the department maintains Capital and Construction accounts that will be used to fund pay-go capital improvement.

Current estimates reflect total available cash in the Rate Stabilization and Residual funds of $192 million at year end 2018, which equates to approximately 170 days' cash on hand. In addition to these funds, the department maintained $103 million in cash for operations as of fiscal 2018 year end. When all available cash is considered, unrestricted reserves as a percent of O&M increases to roughly 69%, which is sufficient for the department's current credit profile. Days' cash on hand increases to a healthy 245 days.

Debt and Legal Covenants

The department's $1.825 billion of outstanding debt at fiscal year-end 2018 is manageable, but projected to grow significantly as part of its $3.3 billion, six year, capital plan. Current debt is roughly 2.5 times gross revenue, and net funded debt is a significantly above average 73% of net fixed assets. Favorably, the existing debt structure is front-loaded, resulting in a debt service “cliff” that was realized in 2018, as debt service decreased from $205 million (fiscal 2017) to a projected $190 million (fiscal 2019) after consideration of the 2018 debt issuance. PWD will realize further debt service savings in 2021, 2024, and beyond, though we expect that much of the debt service savings that could be realized given the current debt profile will be eliminated with the issuance of new debt in the near term. Given current projections for new money issuance over the next six years (roughly $2.2 billion) show that debt service will remain level to moderately increasing in the coming years.

The department’s six-year capital improvement plan, which reflects the consent order as well as major investments to the department's water infrastructure, totals $3.3 billion and will be 80% debt-funded over the next six years. If the capital plan is executed as currently structured, the system’s debt burden will continue to grow, though again, we anticipate that the department's bond covenants and formally adopted policies will ensure that new money debt will only be issued in concert with appropriate rate increases.

LEGAL COVENANTS

The legal covenants governing the system’s senior lien bonds are satisfactory. The senior lien rate covenant is 1.2 times and the total debt service covenant is 1.0 times (although the system currently has no subordinate bond debt). The indenture permits transfers from the rate stabilization fund, meaning the department could use prior-year surpluses to meet its covenant. The additional bonds test is to comply with the rate covenant.

The debt service reserve fund requirement is maximum annual debt service. Additionally, the system, by ordinance, requires that any surety in a debt service reserve fund be rated Aa or higher. A $67 million surety policy with Assured Guaranty Municipal Corp (A2 stable) is not eligible to be included in the reserve requirement. Thus, the department has a debt service reserve fund cash-funded at MADS, plus the surety policy.

DEBT STRUCTURE

Debt is largely fixed. As of October 2018, there is only one variable rate issuance outstanding, the 1997B bonds, with total principal outstanding of $45.4 million (roughly 2.5% of current total debt). The 1997B bonds are unhedged and mature in 2027.

DEBT-RELATED DERIVATIVES

The department is not party to any derivative agreements.

PENSIONS AND OPEB

The city operates one defined-benefit plan: the City of Philadelphia Public Employees Retirement System (not including the pension plan for the Philadelphia Gas Works). It is a mature plan that has roughly 66,000 members, 28,000 active employees and 38,000 retirees. As a result, aggregate contributions into the plan are less than the amount of benefits payable in any given year, resulting in a higher reliance on investment income to make up the difference. Favorably, however, the most recent actuary's report shows that, for fiscal 2018, the fund had positive cash flow even without including interest earnings for the first time in twenty years.

Also positive is the city's action to reduce its assumed rate of return on its pension plan, to 7.65% (2018) from 8.75% (2005). The discount rate was further reduced to 7.6% for 2019, and will be reduced again to 7.55% for 2020. The city has also increased employee contribution requirements under current union contracts. In addition, the city recently negotiated for all non-uniformed employees, excluding elected officials, to enter a stacked hybrid plan. However, the city's assumed rate of return is still above-average when compared to other local governments, and as a result of poor market performance in past years, the city had to revise its fiscal 2017 contribution by an additional $12 million.

The city's minimum municipal obligation (MMO) for the plan was $661 million (14.5% of operating revenue) for 2018, and the city contributed $782 million, or $101 million above the minimum requirement.

The MMO is expected to continue to increase through fiscal 2021, though the five-year plan includes a continued overfunding of this requirement (since fiscal 2012), as the city commits a portion of their sales tax revenues to fund pensions. The city estimates that an additional $300 million over and above its MMO contributions will be applied to pensions over the next five years. The city has also committed for the additional employee contributions negotiated in the last round of collective bargaining agreements will also be in addition to the MMO. The plan reports a funded ratio of 46.8% as of the July 2018 valuation date, a slight improvement over a 45.3% funded ratio reported for 2017 - the city's goal is an 80% funded ratio by 2029.

The city's adjusted net pension liability (three-year average), under Moody's methodology for adjusting reported pension data, is $9.74 billion, or an above average 1.95 times operating revenues, as of 2018. Moody's uses the adjusted net pension liability to improve comparability of reported pension liabilities. The adjustments are not intended to replace the county's reported liability information, but to improve comparability with other rated entities.

The city also provides Other Post-Employment Benefits (OPEB) to employees, which are paid for on a pay as you go basis. The city contributed $115 million (2.5% of operating expenditures) to OPEB in fiscal 2018. Fixed costs including annual pension, OPEB and debt service expenditures summed to a somewhat above average 28% of fiscal 2018 expenditures.

Management and Governance

The water department's management team has a proven track record of detailed planning and conservative budgeting. While the department's future capital plans are extensive, we expect that plans will be executed methodically over the long term.

The system is one of the city's ten operating departments. Its operations are accounted for in the Water Fund, which is an enterprise of the City. The system is closed-loop with a cap on General Fund transfers to the lesser of (a) net reserve earnings or (b) $4.994 million.

The Water Revenue Bureau is responsible for the billing, metering, and collection of revenues for the system. Favorably, the system maintains five-year projections that run through fiscal 2024.

The system's management has consistently increased rates and maintained a healthy amount of operating cash on hand. Until fiscal 2015, the water commissioner had the authority to set rates, and raised rates consistently, averaging around 5% between 2009 and 2015. Rates are now approved by an independent five-member rate board, whose members are appointed by the mayor and confirmed by city council.

While the decision maker for the system's rate increases has changed, much of process remains the same, and includes position briefs, a period of discovery between participants to the proceeding and system management, as well as mandated public hearings. The board adopted a 5.1% and 4.5% increase for fiscal 2017 and 2018, respectively, but its approved rate increases for the following two years were more moderate. The board approved a rate increase of 1.33% for 2019 and 1.2% for 2020. Current projections include additional rate increases through fiscal 2022, though these rates have not yet been adopted by the board.

REPORT NUMBER 1187276

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Moody's INVESTORS SERVICE

S&P Global
Ratings

RatingsDirect®

Summary:

Philadelphia; Joint Criteria; Water/Sewer

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Table Of Contents

Summary:

Philadelphia; Joint Criteria; Water/Sewer

Credit Profile		
US$230.315 mil wtr & wastewtr rev bnds ser 2019B due 10/01/2054		
Long Term Rating	A+/Stable	New
Philadelphia wtr & swr (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & swr (BAM) (SECMKT)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & wastewtr VRDB - 1997B		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Long Term Rating	AA+/A-1+	Affirmed

Rationale

S&P Global Ratings assigned its 'A+' long-term rating to Philadelphia's series 2019B water and wastewater revenue bonds. At the same time, we affirmed our 'A+' long-term ratings and underlying ratings (SPURs) on the city's existing water and wastewater revenue bonds, and our 'AA+/A-1+' rating on Philadelphia's series 1997B bonds, which are jointly secured by the city and the letter of credit provider TD Bank N.A. Except for when applying joint criteria, in which case the outlook is not meaningful, the outlook on the bonds is stable.

The rating reflects our view of the system's very strong enterprise and financial risk profiles, as well as a large capital plan that will require substantial debt issuance in the coming years.

Our view of the system's enterprise risk as very strong reflects:

- The service base in the broad and diverse Philadelphia-Camden-Wilmington metropolitan area, although income levels in Philadelphia County are lower than the surrounding area;
- Rates we view as affordable, particularly given the introduction of affordability programs for low-income residents; and
- Operational management policies and practices we consider good, with adequate water supply, adequate asset management practices, and regular reviews of revenue sufficiency.

Our view of the system's financial risk as very strong reflects:

- Somewhat low but consistent all-in coverage of 1.2x to 1.3x;
- Extremely strong liquidity with over $280 million in available reserves at the end of fiscal 2018, representing 224 days' cash;
- A sizable capital improvement plan (CIP) combined with an already high debt-to-capitalization ratio; and

- Financial management policies and practices we consider strong, with integrated capital and financial planning.

The city will use the series 2019B bond proceeds to finance capital improvements, make a deposit to the debt reserve account of the sinking fund, and pay costs of issuance.

Securing debt service are net revenues of the water and sewer fund, which include (net of operating expenses) rates and charges of the system, transfers from the rate stabilization fund (RSF), and interest earnings. Rates must be set to generate revenues and charges plus transfers from the RSF that represent at least 1.2x annual debt service on senior revenue bonds and 1.0x coverage when including all subordinate debt (if outstanding, which currently they are not) and certain other transfers. The city can issue additional debt as long as it is complying with the rate covenant at the time of issuance and net revenue projections are sufficient to provide for rate covenant compliance for the two fiscal years following the debt issuance. There is an additional test that requires that the city maintain net system revenues (excluding transfers from the RSF) totaling at least 90% of operating requirements (90% test). This provides additional bondholder protection, in our view, since this effectively limits how much the system can rely on draws from the RSF. This provision also applies to the additional bonds test.

Enterprise risk

Philadelphia's water and wastewater systems provide service to roughly 1.6 million people in the city with wholesale service providing services to additional residents outside city boundaries. The systems predominantly serve retail residential customers in the city, as well as in 11 surrounding townships and utility authorities on a wholesale basis. The number of retail accounts has remained relatively stable since 2001 and currently totals about 480,000 for the water system and 545,000 for the wastewater system, which includes about 50,000 stormwater-only accounts. The water department customer base, in which the city is the leading user, remains stable and diverse: The 10 leading retail customers accounted for about 10% of total revenue in fiscal 2018.

Because the service base spans both Philadelphia and suburban areas, the demographic profile takes into account a wide range of socioeconomic scales. The city's unemployment rate has historically been above the national average, and was 4.9% for May 2019, as reported by the U.S. Bureau of Labor Statistics. In our opinion, income indicators for both the city and county are just adequate, with median household effective buying income (MHHEBI) at 77% of national levels. Portions of Bucks, Delaware, and Montgomery counties are part of the service base, and all have stronger median household income levels.

We view rates as affordable despite county poverty rates and city income levels that do not compare well with national averages. As part of our criteria application, we benchmark rate affordability against Philadelphia County's income levels and its poverty rates, which was last reported at about 26% by the U.S. Department of Agriculture. But rate increases have generally been regular and consistent. From 2006 to 2014, management raised rates by about 4%-7% annually. Since the introduction of the independent rate board in 2016, increases were 5.1% and 4.5% in 2016 and 2017, respectively, and 1.3% and 1.2% in 2018 and 2019, respectively, but were also accompanied by some other changes to the rate structure that yielded greater revenue. The city will submit its next request to the rate board in early 2020. We will monitor future actions by the rate board for any differences between requested and approved rate increases. Management estimates that the average monthly combined bill currently totals $67 for 500 cubic feet of use; or just over 2% of MHHEBI on an annualized basis, including a stormwater fee of $16 (including a billing surcharge) per equivalent dwelling unit. Due to the size of the CIP and the customer profile, affordability will be pressured in the coming years; however, we believe the department's Tiered Assistance Program may help alleviate these pressures for low-income residents. The collection rate in 2018 was approximately 95%.

We view both the operational and financial management policies for the water department as strong and well-embedded. Water withdrawal and wastewater treatment capacities are 680 million gallons per day (mgd) and 522 mgd, respectively. We consider water capacity adequate, given average use of less than half that; sewer average use is about 90% of capacity, but the city is actively working on enhancing treatment capacity and accelerating main replacement. It has a full asset management program that helps inform its CIP project prioritization; good communication to ratepayers, especially related to implementation of its long-term control plan, green infrastructure projects, and rate plans; and consistent rate adjustments.

Financial risk

Despite generally stable financial performance, Philadelphia relies on periodic draws on its RSF to support operations. In recent years, it drew $24.6 million in 2018, $4.6 million in 2017, and $1.6 million in 2016, but deposited an aggregate of $44.4 million during fiscal years 2014 and 2015. Management's latest available financial projections show the water department continuing to rely on RSF draws to meet its minimum coverage requirements for several years, but the projections do not indicate the balance dropping below $135 million. The board has a minimum target of $150 million combined in the RSF and residual fund.

Our all-in coverage calculation of 1.2x to 1.3x for the last three audited fiscal years (2016-2018) does not include nonrecurring sources of revenue, such as transfers from the RSF. Management can reach its 1.2x coverage target by making a transfer into or out of its RSF, but the city also remains in compliance with the 90% test, as indicated above. We calculate debt service coverage for the fiscal year ended June 30, 2018, at 1.3x without RSF support; based on our review of management's projections, coverage will remain in the same range with the exception of a slight dip in 2020. We base our calculation on net audited operating revenues backing out depreciation and including miscellaneous nonoperating revenues and expenses, and debt service on all revenue bonds and Pennsylvania Infrastructure Investment Authority (PENNVEST) loans. While operating transfers out for cost reimbursement to other departments is subtracted from net available for debt service, we do not count RSF transfers in either revenues available or an operating expense.

Unrestricted cash levels (including the RSF balance) at the end of each fiscal year also demonstrate stable financial performance, in our view. The combined unrestricted and RSF balances have typically represented 225-275 days' operations (between about $225 million to $290 million). The bond ordinance also stipulates that amounts on deposit in the water department's RSF, capital fund, and residual fund can all be loaned to the revenue fund to pay operating expenses or even debt service because the revenue fund is included as pledged security for the revenue bonds.

Philadelphia's combined water and sewer system is highly leveraged and the $3.3 billion 2020-2024 CIP is likely to require significant additional debt funding; management is currently planning to debt-fund approximately 80% of the plan. However, since the city entered into a 25-year consent order and agreement with the Pennsylvania Department of Environmental Protection in 2011, a good portion of the CIP projects are now definable. As debt is layered in, we would expect that annual debt service costs would also steadily increase as additional debt is issued. We also expect that management will continue to raise rates as it has in the past, to fund these additional costs, as well as cash-funded capital costs and general operating expenses.

Total debt has consistently represented no less than about two-thirds of capitalization, which we consider high. Given the large CIP, we do not expect this to change materially over time. Only about 2% of the city's $2.0 billion in water and sewer revenue debt outstanding at the end of June 2019 is variable rate, and 6% is PENNVEST state revolving fund loans. There is no subordinate debt or swap exposure in the portfolio at this time.

Financial management practices applied to all its financial operations are generally strong, in our opinion. Management has integrated capital and financial planning, comprehensive policies for liquidity, and recent financial variances from the budget have been small and positive.

Outlook

The stable outlook reflects our opinion that the water department should be able to continue meeting or exceeding its financial projections as long as it keeps making consistent rate adjustments and controlling its overall costs in a fashion consistent with or better than what the projections indicate. The outlook is also supported by the large service base, which adds both geographic and socioeconomic diversity to the department's rate base.

Upside scenario

If the city's actual financial performance significantly exceeds current projections, we could raise the rating. However, we view this scenario as fairly remote over the next two years, given the city's large amount of capital and debt needs, which we believe will keep future financial performance at levels in line with historical trends.

Downside scenario

If rate increases are short of what is needed to maintain financial performance consistent with recent experience, there are drawdowns in liquidity beyond current expectations, or a significant amount of additional capital spending is added to the city's CIP, we could lower the rating or revise the outlook to negative.

Ratings Detail (As Of July 26, 2019)		
Philadelphia wtr & swr		
Long Term Rating	A+/Stable	Affirmed
Philadelphia wtr & wastewtr		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed

Many issues are enhanced by bond insurance.

FITCH RATES PHILADELPHIA (PA) WATER AND WASTEWATER REVS 'A+'; OUTLOOK STABLE

Fitch Ratings-New York-25 July 2019: Fitch Ratings has assigned an 'A+' rating to the following Philadelphia, PA (the city) revenue bonds:

--$270 million water and wastewater revenue bonds, series 2019B.

The city expects to sell the bonds in a negotiated sale the week of Aug. 5. Proceeds will be used to finance various system-wide capital improvements, make a deposit to the debt service reserve and pay issuance costs.

The Rating Outlook is Stable.

SECURITY
The bonds are secured by a senior lien on combined net revenues of the Philadelphia Water Department's (PWD) water and sewer system.

KEY RATING DRIVERS
SATISFACTORY FINANCIAL PERFORMANCE: Consistency in annual rate setting to both achieve 1.3x debt service coverage (DSC) and healthy liquidity levels has supported Philadelphia Water's 'A+' rating despite metrics that are weaker than Fitch's medians. Narrow but consistent margins have generated Fitch-calculated all-in DSC approximating 1.3x in three of the past five fiscal years.

SIGNIFICANT LONG-TERM CAPITAL NEEDS: The capital improvement program (CIP) totals a sizable $3.3 billion through 2025. Capital needs beyond 2025 remain significant; a result of the department's recently completed long-term water and wastewater master plans and ongoing required consent order projects.

DEBT AND LEVERAGE TO RISE: Outstanding debt levels are currently manageable but will increase with annual borrowings expected to fund the department's long-term capital needs. Despite anticipated rate increases and stronger cash flows, leverage is similarly expected to rise.

COST RECOVERY CHALLENGES: Cost recovery remains a focal point for this rating, especially in light of the below-average income levels and high poverty rates, recent challenges to rate implementation, and long-term capital needs.

MIXED ECONOMIC CHARACTERISTICS: The service area is anchored by a broad and stable economy. However, low income levels and high levels of unaccounted-for water persist, contributing to below-average collection rates.

RATING SENSITIVITIES

INSUFFICIENT RATE RECOVERY: The rating on Philadelphia Water's revenue bonds reflects Fitch's expectation that consistent rate action will be taken to support planned capital spending. However, if the department experiences difficulty in achieving timely and sufficient rate recovery, leading to a decline in financial margins, negative rating action could result.

SIGNIFICANTLY RISING LEVERAGE: Given the long-term and significant capital spending needs of the system, rising leverage is also a concern, especially in light of the potential for insufficient rate recovery. Fitch believes continuance of the current trajectory of additional debt could lead to much higher leverage over time and result in downward rating pressure.

CREDIT PROFILE

The Philadelphia Water Department provides water to all of the nearly 1.6 million residents of the city as well as a small wholesale customer that serves accounts in neighboring Montgomery and Delaware Counties. The wastewater service area, which serves greater portions of the surrounding counties, includes a larger population estimated at nearly 2.3 million. The retail customer base is highly diverse, comprising predominantly residential users, with the 10-largest customers accounting for just 9.7% of fiscal 2018 total revenue.

Operations are stable and system capacity is robust. Average daily water demand is comfortably below permitted water supply and capacity at all treatment facilities remains well within existing permit limits. Raw water supplies from the Delaware and Schuylkill rivers are sufficient for the foreseeable future.

SOUND HISTORICAL FINANCES

Fitch considers the system's financial profile to be adequate for the rating despite historically narrow DSC levels. Management budgets to meet a 1.3x DSC target, which in some years has required a transfer from the department's rate stabilization fund (RSF) to balance lower projected cash flow amounts. RSF transfers have been fairly minimal over the past several years, leading to a fairly robust RSF balance of $179 million.

Operating results for fiscal 2018 were in line with prior projections with DSC of roughly 1.2x, continuing a consistent trend of satisfactory financial performance. Total liquidity, which includes unrestricted balance sheet cash and investments, was a solid 218 days cash on hand at fiscal-end 2018.

Pro forma financial results provided by PWD show a continuing trend of low but stable coverage, and sound liquidity levels. DSC net of RSF transfers is forecast to remain in the range of 1.2x-1.3x in fiscals 2019-2024, as has been the case historically. While Fitch believes the assumptions built into the forecast to be reasonable, future rate increases will depend upon subsequent rate board approvals and the potential for future challenges.

FUTURE COST RECOVERY REMAINS KEY RATING FACTOR

In 2016, the city passed an ordinance establishing the Philadelphia Water, Sewer, and Storm Water Rate Board (the rate board), an independent rate-making body responsible for fixing and regulating water/sewer and stormwater rates. The rate board's initial rate ruling in 2016 resulted in manageable annual rate increases for fiscals 2017 and 2018.

According to management, the rate board's initial rate determination process was seamless and apolitical, and approved within the required 120 day timeframe. The rate board has adopted several policy targets including a 1.3x DSC target and minimum liquidity in the RSF and other funds of $150 million, levels which are generally consistent with the current rating.

Rate increases of 1.33% and 1.20% were approved by the rate board on July 12, 2018 for implementation in fiscal years 2019 and 2020, respectively. While the approval of this most recent rate ordinance is generally viewed positively, the rates were approved at levels below the amounts requested by PWD's management and lower than historical increases.

The public advocate filed an appeal of the rate board's decision with the local trial court. The appeal was recently denied by the trial court. However, Fitch would expect the public advocate to appeal the lower court's decision. While the case may take several years to adjudicate, if the rates are eventually overturned, rates would revert back to 2018 levels. Management estimates the potential lost revenues to be approximately $24 million in aggregate, which is manageable given the department's robust current liquidity.

Enacting multi-year rate adjustments is generally viewed positively and while reversal of the rate increases would not represent a significant shift in near-term credit quality, Fitch is concerned the above-described rate process and/or a successful appeal could portend challenges to future cost recovery efforts in light of the department's large capital program. Even still, Fitch believes it is unlikely rates will be increased beyond the levels assumed in the policy targets previously described, resulting in much higher future leverage as debt incrementally increases over time. If leverage moves significantly higher, rating pressure could result.

The monthly combined bill for water, sewer and stormwater service is approximately $67 per month for an average customer using about 500 cubic feet per month, equal to about 2% of the city's median household income (MHI). Rates are somewhat high but comparable with other large urban systems.

ENVIRONMENTAL REGULATIONS, SYSTEM RENEWAL DRIVE LARGE CIP

The city continues to operate under a consent order and agreement (COA) signed in 2011 with the Pennsylvania Department of Environmental Protection. The COA requires the department to address combined sewer overflows over a 25-year term ending in 2036. Terms of the agreement, including total cost and timeline are considered by Fitch to be generally favorable for the city when compared with alternative, likely more costly strategies.

However, typical of most large, older, urban combined utilities facing combined sewer overflow mitigation and long-term renewal and replacement issues, PWD's CIP remains substantial. Most of the anticipated capital spending will be funded with additional debt.

ESCALATION IN DEBT EXPECTED TO PRESSURE LEVERAGE

As of fiscal-end 2018, PWD had $2 billion of mostly fixed-rate, long-term revenue bonds and $121 million in Pennsylvania Infrastructure Investment Authority (PENNVEST) loans outstanding. Debt and leverage ratios are somewhat mixed, but overall system capitalization is currently manageable.

The CIP continues a trend of relying heavily on long-term debt as a funding source, primarily due to low operating margins and narrow DSC that yield modest amounts of excess cash flow. Approximately 80% of project costs over the next six years will be financed with new debt. With long-term capital needs escalating, Fitch anticipates the amount of future debt will continue to outpace the rate of amortization of existing bonds, leading to a steady rise in debt and leverage over time.

Leverage, as measured by debt to funds available for debt service, was a manageable 6.9x in fiscal 2018 and approximates the median leverage ratio for water and sewer systems rated in the 'A' category by Fitch. However, PWD is projecting an additional approximately $2.3 billion in total new debt in 2020-2024, which is several multiples more than the amount of existing bond principal scheduled to be retired over that span.

Fitch believes the large size and duration of the CIP, coupled with the continued strategy of funding capital costs almost entirely with long-term debt will eventually begin pressuring leverage absent more robust rate recovery than is currently expected. If rate increases do not keep pace with and/or exceed the escalating capital costs and debt issuances, the ratings will likely come under pressure.

ECONOMIC IMPORTANCE OFFSETS WEAK SOCIOECONOMIC INDICATORS

Philadelphia's large population, sound economic underpinnings and distinct role as the economic driver for the broader metropolitan statistical area ensure the continued stability of PWD's service area. The city's April 2019 unemployment rate decreased from the year prior to just 4.1%.

Weak income levels persist, as the city's poverty rate remains nearly twice the national rate and MHI approximates just 70% of state and national averages. Consequently, PWD's accounts receivable balances and annual write-offs are consistently high relative to most utilities.

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Applicable Criteria
Rating Criteria for Public-Sector, Revenue-Supported Debt -- Effective Feb. 26, 2018 to May 27, 2019 (pub. 26 Feb 2018)
https://www.fitchratings.com/site/re/10020113
U.S. Water and Sewer Rating Criteria (pub. 29 Nov 2018)
https://www.fitchratings.com/site/re/10049877

Schedule ML5

Table 1

City of Philadelphia

Water Operating Fund

Fund Balance Summary

Category	**FY'16 Year-End Final**	**FY'17 Year-End Final**	**FY'18 Year-End Final**	**FY'19 Year-End Unaudited Final**	**FY'20 B&V Projected**	**FY'21 B&V Projected**	**FY'22 B&V Projected**	**FY'23 B&V Projected**	**FY'24 B&V Projected**	**FY'25 B&V Projected**
REVENUES										
Locally Generated Non - Tax Revenues	678,161,586	719,236,865	749,500,734	740,848,137	764,404,650	779,257,005	820,090,901	865,919,171	915,266,154	967,432,530
Other Governments	744,461	1,407,828	569,483	698,175	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Revenue from Other Funds of City - General Fund										
Revenue from Other Funds of City - Rate Stabilization Fund	1,629,332	4,563,392	24,629,567	4,321,032	21,882,505	7,905,034	622,215	9,020,554	0	7,728,076
Total Revenues and Other Sources	**680,535,378**	**725,208,085**	**774,699,784**	**745,867,345**	**787,287,156**	**788,162,039**	**821,713,116**	**875,939,725**	**916,266,154**	**976,160,605**
Category	**FY'16 Year-End Final**	**FY'17 Year-End Final**	**FY'18 Year-End Final**	**FY'19 PWD Preliminary**	**FY'20 B&V Projected**	**FY'21 B&V Projected**	**FY'22 B&V Projected**	**FY'23 B&V Projected**	**FY'24 B&V Projected**	**FY'25 B&V Projected**
OBLIGATIONS / APPROPRIATIONS										
Personal Services	118,414,774	125,010,183	132,309,262	137,276,973	147,363,193	153,860,726	160,523,668	167,041,540	173,803,966	180,818,173
Personal Services - Pension	46,646,526	68,914,800	76,957,397	78,876,294	81,600,000	83,475,000	84,655,000	86,665,000	87,676,000	87,687,000
Personal Services - Other Employee Benefits	59,744,688	52,651,923	56,886,860	54,893,284	58,605,000	61,871,111	64,931,874	67,856,848	70,829,662	73,860,967
Sub-Total Employee Compensation	224,805,988	246,576,906	266,153,519	271,046,551	287,568,193	299,206,837	310,110,542	321,563,388	332,309,627	342,366,140
Purchase of Services	124,873,757	146,179,730	156,997,467	167,555,924	178,457,408	181,401,278	187,798,282	194,458,889	201,394,001	208,614,971
Purchases of Services - Electricity	20,101,556	18,252,847	15,002,114	13,884,363	13,914,269	14,331,697	14,331,697	14,403,356	14,547,389	14,692,863
Purchases of Services - Gas	4,013,405	3,176,527	3,855,757	5,452,000	3,987,411	4,107,034	4,107,034	4,127,569	4,168,845	4,210,533
Sub-Total Purchase of Services	148,988,718	167,609,104	175,855,338	186,892,287	196,359,088	199,840,008	206,237,013	212,989,813	220,110,234	227,518,367
Materials, Supplies	24,425,002	27,893,295	28,305,613	23,426,796	31,352,635	32,213,325	33,098,005	34,007,351	34,942,058	35,902,841
Equipment				7,365,765						0
Materials - Chemicals	21,096,651	18,728,508	21,771,176	22,115,310	22,265,999	23,379,299	24,548,264	25,775,677	27,064,461	28,417,684
Sub Total -Materials, Supplies and Equipment	45,521,653	46,621,803	50,076,789	52,907,871	53,618,634	55,592,625	57,646,269	59,783,028	62,006,519	64,320,525
Contributions, Indemnities and Taxes	5,440,820	7,352,314	6,779,219	3,816,246	4,709,259	4,709,259	4,709,259	4,709,259	4,709,259	4,709,259
UESF	0	400,000	500,000	500,000						
Indemnities	5,440,820	6,952,314	6,279,219	3,316,246						
Debt Service	219,132,799	206,390,425	218,482,803	190,908,003	206,896,631	195,350,537	207,155,496	234,160,868	247,190,521	282,629,020
Transfer to Escrow		9,507,288	18,765,332	0	0					
Sub Total Debt Service	219,132,799	215,897,713	237,248,135	190,908,003	206,896,631	195,350,537	207,155,496	234,160,868	247,190,521	282,629,020
Advances and Miscellaneous Payments	-	-				-	-	-	-	-
Payment to Other Funds - Net of Payment to Rate Stabilization Fund	60,733,243	65,700,000	71,000,000	70,716,987	69,805,911	66,401,591	70,018,416	78,189,423	82,182,224	92,852,626
Payments to Other Funds - Rate Stabilization Fund	-	-				-	-	-	4,575,452	-
Total Obligations / Appropriations	**704,623,222**	**749,757,840**	**807,112,999**	**776,287,945**	**818,957,715**	**821,100,858**	**855,876,994**	**911,395,780**	**953,083,836**	**1,014,395,937**
Operating Surplus / (Deficit)	**(24,087,843)**	**(24,549,755)**	**(32,413,215)**	**(30,420,600)**	**(31,670,560)**	**(32,938,819)**	**(34,163,878)**	**(35,456,055)**	**(36,817,682)**	**(38,235,332)**
OPERATIONS IN RESPECT TO PRIOR FISCAL YEARS										
Net Adjustments - Prior Year (Liquidated Encumbrance)	24,087,843	24,549,755	32,413,215	30,420,600	31,670,560	32,938,819	34,163,878	35,456,055	36,817,682	38,235,332
Total Net Adjustments	**24,087,843**	**24,549,755**	**32,413,215**	**30,420,600**	**31,670,560**	**32,938,819**	**34,163,878**	**35,456,055**	**36,817,682**	**38,235,332**
Year End Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Category **PAYMENTS TO OTHER FUNDS**	**FY'16 Year-End Final**	**FY'17 Year-End Final**	**FY'18 Year-End Final**	**FY'19 Year-End Unaudited Final**	**FY'20 B&V Projected**	**FY'21 B&V Projected**	**FY'22 B&V Projected**	**FY'23 B&V Projected**	**FY'24 B&V Projected**	**FY'25 B&V Projected**
Payment to Other Funds - Net of Payment to Rate Stabilization Fund										
Capital Account Deposit	21,496,800.00	22,302,330	34,776,150	24,878,890	27,065,040	29,230,243	31,568,663	34,094,156	36,821,688	39,767,423
Residual Fund Transfer to Capital	31,136,257.36	31,300,606	28,904,525	*38,085,853*	35,054,871	29,416,174	30,624,782	36,199,872	37,394,082	45,047,051
Transfer to GF for Services	8,100,186.00	12,097,064	7,319,325	7,752,244	7,686,000	7,755,174	7,824,971	7,895,395	7,966,454	8,038,152
Total	60,733,243	65,700,000	71,000,000	70,716,987	69,805,911	66,401,591	70,018,416	78,189,423	82,182,224	92,852,626

Schedule ML-6

February 07, 2020

Memorandum

TO:	City of Philadelphia Water Department
FROM:	Katherine Clupper, Managing Director, Public Financial Management
	Peter Nissen, Managing Director, Acacia Financial Group, Inc.
RE:	Discussion of Water Department Financial Policies and Metrics

Introduction

The purpose of this memorandum ("Memorandum") is to provide additional support for the Philadelphia Water Department's ("PWD" or "Department") Financial Plan, related policies and financial metrics. This memorandum is submitted by Public Financial Management ("PFM") and Acacia Financial Group, Inc. ("Acacia"), as financial advisors to the Department.[1] The recommendations herein are based upon PFM's and Acacia's knowledge of the Department, national water and sewer utility experience, credit agencies published metrics and methodology, comparative information on peer utilities and industry best practices.

The central recommendation of this Memorandum is that implementation of the PWD Financial Plan, as proposed in the pending rate proceeding before the Philadelphia Water, Sewer and Storm Water Rate Board ("Rate Board") is critical (i) to maintaining a strong credit profile and (ii) sustaining reasonable liquidity levels to provide protection from unforeseen financial events or economic downturns.

The discussion below focuses upon the following key financial metrics identified by the Department in connection with its Financial Plan: (i) capital funding from current revenues (pay-go), (ii) debt service coverage, (iii) cash reserves or system liquidity and (iv) debt issuance or system leverage, including comparing life of the assets to debt. We will discuss the importance of these metrics, the Department's financial trends and the resulting impact on the credit profile, including insights from the rating agencies, on median comparisons and a review of peer systems and financial comparisons. It is our position that the requested revenue requirements are well within industry standards and that it is critical for the Department to maintain and continue to manage these financial metrics. These agreed upon metrics are within industry norms and would be considered best practices.

[1] The resumes of experience of Katherine Clupper, Peter Nissen and their respective firms are attached to this Memorandum and incorporated herein by reference.

It should also be noted that the projected revenue and revenue requirements presented by the Department's rate consultant, Black & Veatch, support proposed increases in water, sanitary sewer and stormwater rates and charges which will, among other things, allow the Department to comply with the financial policies and metrics discussed below[2].

Financial Metrics

Pursuant to the Rate Ordinance, the Rate Board has and must "recognize the importance of financial stability to customers and fully consider the Water Department's Financial Stability Plan" (Philadelphia Code 13-101 (4)(b)(i)) in addition to considering "peer utility practices, best management practices and projected impacts on customer rates" (Philadelphia Code 13-101 (4)(b)(ii)). The Department developed key financial policies as a part of their annual Financial Stability Plan and have incorporated these metrics in the rate increase request.

Capital Funding from Current Revenues (Pay-Go Financing) – Pay-Go financing is simply funding capital needs with current revenues, rather than from debt borrowing. Pay-Go financing is often funded with identified user charges or growth related fees. Systems that have funded significant portions of their Capital Improvement Plan ("CIP") with annual revenues are able to manage their debt while mitigating the burden upon future rate payers. PWD has targeted 20% of its CIP being funded with pay-go revenues (or 80% debt funding). As a point of reference, Fitch's 2020 medians indicate a pay-go percentage of 66% for all systems and 54% for large systems. The PWD goal is on the weaker side and should be met and even strengthened in the future. Systems that are able to sustain higher levels of Pay-Go financing consequently also enjoy healthier debt service coverage, greater liquidity and lower borrowing costs which inure to the benefit of rate-payers.

***Debt Service Coverage* -** The Water and Wastewater sector is capital intensive, requiring significant capital investment to insure safe and efficient delivery of service. Debt service coverage provides ongoing revenues to continue to fund a portion of a systems capital needs with internally generated funds. Adequate coverage also permits reserves to be maintained at levels which can mitigate unforeseen expenses and capital needs or shortfalls in expected revenue. The

[2] These policies were developed to position the PWD with adequate debt service coverage and cash reserves (i) to address capital needs aimed at maintaining assets and (ii) to increase pay-go funding to lower the debt burden. PWD has also implemented affordability programs to address ongoing rate increase impact on lower income rate payer. Additional revenue will be required to fund these affordability programs which will be increasingly necessary to mitigate the impact of rate increases on low-income households. Affordability is becoming an increased focal point in the credit profile of utilities across the sector and we believe the Department has been pro-active in addressing this issue. The Tiered Assistance Program is specifically noted by S&P as a tool to alleviate future pressure on low income residents (S&P Report, Feb. 4, 2019)

PWD has set its financial plan to formulate senior debt service coverage levels that support maintaining its existing credit ratings over the next five fiscal years.

The authorizing bond document (i.e. legal) requirement for debt service coverage for the PWD is 1.2 times coverage of senior debt, inclusive of contributions from the Rate Stabilization Fund. The Department has managed to debt service coverage of 1.3 times, as concluded reasonable in the 2018 Rate Determination. It should be noted that sector wide coverage is 2.30 times (2018 Moody's medians for combined systems). For the rating category and the size of the Department, the current and past debt service coverage are below national trends. If not allowed to continue at the 1.3 times level or greater, the ability to generate financial resources to fund the 20% pay go levels will be inhibited and debt burden will significantly increase. Additionally, relying on the Rate Stabilization Fund contributions to meet debt service coverage depletes financial resources which can be critical in addressing potential economic or operational challenges and diminishes the debt service coverage perception by the rating agencies.

Cash Reserves – Liquidity measures are a critical indicator of the financial stability of utility system. Adequate cash reserves allow systems to contribute to growing capital projects, mitigate system disruptions, and fund unexpected operating expenses. The Department is maintaining liquidity by managing to a $135 million balance in the Rate Stabilization Fund (over time) and $15 million in the Residual Fund. The credit agencies give credit to the Department for balances in both funds in calculating liquidity levels. The common measure to determine liquidity is "days cash on hand", which is calculated by totaling unrestricted cash and investments and any restricted cash that is available for general system purposes, divided by the result of the annual operating expenses (minus depreciation), divided by 365. While rating agencies vary in their calculation, in particular with regards to the allowance of balances in the Rate Stabilization Fund and the Residual Fund, all mention and acknowledge these balances in their liquidity consideration. It is critical that the Department maintain the thresholds adopted in the 2018 Rate Determination of a Rate Stabilization balance of $135 million (by 2023) and a Residual Fund balance of $15 million.

Debt Issuance - Finally PWD is considering the overall investment in assets and the impact of debt issuance on the average life of PWD's assets. In addition to considering the useful life of assets in comparison to overall debt levels, consideration is also given to matching asset life to the life of the outstanding debt. Matching assets to liabilities is a critical tool in any robust debt management plan and intrinsic to matching the utility of an asset to the repayment of the asset (i.e. rate-payers derive the benefit of asset over the same term that the asset is repaid). Since debt issuances typically have 20 to 30 year amortization schedules, it is important to balance the debt burden of current rate payers with future customers. Structuring a debt portfolio requires consideration of long range planning. Over the past several years, PWD has increased the average life of its debt portfolio to begin achieving this goal. The table below illustrates that the PWD has increased the average life of the debt outstanding and slightly increased debt service coverage over the past several years, which is in line with the financial policies of the Department and the recommendations of the Rate Board in the 2018 Rate Determination.

Year	2015	2016	2017	2018	2019
Debt Service Coverage	1.23	1.24	1.31	1.38	1.33
Weighted Average life of outstanding debt	12.59	12.87	14.54	14.24	13.48

Bond Credit Agencies

Moody's, Standard & Poor's and Fitch look to variations of the above metrics in determining the Department's credit worthiness. Notably, the consistency of PWD's respective ratings of A1/A+/A+ show a consistency of rating views by all three rating agencies. This benefits PWD as investors price to the lowest rating if there are significant discrepancies. PWD accessed the capital markets twice in 2019 (once for a refunding for savings and once to fund capital projects) with extremely positive results. Both issues were significantly oversubscribed with orders from bond purchasers and the final order book and allocations resulted in increasing PWD's investor base. Issuers with a robust and diverse buyer base are better received in the market, which can be critical in times of market stress. This is critical for future pricings and market access. PWD's consistent rating profile is a critical component of this success. It also reflects the positive trends in financial metrics and the assumption that these trends will continue.

All three rating agencies have also been reviewing and updating methodology with a view towards transparency with a more quantitative approach. S&P most recently updated their methodology in 2016 and Moody's and Fitch updated their methodologies in 2017. Both Moody's and S&P have published credit scorecards which identify certain rating factors as well as assigning certain factor weighting. Both credit scorecards include some level of qualitative analysis beyond strict quantitative analytics. Fitch's criteria identifies attributes and identifies stronger (AAA), midrange (AA) and weaker (A) guidelines. There are general observations, however, that are germane to all of the rating analysis and comments.

Moody's – Moody's identifies broad factors for consideration and further provides sub factors in its scorecard. The broad categories include system characteristics (asset condition, service area and system size), financial strength (debt service coverage, day's cash on hand, debt to operating revenues), management (rate management, regulatory, compliance and capital plans) and legal provisions (rate covenant, debt service reserve requirements). Financial metrics that are mentioned as credit strengths include healthy cash reserves and a formal reserve policy (mentioning a $192 million balances in the rate stabilization fund and the residual fund). Specific credit challenges mentioned were the regulatory and compliance realities which will require a large CIP and the "possible rate limitations through Rate Board approval structure and continued rate increases required to support debt and capital plan". It is clear in the credit discussions that Moody's will continue to focus on the levels of debt service coverage and monitor any "notable deterioration in cash and liquidity". (Moody's Credit Opinion 26 July 2019)

Moody's has assigned the water and sewer industry nationally a stable outlook for 2020, noting strong liquidity and management but indicating under-investment in infrastructure. These characteristics mirror the strengths of PWD. However, Moody's will conduct future rating reviews by considering future debt service coverage and expected increases in debt burden resulting from the future CIP. This will be viewed negatively if not improved, particularly in comparison to other A rated systems. Below are Moody's selected indicators which illustrate this analysis. These are considered key ratios, and it should be noted that PWD is generally below national medians. Increasing rates to provide available cash flow to fund an increased percentage of projects on a pay-go basis will help to mitigate this concern.

Key Indicator	PWD (2018)	A Rated Medians (2017)	Aa Rated Medians (2017)
Asset Condition	24	25	27
Debt to operating Revenues	2.2	2.5	1.9
Debt service coverage	1.5	2.1	2.4
Days cash on hand	300*	364	492

*Includes the Rate Stabilization and Residual Fund (Moody's Median Report (May 29, 2019))

Standard & Poor's – S&P also has developed a credit calculator to provide a qualitative analysis of a system's credit profile. They measure credit through an enterprise risk profile (economic fundamentals, industry risk, market position and operational management assessment) and a financial risk profile (all-in-coverage, liquidity and reserves, debt and liabilities and financial management assessment). They also provide for notch adjustments for certain factors. PWD was upgraded by S&P in 2016, specifically noting financial performance that has continued to meet or exceed historical projections. Increased debt service coverage to 1.3 times and higher liquidity (cash reserves, rate stabilization and residual fund) were included in the discussion of the strong financial risk profile. This is needed to support the robust capital plan and high debt to capitalization ratio. This rating increase was important because, as discussed previously, it aligned the Department's S&P rating with Moody's and Fitch and provided a strong message to the investor public.

It is important to note that S&P does not include transfers from the RSF in the debt service reserve coverage calculation. The report clearly stated that "if rate increases are short of what is needed to maintain financial performance consistent with recent experience, there are drawdowns in liquidity beyond current expectations or a significant amount of additional capital spending is added to the city's CIP, we could lower the rating or revise the outlook to negative".

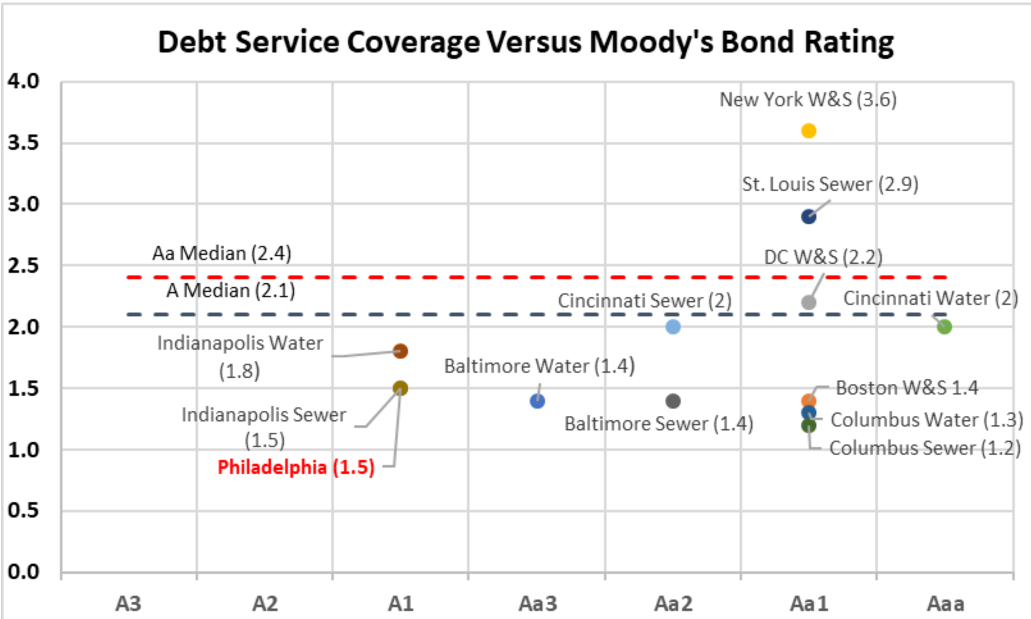
Fitch – As mentioned previously, Fitch has not developed a scorecard but has developed ranges based on certain considerations. The assessment includes a review of revenue defensibility (the ability to generate cash flow given legal framework and fundamental economics), operating risks (revenue/expense predictability, life cycle/capital risks, key resource risk), financial profile (operating margins, liquidity and overall leverage) and asymmetric risks (debt structure, management and governance). Fitch views PWD's financial performance as "satisfactory," mentioning the 1.3 times debt service coverage and healthy liquidity levels. High debt burden and mixed economic characteristics raise concern, especially since Philadelphia's poverty levels are higher than the national average. Clearly the financial metric targets for PWD are "weaker than Fitch Ratings' medians", however Fitch's expectation is that PWD will continue to be able to achieve consistent rate recovery through rate increases to continue to support the planned capital needs. Consistency in achieving the PWD's stated metrics will be key to maintaining the current rating.

General observations – All three of the rating agencies have mentioned the PWD's increased debt service coverage of 1.3 times as a credit positive. This increased coverage has resulted in stronger liquidity and will ultimately allow for increased pay go funding. This is critical given the reality of PWD's significant required capital needs. Ongoing maintenance of assets is critical with older urban systems. PWD has historically had lower margins and a higher debt burden. Consistent reasonable rate increases will allow PWD to address capital needs without over-burdening future rate payers.

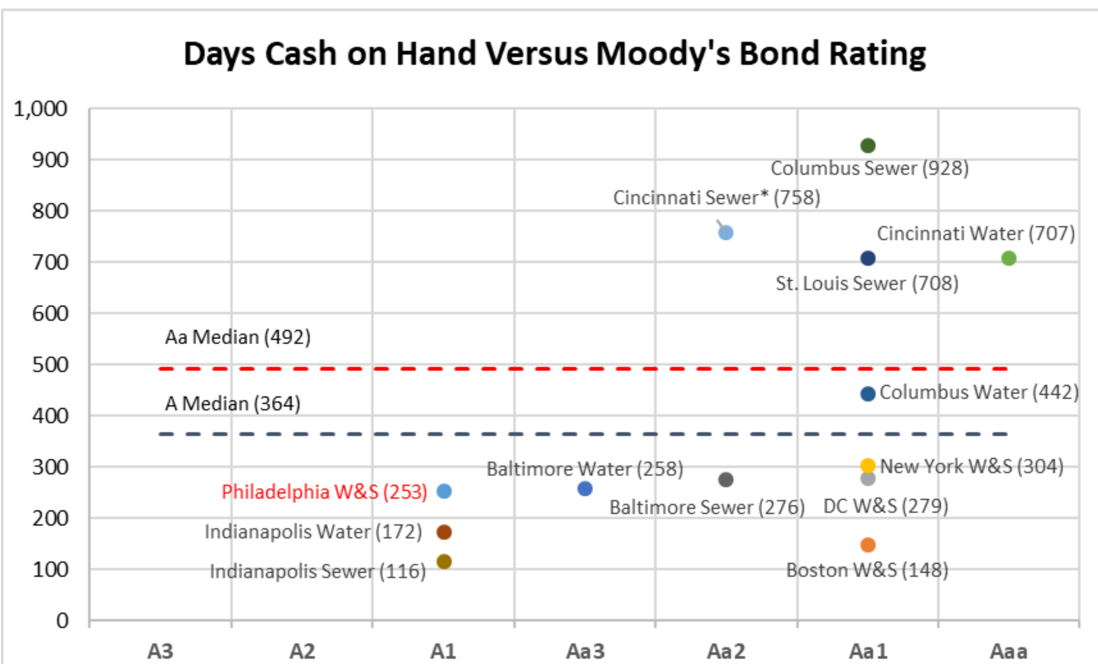
Peer Utilities

Peer utility comparisons are relevant in weighting the appropriate metrics to be approved for the Department. PWD has selected certain peer systems to provide important benchmarking critical to organizational best practices. While systems each have their own characteristics based on regions, size, and service area, the selected peers are of similar size, service areas of industrial urban centers and are located largely in the mid-Atlantic and Midwestern regions of the country. Peer comparisons and benchmarking performance indicators are a component of best practices and are specifically mentioned as a factor the Rate Board must consider in its rate making decisions.

Below are charts which indicate that PWD, as compared to its peers, remains on the weaker side of certain key financial ratios. It is important to note that viewing data for peer systems should be used to provide a general perspective, since obviously each system has its own characteristics.



(Moody's MFR, 2018)



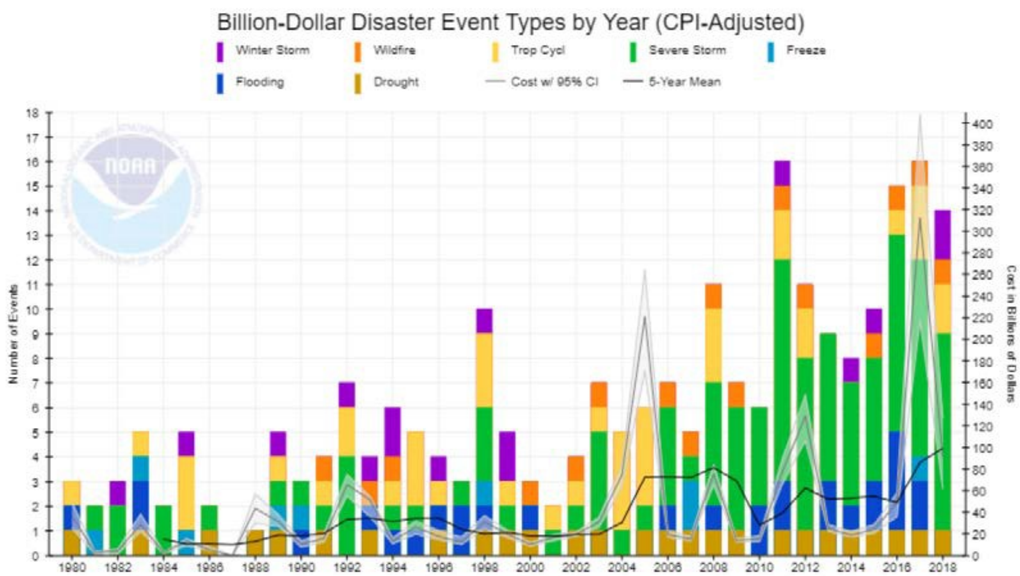
(Moody's MFR, 2018)

*Cincinnati Sewer includes Surplus Account in calculation

Resiliency

Municipal resiliency is an additional consideration weighed in assessing credit and risk. There has been increased focus on utility and municipal resilience by both the investor and credit community in the face of increased economic and environmental risks. Moody's Investor Services has begun to develop an additional approach to assessing credit and risk by viewing all credits considering Environmental, Social and Governance (ESG) factors. A large component of assessing risk is viewing environmental risks globally and determining the ability to remain resilient in the face major climate events.

This is increasingly important. According to the National Oceanic and Atmospheric Administration ("NOAA"), "In 2018, there were 14 separate billion-dollar weather and climate disaster events across the United States, with a total cost of $91 billion. The total cost over the last 3 years (2016-2018) exceeds $450 billion — averaging $150 billion/year. The total cost over the last 5 years (2014-2018) is approximately $500 billion— averaging $100 billion/year, as indicated by the black line below." Maintaining the metrics described earlier are critical to permit a level of resiliency for PWD, for ratepayers today and those in the future.



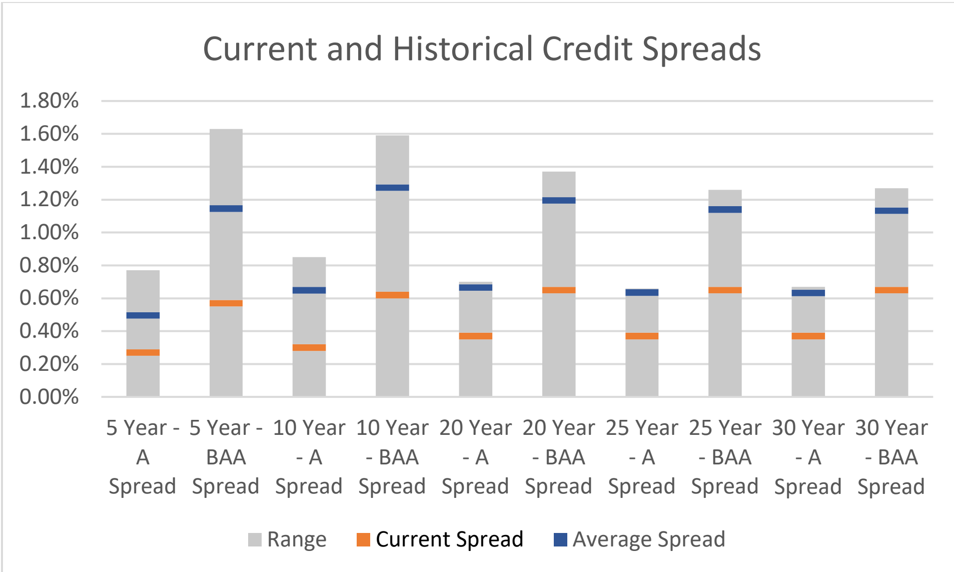
Public versus Private Utilities

Publically owned utilities have two major sources of funds to address capital needs: (i) revenues generated from rates and fees (Pay-Go) and (ii) proceeds from debt issuance (bonds). It is important to note that the cost of borrowing also must be paid by ratepayers. This differs from private (or investor) owned utilities, who have an additional source of funds since they can also rely on investor equity to fund projects in exchange for a return on equity.

In each year, the PWD incurs both operating and capital expenses to operate, maintain, and improve the Water and Wastewater Systems. Utilities incur capital costs to make long-term infrastructure improvements (e.g. water main replacements, sewer replacements, pumping stations, plant improvements) to maintain and improve the level of service provided to customers and ensure compliance with environmental regulations. As a municipally-owned utility, the PWD establishes rates and charges that are designed to generate revenues that exceed operating costs and debt service in order (i) to provide funds for unforeseen circumstances and (ii) to provide a contribution from rates to capital costs to avoid relying solely on debt financing. This excess above current costs is referred to as coverage. For an investor-owned utility, these excess funds are partially paid out as dividends to shareholders. For publicly owned utilities, there are no external dividend payments and the margin above current costs stays within the system for the benefit of ratepayers over time. This common use of coverage with public owned utilities is illustrated by in the fact that the median debt service coverage for US publicly owned, combined systems is 2.4 times and the median days cash on hand is 500 days. (Moody's Municipal Water & Sewer Utilities Sector Outlook, Dec. 4, 2019)

Cost of Capital

The ultimate measure of credit and risk is the sufficiency of service revenues to provide the necessary cash flow for liquidity and pay-go funding. The authorization of higher rate levels is required from time to time to sustain this over-arching financial metric. To be sure, this has a direct impact on the utility's cost of capital. The foregoing also has an impact on the cost of annual debt service as well as the cost to the Department of alternative financing options such as letter of credits, bank loans, and implementing a commercial paper program. Higher rated credits enjoy a range of options in financing growing CIP programs and these short term, variable rate options can be even more advantageous in a rising rate environment. Below are current and historical credit spreads for various bond ratings. The lower borrowing cost with higher credit ratings is apparent for various bond ratings.



Source: Municipal Market Data (MMD) Curve

Over the next five years, the Department expects to issue $1.560 billion in additional debt. For every 50 basis point increase (or ½ of a percentage point), rate payers should expect to pay an additional $7.8 million in annual debt service on the amount expected to be borrowed. This increase is cumulative and can place additional stress on debt service coverage requirements.

Conclusion

Taken together, the financial metrics and policies identified in the Department's Financial Plan are reasonable and should be reaffirmed in the current rate case, to ensure that the Department can maintain and continue to manage its financial metrics and bond ratings.

February 7, 2020

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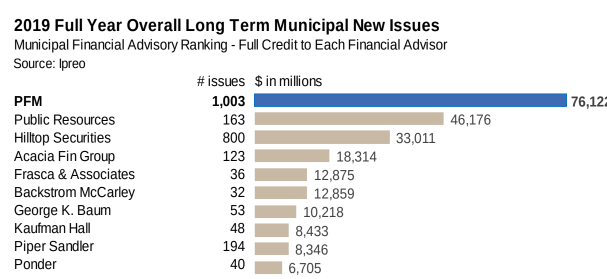
PFM Firm Overview

PFM was founded in 1975 on the principle of providing sound independent and fiduciary financial advice to public entities. We have been providing financial advisory services for 44 years and are currently the nation's leading provider of financial advisory services across a broad range of sectors including utilities and airports. PFM's financial advisory business is provided by PFM Financial Advisors LLC, which is a registered municipal advisor with the Securities and Exchange Commission ("SEC") and the Municipal Securities Rulemaking Board ("MSRB"). PFM Financial Advisors LLC is registered with the SEC and MSRB. Our SEC Number is 867-02030 and our MSRB ID is K1162. PFM is registered to participate in business within the Philadelphia city limits and within the Commonwealth.

PFM is wholly owned by its 92 Managing Directors, who set the firm's strategic direction. It is comprised of seven affiliates that are indirect, wholly owned subsidiaries of a holding company known as PFM I, LLC. Employees of our affiliates are co-located in PFM's offices across the country.

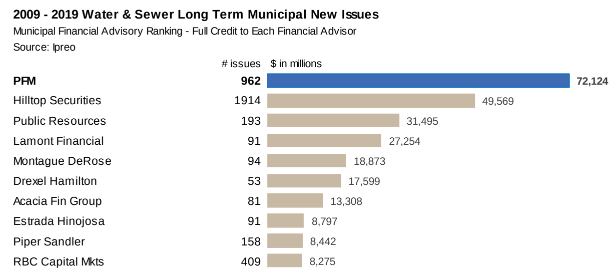
Financial Advisory Services

PFM is the nation's leading financial advisory firm by any measure: the experience of our professionals, the clients we serve, our resources, the number of transactions completed annually, and the par amount of bonds on which we have advised. PFM offers the broadest scope of advisory services in the industry and is the only independent financial advisor which also offers full-time professionals to provide investment advisory, structured products advisory and arbitrage rebate compliance services. PFM's experience is unmatched by any other advisory firm.



We have been ranked by Ipreo as the nation's number one ranked financial advisor for the past twenty-one consecutive years for overall long term issues. Over that period, we advised on 18,935 transactions with a total par value over $1.3 trillion. In 2019 alone, we advised on 1,003 transactions with a total par value of over $76.1 billion, far surpassing our next closest financial advisor competitors.[1]

Water Utility Clients: IPREO has ranked PFM as the leading financial advisor for water and sewer issues, in terms of overall issues and/or principal amount during the last 10 years. From 2009 to 2019, we advised on 962 transactions totaling over $72.1 billion.[1] Since January 1, 2019, we have served as financial advisor on 96 transactions totaling over $7.9 billion in par.[1] Managing large and complex transactions for some of the nation's largest water and wastewater utilities helps ensure that we remain on the forefront of the public finance industry, as well as in the water and sewer business. Our clients benefit from our ability to leverage our wealth of resources to provide them with the ideal strategy for their specific needs.



In addition to the bond transactions on which we have advised, we regularly assist water and wastewater clients with strategic financial advisory projects. We routinely provide guidance on strategic matters such as resource acquisitions, financial reserve policies and credit matters.

In the water and sewer sector, we serve as financial advisor to issuers with some of the largest, most complex capital programs across the nation.

Large National Water and Wastewater Clients

Client	Issue Faced / Results	Client	Issue Faced / Results
DC Water	*$5 billion capital program primarily for sewer overflows; EPA Consent Decree* Successful implementation of impervious area charge; Rating upgrades; First 100-year infrastructure bond; Rating upgrades to AAA/Aa1 from A/A; Bond Buyer Deal of the Year	Great Lakes Water Authority, MI (Regional Detroit)	*$2 billion capital program for capital improvements; State Adminsitrative Consent Order* Successful exit from City bankruptcy; Rating upgrades to A-/A from non-investment grade; Significant refunding savings; Bond Buyer Deal of the Year
City of Philadelphia Water & Sewer, PA	*EPA Consent Decree; Sizeable capital program and required reworking of rate approval process* Improved bond ratings and significant refunding program to achieve fixed cost savings	San Antonio Water System, TX	*Major multi-billion dollar capital program for regional water supply and $1 billion EPA Consent Decree* Notable achievements including innovative P3 transactions for 50,000 AF per year of new water supply and rating upgrades to AA+ in spite of large CIP
Hamilton County, OH (MSD of Greater Cincinnati)	*$3 billion capital program for Consent Decree* Notable achievements including working with EPA on the size and timing of the Consent Decree. Also assisted in renegotiating the City-County agreement for the Sewer System	Las Vegas Valley Water District / Southern Nevada Water Authority	*$7 billion capital program for new regional water supply projects.* Designed successful capital improvement program to build new water supply, while limiting rate increases and maintaining affordability
City of Austin, TX	*CIP financing during drought; complex financing issues* Assisted in the design of a financing program to limit rate increases, despite severe drought impacts. Resulted in rating upgrades as the drought impacts subsided	Oklahoma City Water Utilities Trust, OK	*Structuring Debt Service to accommodate large CIP* Assisted in the design of financing plan to implement large capital program; Realized significant debt savings from refinancing component
Los Angeles Department of Water and Power, CA	*Large mandated water quality capital program for Water System* Created new revenue source with fixed securitization charge; Financing structure achieved preliminary AAA ratings and exclusion from debt metrics	New Orleans Sewerage Board, LA	*Rebuilding from Hurricane Katrina; Major CIP to rebuild system that was devastated by Katrina and required years of FEMA assistance* Re-entry into capital markets and achievement of stand-alone "A" rating

[1] *Source: IPREO, February 7, 2020.*

Katherine Clupper

Managing Director

PFM Financial Advisors LLC

Katherine Clupper is a managing director based in the firm's Philadelphia office. Her expertise is wide ranging, including financial planning and debt transaction management and she works with a diverse list of issuers in the Mid-Atlantic region. She also assists in the development of non-profit and higher education clients in Pennsylvania, Maryland, New Jersey and Delaware.

Katherine brings 30 years of experience working for investment banking firms, financial advisory firms and as an issue manager in Philadelphia. She was the assistant to the director of finance for the City of Philadelphia where she worked for the city treasurer's office in debt management, acting as issue manager for approximately one billion dollars of securities. She also worked for the Pennsylvania State Legislature.

She works with several large state and regional issuers such as the Pennsylvania Industrial Development Authority, City of Philadelphia, Commonwealth Financing Authority and the City of Baltimore. She provides financial advisory services to non-profit and higher education organizations such as Temple University, Drexel University and several secondary schools. Katherine has assisted her clients in successfully entering into the public markets, implementing best practices in managing their debt portfolio, analyzing and developing credit and long-term asset/liability strategies.

Katherine currently serves on the board of directors of the Urban Affairs Coalition and the Committee of 70. She is also a member of the Forum of Executive Women.

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Specialties
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Environmental Utilities, State & Local Governments, Higher Education

Education
B.S.W.
Shippensburg University

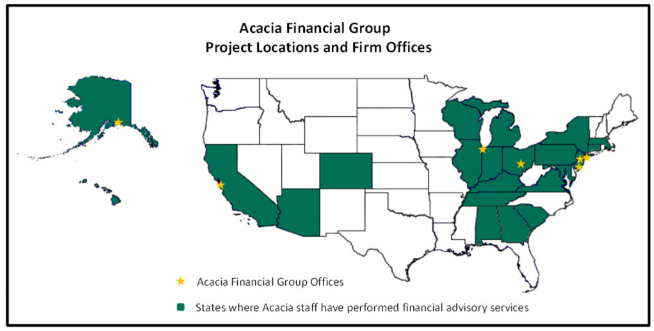
MBA
Temple University

Professional Designations or Licenses
Municipal Advisor Representative (Series 50)

Started with PFM: 2003

Started in the Field: 1987

Acacia Firm Overview



Acacia is an independent, women-owned firm providing comprehensive financial advisory services to governmental entities. The firm has been in business under its current name and management since 2006. Our professionals have the experience and expertise to assist with all of our client's financial advisory needs, including plan of finance development and execution, financial modelling, strategic planning, credit review and rating agency strategy, review of financial documents and the analysis of the long-term implications of various financing options.

Over the past 5 years, Acacia advised on over $87.1 billion of tax-exempt and taxable financings. The firm's team of professionals has a proven track record of success managing engagements for governmental entities ranging from small local governments to the largest state authorities. Over the past several years, Acacia has priced bonds and notes an average of two to three times a week, keeping the entire team current as to market conditions and innovative financing structures. Acacia is consistently ranked as a top financial advisory firm on a national level, ranking 4th in 2016, 2017, 2018 and through the first half of 2019 based on par amount issued.

Acacia's definition of quality financial advisory services extends beyond knowledge of the public finance industry. It encompasses commitment to the client's mission, creativity in developing financial solutions and a demonstrated determination to solve problems and overcome obstacles on an issuer's behalf. In total, the firm has 17 public finance professionals and 3 support staff.

General and Water/Wastewater Experience

Acacia advises a wide variety of governmental clients, ranging from large, complex state agencies to local level issuers. We have provided services in connection with the development and implementation of detailed plans of finance including the execution of traditional financings for new money and refunding transactions, complicated multi-series refunding and restructuring transactions and short and long-term products. Acacia is an expert in the various complexities of negotiated and competitive financings and has tailored our services to best serve our clients. Acacia professionals have developed comprehensive cash-flow, tax impact and user rate models, assisted with the development and compilation of rating agency and investor presentations and provided advice relating to the structuring and financing of long-term debt management plans.

Acacia professionals currently advise on over 25 sewer and water utility clients throughout the country. We have advised these clients on plan of finance development, capital planning, cash flow and rate models, debt capacity, option analysis, rating agency strategies, investment advisory, and the use of federal programs. Among our recent national clients are the City of Chicago, City of Philadelphia Water Department, San Diego County Water Authority, South Central Connecticut Regional Water Authority, Bergen County Utilities Authority (NJ), and Wayne County (MI). Acacia also has extensive experience with State Revolving Fund Loan Programs.

Below is a sampling of the water and wastewater issuers that Acacia has represented in recent years:

- Atlantic County Utilities Authority (NJ)
- Bayshore Sewerage Authority (NJ)
- Bergen County Utilities Authority (NJ)
- Bordentown Sewerage Authority (NJ)
- Brick Township Municipal Utilities Authority (NJ)
- Cape May County Municipal Utilities Authority (NJ)
- Chicago, City of (Water Department) (IL)
- Chester Water Authority (PA)
- DuPage Water Commission (IL)
- Essex County Utilities Authority (NJ)
- Illinois Finance Authority SRF (IL)
- Lacey Township Municipal Utilities Authority (NJ)
- Lambertville Municipal Utilities Authority (NJ)
- Metropolitan Water Reclamation District of Greater Chicago (IL)
- Moorestown Township (NJ)
- New Jersey Water Supply Authority (NJ)
- New York State Environmental Facilities Corporation (NY)
- North Jersey District Water Supply Commission (NJ)
- Old Bridge Municipal Utilities Authority (NJ)
- Philadelphia Water Department, City of (PA)
- San Diego County Water Authority (CA)
- South Central Connecticut Regional Water Authority (CT)
- Toms River Municipal Utilities Authority (NJ)
- Washington Township Municipal Utilities Authority (NJ)
- Wisconsin State (WI)

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Mr. Nissen is a Managing Director and shareholder with Acacia Financial Group, Inc. Mr. Nissen serves as head of quantitative matters for the firm.

Mr. Nissen has 25 years of experience working for both large and small municipal advisory firms. His experience includes general obligation, lease revenue/subject to appropriation, toll roads, airports, solid waste, water and wastewater, higher education, health care, major economic development, not-for-profit (501(c)(3)), MSA tobacco secured, gaming industry, tax lien sales, PILOT bonds and multiple complex refundings. Major clients represented include: States of New Jersey, Ohio, New York, Massachusetts, Alaska, Cities of Philadelphia (City, PAID, PRA, PMA), New York, Los Angeles, Chicago, Philadelphia Water Department, Chester Water Authority (PA), New Jersey EDA, NJ Sports and Exposition Authority, NJ Building Authority, NJ Health Care Facilities Financing Authority, Casino Reinvestment Development Authority, South Jersey Transportation Authority, Delaware River Port Authority, Philadelphia School District, SEPTA, Alaska International Airport Systems and others.

Mr. Nissen has developed complex rate setting, life-cycle and debt capacity analysis for many reveunue secured utilities. Debt structures completed have included fixed rate, synthetic fixed rate, variable rate demand bonds, auction rate securities, private placement and LOC structures. Refunding structures completed have included current and advance fixed rate refundings, synthetic fixed rate refundings (with and without integration), forward refundings (with and without optionality), cross-over refundings, “cinderella” structures. He has made presentations to ratings agencies & bond insurers; negotiated with insurers, LOC banks; provided testimony before local and State level boards and committees. Mr. Nissen has provided reasonableness opinions and valuation opinions on debt issuances and asset transfers.

Mr. Nissen has a BA in Civil Engineering from Drexel University. Mr. Nissen has passed the MSRB Series 50 and 54 Examinations.