PWD 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 2019-2021

Direct Testimony

of

Melissa LaBuda

on behalf of

The Philadelphia Water Department

Dated: February 12, 2018

I. Introduction and Purpose of Testimony

Q1. PLEASE STATE YOUR NAME AND WORK ADDRESS FOR THE RECORD.

A1. My name is Melissa LaBuda. My business address is 1101 Market Street, Fifth Floor, Philadelphia, Pennsylvania.

Q2. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A2. I am employed by the City of Philadelphia and serve as the Water Department's ("Department" or "PWD") Deputy Commissioner in charge of finance.

Q3. WHAT ARE YOUR JOB RESPONSIBILITIES?

A3. As Deputy Commissioner of Finance, I have overall responsibility for the Department's financial, accounting and budgetary functions, including overseeing the PWD's budget, accounting for Water Department's financial activities; issuing Water Department Financial Reports, and developing the Water Department's debt issuance requirements. In connection with debt financings, I have participated in meetings with rating agencies with respect to the credit ratings on Water & Wastewater System debt. In my previous employment, I also routinely participated in meetings with rating agencies for over 15 years. In the normal course of my duties, I also lead the Department's efforts related to the Cost of Service study not only for the current proceeding but also for the prior rate proceeding completed in 2016.

Q4. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A4. I received a Bachelor of Science Degree in Business Administration from Bloomsburg University of Pennsylvania in 1995.

Q5. PLEASE DESCRIBE YOUR RELEVANT WORK EXPERIENCE.

A5. 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.

Q6. PLEASE DESCRIBE THE PURPOSE OF YOUR DIRECT TESTIMONY.

A6. The purpose of my testimony is to: (i) provide an overview of the rate filing, including the reasons why the Department is seeking rate relief; (ii) provide background and support for the Board's consideration of the requested rate relief; (iii) summarize the Department's wholesale service contracts; and (iv) explain and provide support for the proposed changes in the Department's rates and related charges.

Q7. PLEASE IDENTIFY THE SCHEDULES THAT ACCOMPANY YOUR DIRECT TESTIMONY.

A7. The following schedules accompany my testimony. Schedules ML-2 through ML-61101 are described in greater detail in subsequent sections of my testimony.

Schedule ML-1: Resume of Melissa LaBuda

Schedule ML-2: Financial Plan

Schedule ML-3: Memorandum from Bond Counsel

Schedule ML-4: Rating Agency Reports

Schedule ML-5: Water Fund Projection Summary

Schedule ML-6: Memorandum from Financial Advisor

II. Overview of Rate Filing and Supporting Reasons

Q8. PLEASE SUMMARIZE THE RELIEF THAT THE DEPARTMENT IS REQUESTING THROUGH THIS FILING?

A8. The Water Department is requesting rate increases over a three-year period to generate approximately $116 million or 10.6% on cumulative total annual increases basis[1], with the proposed effective dates starting September 1, 2018. In addition, the Department is proposing to make withdrawals from the Rate Stabilization Fund over the same period totaling $43.7 million to absorb some of the projected cost increases and protect rate payers from rising rates. Finally, in order to better align actual revenue losses for the Tiered Assistance Program and actual costs of the Low-Income Conservation Program, the Department is proposing a rate rider which would adjust water and sewer charges in Fiscal Years 2020 and 2021.

Q9. PLEASE BRIEFLY DESCRIBE THE PROPOSED RATE INCREASE.

[1] The 10.6% cumulative total annual revenue increase represents the mathematical sum of the proposed annual revenue increases.

A9. The Department's proposed rates will result in annual increases on typical customer bills of 1.1% beginning September 1, 2018, 5.0% beginning September 1, 2019, and 4.5% beginning September 1, 2020 for a total proposed increase of 10.6% spread over three years. Estimates of the average bill increase for typical residential, senior citizen and small business customers are provided in the testimony of Black & Veatch. (See PWD Statement 9A at pp. 129 to 132.)

Q10. WHY IS THE DEPARTMENT REQUESTING A RATE INCREASE AT THIS TIME?

A10. Since the last rate proceeding, the Department has reduced debt and other costs where it is possible to do so. However, the Department needs additional revenues to address unavoidable increases in operating costs in several areas and to continue to achieve the financial metrics necessary to maintain our financial status, in addition to ensuring current favorable bond ratings and avoiding increased borrowing costs that customers would have to bear in the future if the rating agencies downgraded our bond rating.

Q11. WHAT ARE THE MAJOR REASONS FOR THE DEPARTMENT'S INCREASED COSTS?

A11. The Department has experienced unavoidable increases in workforce costs and costs related to satisfying ongoing obligations under the Consent Order and Agreement (the COA) with the Pennsylvania Department of Environmental Protection and related long-term control plan projects, permits and regulations. Additional information on the COA and long-term control plan is provided in the testimony of Debra McCarty in PWD Statement No. 1. Additionally, the

Department's rate increase is driven by the prudent and responsible practice of funding a portion of the capital program from current revenues after operating expenses ("coverage"). This practice reduces borrowing needs, thereby reducing costs that customers will have to bear over the life of the typical 30-year bond. The Department's rate filing as detailed in Schedule BV-E1, Table C-7, includes capital improvements totaling $1.1 billion from FY19 through FY21 which supports critical improvements related to water and wastewater treatment plant upgrades, clean water storage tanks, pumping stations, water main replacements and sewer replacements. For a listing of the Top Fifteen Projects, please see Table 6 in PWD Exhibit 5.

Q12. ARE THERE ANY OTHER CITY POLICY CHANGES THAT HAVE INCREASED THE DEPARTMENT'S OPERATING COSTS?

A12. Yes. As part of the Fiscal Year 2019 budget process, the Department is no longer able to procure certain vehicle types with capital funds and must use operating funds. The additional operating cost related to this change totals approximately $3 million. This shift occurred after the completion of the cost of service analysis and is not factored into the base rate request. In addition, the Department will incrementally shift employees paid with capital funds to the operating budget. This process started with Fiscal Year 2019 and will continue for the next several years. This policy change occurred after completion of the cost of service analysis and is not part of the rate filing.

Q13. HAS THE DEPARTMENT EXPERIENCED A DECREASE IN BILLED CONSUMPTION AND ASSOCIATED REVENUES?

A13. Yes. A review of historical usage per account performed by Black and Veatch shows a continued decline in usage per account from 2012 to 2016 for 5/8 inch meter General Service Customers of about 1.75% annually when measured on an historical two-year average. 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 residential consumption in its southeastern Pennsylvania service area has gone from approximately 7,200 gallons per month in 1971 to 4,100 gallons per month in 2016.[2] The annual decrease in General Service Customer consumption in Philadelphia of about 1.75% results in a projected decrease in revenue for the Department of approximately $11.3 million for the rate period.

Q14. ON WHAT BASIS DOES THE DEPARTMENT ESTABLISH RATES AND CHARGES?

A14. The Department's rates are set using the cash basis[3] of accounting. The Department has no shareholders and therefore does not pay a dividend to shareholders. As such, all the funds the Department needs to run the Water and Wastewater Systems come from ratepayers or from borrowing (the costs of which

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[2] See Comments of Aqua Pennsylvania, Inc., received May 31, 2017, PUC Docket No. M-2015-2518883, available at: http://www.puc.state.pa.us/about_puc/search_results.aspx and at: http://www.puc.state.pa.us//pcdocs/1522868.pdf

[3] 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.

must be paid by ratepayers). This means that the Department's rates are set by determining the appropriate level of cash and other financial metrics necessary to pay all the Departments operating expenses, payment of debt service, provide sufficient funding for the capital program, meet 1989 General Bond Ordinance provisions, maintain current rating levels and provide efficient access to debt capital markets.

III. Background and Support for Consideration by the Rate Board

Cost Savings

Q15. WHAT ACTIONS HAS THE DEPARTMENT TAKEN SINCE THE LAST RATE PROCEEDING TO REDUCE COSTS?

A15. Some of the measures taken by the Department to lower or manage its costs include the better alignment of debt issuance for new capital projects with the useful life of the assets and refinancing debt. Both refunding transactions described below reflect the better alignment of releases from the debt service reserve account which were deposited to the refunding escrows to reduce the debt burden on ratepayers.

New Debt Issuance

On April 13, 2017, the City issued $279,865,000 in new money revenue bonds, designated as City of Philadelphia, Pennsylvania-Water and Wastewater Revenue Bonds, Series 2017A (the 2017A Bonds"). The proceeds were designated to finance a portion of the Philadelphia Water Department's capital program and to pay the cost of issuance. The 2017A bonds were structured with maturities in October 1, 2018, October 1, 2019 and from October 1, 2032 to October 1, 2052. This was the first time that the PWD issued bonds beyond 30 years.

Refinancing Debt

On November 3, 2016 the City issued $192,680,000 in refunding revenue bonds, designated as City of Philadelphia, Pennsylvania-Water and Wastewater Revenue Refunding Bonds, Series 2016. The proceeds were designated to refinance debt comprised of certain Water and Wastewater Revenue Bonds of the City then-outstanding. The refunding produced savings that will be derived in fiscal years 2018 through 2036 producing a total net present value savings of approximately $29 million.

On August 10, 2017, the City issued $174,110,000 in refunding revenue bonds, designated as City of Philadelphia, Pennsylvania-Water and Wastewater Revenue Refunding Bonds, Series 2017B. The proceeds were designated to refinance debt comprised of certain Water and Wastewater Revenue Bonds of the City then-outstanding. The refunding produced savings that will be derived in fiscal years 2019 through 2035 producing a total net present savings of approximately $28 million.

Overview of Rate Making Authority and Standards

Q16. WHAT ARE THE REQUIREMENTS OF THE HOME RULE CHARTER WITH RESPECT TO RATES AND CHARGES?

A16. In November 2012, Philadelphia voters approved an amendment to the Philadelphia Home Rule Charter ("Charter") 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 Stormwater Rate Board, and hereinafter 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.)

Q17. WHAT ARE THE REQUIREMENTS AND STANDARDS OF THE RATE ORDINANCE WITH RESPECT TO RATES AND CHARGES?

A17. 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 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. In the plan the Department also must compare itself 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 section, 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 9A at 43-47.)

In addition, Section 13-101(4)(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.

Q18. ARE THERE OTHER REQUIREMENTS IN CITY ORDINANCES THAT APPLY TO RATE PROCEEDINGS?

A18. Yes. In the 1989 General 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 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, the City's bond insurance policies contain an insurance covenant (the "Insurance Covenant") which requires the City to establish rates sufficient to produce net revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund for a given year) equal to at least 90% of Debt Service Requirements (as defined by the 1989 General Ordinance). In this testimony, the Rate Covenants and the Insurance Covenant are collectively referred to as the "Bond Covenants." Additional information on the bond covenants is provided in Black & Veatch direct testimony (PWD Statement 9A at 43-46, 46-51.)

Q19. WHY IS IT IMPORTANT THAT THE DEPARTMENT FULFILL ITS OBLIGATIONS TO INVESTORS UNDER THE BOND COVENANTS?

A19. 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 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"). More specifically, 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 Ordinance, if the City has failed to do so.

Q20. ARE THERE OTHER CONSEQUENCES OF FAILING TO ESTABLISH RATES THAT SATISFY THE REQUIREMENT OF THE BOND COVENANTS?

A20. Yes. The Department's (City's) current bond rating could be lowered and accordingly its cost of raising debt capital increased, if it fails to establish rates that enable it to meet all applicable Bond Covenants and certain legal requirements specified in the Charter and City Code, as referenced above. The Department's bond ratings and cost of capital are vulnerable to negative consequences resulting from covenant failures for two reasons. An involuntary failure by the City to meet its financial covenants signals to the market that the City's rate base is insufficient to service its debt. A voluntary failure by the City to meet its financial covenants (i.e., an intentional failure to generate sufficient revenues) signals to the market that the City is not creditworthy because it does not honor its agreements with creditors. In either case, a Covenant Default, particularly for a financial covenant like the coverage requirement or Rate Covenant, is a strong negative signal to rating agencies concerning the creditworthiness of the Water Department, and a strong deterrent to investors. Additional information is provided in the memorandum from the Department's financial advisor attached to my testimony as Schedule ML-6.

Q21. WHY IS IT IMPORTANT FOR THE DEPARTMENT TO MAINTAIN ITS CURRENT BOND RATINGS?

A21. 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 18% of the Department's capital costs will be funded with current revenues; the balance must be funded (82% or $885 million) with frequent, sizable, 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 in full and on time. A downgrade of the credit ratings for Water Department bonds would result in an increase in the Department's borrowing costs and necessitate higher rate increases over time.

<u>Financial Plan</u>

Q22. HAS THE DEPARTMENT PREPARED AND SUBMITTED A FINANCIAL STABILITY PLAN AS REQUIRED BY THE RATE ORDINANCE AND THE PHILADELPHIA CODE?

A22. Yes, the Department has prepared a Financial Plan as part of every prior rate proceeding and updated its Financial Plan prior to initiating this rate proceeding. As I indicated earlier, the Department's current Financial Plan is attached to my testimony as Schedule ML-2.

Q23. PLEASE DESCRIBE THE CONTENTS OF DEPARTMENT'S FINANCIAL PLAN.

A23. The Financial Plan contains three major sections which provide the information required by the Rate Ordinance. The first section summarizes information on revenues and expenses, debt service coverage, and cash balances in recent years and describes the Department's current bond ratings. As shown in this section, the Department outperformed projections for Fiscal Years 2016 and 2017 in the amounts and for the reasons summarized.

The most recent credit ratings, received in July 2017, in connection with the issuance of the City's Water and Wastewater Revenue Refunding Bonds, Series 2017B are as follows: Moody's, A1, "stable outlook"; S&P, A+, "stable outlook"; and Fitch, A+, "stable outlook". The City's Water and Wastewater Revenue Bonds, Series 2017A received the same ratings in April 2017; and its Water and Wastewater Revenue Refunding Bonds, Series 2016 received the same ratings in October 2016. The most recent rating reports are attached to my testimony as Schedule ML-4.

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 is focusing on the following four key financial policy goals: (1) funding at least 20% of the Department's capital program from current revenues; (2) improving debt service coverage; (3) using strategic debt issuance to relieve cash flow pressures and better align debt payments over the lifetime of assets; and (4) utilizing cash reserves to offset the level of rate increases. 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 rations, and asset conditions.

Q24. WHAT EVENTS, OTHER THAN DEFAULTING ON THE BOND COVENANTS, COULD RESULT IN A DOWNGRADING OF THESE BOND RATINGS?

A24. The rating agencies have identified several factors that could result in negative rating actions. Fitch stated that difficulty in achieving timely and sufficient rate recovery would likely prompt negative rating action. It also noted that coverage is below Fitch's median for that rating category. Moody's Investor Service identified a relatively untested rate board as a credit challenge, and listed failure to increase rates commensurate with coverage requirements, material reductions in debt service requirements, and notable deterioration in cash and liquidity as factors that could lead to a downgrade. Moody's also made note that the COA and aging infrastructure necessitate a significant capital improvement program and resulting in increased debt issuance. Standard & Poor's Rating Service viewed the sizeable capital improvement plan combined with the high debt-to capitalization ratio as credit weaknesses and stated that it could lower its rating or revise the outlook to negative if financial metrics deteriorate or if a significant amount of additional capital spending is added to the capital improvement plan. Standard & Poor's also made clear that there is a fairly remote chance that ratings will improve given credit challenges.

Q25. DOES THE DEPARTMENT ANTICIPATE FUTURE BORROWING DURING THE RATE PERIOD?

A25. The Department expects to finance its Capital Improvement Program during the rate period with the proceeds of debt totaling $885 million, current revenues (ie coverage), and possibly alternate sources of funding, including loans or grants[4] during the FY 2019 to FY 2021 rate period. The City expects all such 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 9A, p. 38.)

Q26. WHAT IS THE REASON FOR THE GOAL OF FUNDING AT LEAST TWENTY PERCENT OF THE CAPITAL PROGRAM FROM CURRENT REVENUES?

A26. As discussed previously, 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. Increasing the extent to which current revenues fund capital expenditures is mathematically 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 a hedge against unanticipated cost increases or revenue losses, as well as to

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

provide bondholders comfort that the Department is not continually operating at the edge of an event that would cause a violation of the Rate Covenants.

Q27. WHY IS IT IMPORTANT TO IMPROVE DEBT SERVICE COVERAGE?

A27. 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 capital program costs. Coverage also provides assurance to investors that the utility will be able to make timely debt service payments. The recent rating agency reports have emphasized the need for the Department to improve coverage. Improving coverage is critically necessary to keep the Department in a position to continue to have access to the capital markets on acceptable terms and to finance a portion of the capital program through internally generated funds as necessary to provide significant savings to ratepayers over time. As detailed in Schedules BV-E1, Table C-1, the Department is proposing to utilize transfers from the Rate Stabilization Fund during the rate period and does not fully achieve the "margin" that is referred to by the rating agencies.

Q28. WHY IS USING STRATEGIC DEBT ISSUANCE TO RELIEVE CASH FLOW PRESSURES AND BETTER ALIGN DEBT PAYMENTS OVER THE LIFETIME OF ASSETS INCLUDED IN THE FINANCIAL PLAN AS ONE OF THE DEPARTMENT'S GOALS?

A28. Given the magnitude of the Department's debt issuance, it is critical that the amortization of the additional borrowing during the rate period is aligned with the life of the assets being financed. This practice will best balance the debt burden of current rate payers with future customers.

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.

Additional financial data in support of these financial policies with regard to maintaining certain financial metrics and how those policies should be considered in the current rate proceeding is provided in the memorandum from the Department's financial advisor, attached to my testimony as Schedule ML-6.

Rate Making Methodologies and Policies

Q29. WHAT SPECIFIC RATE MAKING METHODOLOGIES AND POLICIES APPLY TO THE DEPARTMENT AS A MUNICIPAL UTILITY?

A29. The Philadelphia Water Department is one of the operating departments of the City and is a "government-owned utility" as defined in AWWA's "Principles of Water Rates, Fees, and Charges Manual of Water Supply Practices M1." 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 system. Virtually all the funds needed to run the operations of the Department come from ratepayers or from borrowing. The cost of borrowing also 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.

Q30. PLEASE DESCRIBE WHY THE DEPARTMENT IS PROPOSING A THREE-YEAR RATE PERIOD?

A30. The Department has chosen a three-year rate period as optimal for this rate proceeding. In the past few rate proceedings, the rate periods have ranged from two to four years, with rate increases phased in over multiple years. 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") acknowledges that government-owned utilities may use multi-year rate periods and phase in rates over the rate period. (See PWD Statement 9A, page 10, note 1.) The AWWA Manual specifically refers to three-year rate periods with three separate 12-month test-year periods in situations where government-owned utilities project revenue requirements over a 36-month period. (AWWA Manual, 2017, p. 16). Base rate proceedings involve significant time and expense. The City budgets approximately $2 million for each base rate proceeding before the

Board. Multi-year rate proceedings provide customers with transparency about the Department's planned expenses, revenues and rate increases over a reasonable number of years while reducing the administrative burden and expense of having to litigate base rate filings on a more frequent basis.

Q31. DO YOU HAVE ANY ADDITIONAL RECOMMENDATIONS FOR ACTIONS THAT THE DEPARTMENT OR BOARD MAY TAKE TO CONTROL THE COST OF BORROWING AND IMPROVE THE DEPARTMENT'S FINANCIAL CONDITION?

A31. Yes. The Department should use cash from revenues to fund a portion of its infrastructure capital improvements in lieu of relying exclusively on debt as its only source of funding capital projects. If the Department's revenues exceed projections, the Department should use the excess revenues to grow coverage beyond the stated minimums to improve the cash funding and the Board's decision should enable the Department to grow coverage if this occurs. The Board's decision also should not limit the Department's ability to use potential releases from the debt service reserve account to reduce future borrowing costs.

<u>Financial Challenges and Risk Factors</u>

Q32. WHAT IS THE MOST SIGNIFICANT FINANCIAL CHALLENGE FACING THE DEPARTMENT DURING THE RATE PERIOD?

A32. In addition to the challenges mentioned by the bond rating agencies, the most significant challenge the Department faces during the proposed rate period and into the foreseeable future is the ongoing implementation of the Department's

Long-Term Control Plan, also known as COA or Green City, Clean Waters, for controlling combined sewer overflows.

The Department has revised its financial plan and strategies to begin to address the increasing capital and operating requirements associated with the COA. However, additional pressures will arise in future rate periods due to the performance metrics in the COA. Among the financial challenges the Department faces in connection with its revised financial plan are the following: (i) managing cash reserves with the dual intent of covering expenditures when revenues are not sufficient and to prevent the need for large swings in rate increases, (ii) targeting higher coverage levels above the minimum required by the 1989 General Ordinance, and (iii) increasing internally generated funds for the Department's Capital Improvement Program to provide (A) for financial stability for the Department both in the near and medium terms and (B) more closely mirror coverages of other municipal water and wastewater utilities.

Q33. WHAT OTHER MAJOR FINANCIAL RISK FACTORS ARE PRESENTED DURING THE RATE PERIOD?

A33. A few areas where the Department has risk exposure include the following: (i) environmental regulation, (ii) general economic conditions, and (iii) security of the utility system.

<u>Environmental Regulation</u> – The Department is subject to state and federal environmental laws and regulations applicable to its facilities. These laws and regulations are subject to change, and the City may be required to expend

substantial funds to meet the requirements of such changing laws and regulations in the future. Failure to comply with these laws and regulations may result in the imposition of administrative, civil and criminal penalties, or the imposition of an injunction requiring the City to take or refrain from taking certain actions. In addition, the City may be required to remediate contamination on properties owned or operated by the City or on properties owned by others, but contaminated because of City operations. These remedial costs are charged to the Water Fund if they result from prior operations of the Water Department.

Water and wastewater services are governed by various federal and state environmental protection and health and safety laws and regulations, including the federal Safe Drinking Water Act, the Clean Water Act and similar state laws, and federal and state regulations issued under these laws by the U.S. Environmental Protection Agency (EPA) and PaDEP. These laws and regulations establish, among other things, criteria and standards for drinking water and for discharges into the waters of the United States and nearby states. Pursuant to these laws, the Water Department is required to obtain various environmental permits for operations. Environmental laws and regulations are complex and change frequently. These laws, and the enforcement thereof, have tended to become more stringent over time. While the Water Department has budgeted for future capital and operating expenditures to comply with these laws and permitting requirements, it is possible that new or stricter standards could be imposed that will require additional capital expenditures or raise operating costs.

General Economic Conditions – The Department's financial condition and results of operations may also be affected by general economic conditions. A general economic downturn may lead to a reduction in discretionary and recreational water use. General economic turmoil also may lead to an investment market downturn, which may result in asset market values (including pension plan assets) suffering a decline and significant volatility. For instance, a decline in the City's pension plans' asset market values could increase required cash contributions to these plans from the Water Fund and increase pension expenses in subsequent years.

Security of the System – Damage to our infrastructure resulting from vandalism, sabotage, sever weather events such as hurricanes or terrorist activities may also adversely affect the operations and finances of the utility system. There can be no assurance that the City's security, emergency preparedness and response plans will be adequate to prevent or mitigate such damage, or that the costs of maintaining such security measures will not be greater than currently anticipated.

The Department is increasingly dependent on the continuous and reliable operation of information technology systems, and a disruption of these systems, resulting from cyber security attacks or other events, could adversely affect its business. PWD relies on information technology systems with respect to customer service and billing, accounting and, in some cases, the monitoring and operation of treatment, storage and pumping facilities. In addition, the Department relies on these systems to track utility assets and to manage maintenance and construction projects, materials and supplies. A loss of these systems, or major problems with the operation of these systems, could adversely affect operations and have a material adverse effect on the financial condition and results of operations of the Department.

<u>Relationship to the City and Budgeting Process</u>

Q34. WHAT IS THE RELATIONSHIP BETWEEN THE WATER DEPARTMENT AND THE CITY?

A34. The Water Department is one of the City's operating departments and is overseen by the Office of the Managing Director. Various City departments and agencies provide operational support to the Water Department, for which they receive a direct appropriation at the beginning of each Fiscal Year ("Direct Appropriation"), which provides a portion of the funding for such department or agency from the Water Department's operating budget. The departments that receive Direct Appropriations from the Water Department are: the Revenue Department (Water Revenue Bureau) 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 Office of Sustainability for energy procurement services; and the Office of

Transportation and Infrastructure. The Board also receives a Direct Appropriation.

Q35. WHAT IS THE WATER FUND?

A35. 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 system. The operations of the Water Department are accounted for in the Water Fund, which is an enterprise fund of the City.

Q36. HOW DOES THE WATER DEPARTMENT DETERMINE ITS ANNUAL OPERATING BUDGET?

A36. The Water Department, like all other City departments, submits a proposed budget to the City's Budget Bureau and the City's Managing Director's Office for consideration and inclusion in the Mayor's proposed annual operating budget. The Water Department began preparation of its operating budget for Fiscal Year 2018 in September 2016. In November 2016, each of the Department's divisions and the Water Revenue Bureau submitted their budget proposals setting forth their estimated obligations for Fiscal Year 2018. Revenue estimates were prepared by the Water Revenue Bureau under the direction of the City's Office of the Director of Finance and Water 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. In January 2017, the Water Department submitted its proposed Fiscal Year 2018 budget proposal to the City's

Budget Bureau and the City's Managing Director's Office. The Mayor reviewed the Department's budget proposal and included it in the City's proposed operating budget for Fiscal Year 2018, which was submitted to City Council on March 2, 2017. The City's Fiscal Year 2018 annual operating budget was approved by City Council on June 15, 2017, and signed by the Mayor on June 21, 2017.

Q37. HOW DOES THE WATER DEPARTMENT DEVELOP ITS CAPITAL IMPROVEMENT PROGRAM AND CAPITAL BUDGET?

A37. 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 2018 in October 2016. 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 2018, Five-Year Financial and Strategic Plan for Fiscal Years 2018-2022, and Capital Program for Fiscal Years 2018-2022, all of which were submitted to City Council for adoption. The City's capital budget for FY 2018 and its capital program for Fiscal Years 2018 through 2022 were approved by City Council on June 14, 2017, and signed by the Mayor on June 21, 2017.

Q38. IS ADDITIONAL INFORMATION AVAILABLE ON THE REVIEW AND APPROVAL PROCESS ASSOCIATED WITH THE CITY'S OPERATING AND CAPITAL BUDGET?

A38. Yes. Additional information on the City's budgeting procedure, including the review and approval process, is in Appendix IV of the Official Statement for the Water and Wastewater Revenue Refunding Bonds, Series 2017B, which is included with this filing as PWD Exhibit 5. (See PWD Exhibit 5, Appendix IV, p. IV-9.)

Q39. ARE ANY OTHER ENTITIES INVOLVED IN THE REVIEW OF THE CITY'S BUDGET?

A39. Yes. In addition to review by the Mayor's Office and City Council, City budgets and finances, including those of the Water Department, are evaluated and approved by the Pennsylvania Intergovernmental Cooperation Authority ("PICA"). PICA is a special administrative authority created by the Commonwealth to review and oversee the finance of the City. Appendix IV of the Official Statement for the Water and Wastewater Revenue Refunding Bonds, Series 2017B, provides additional information on PICA's financial and oversight functions. (See PWD Exhibit 5, Appendix IV, pp. IV-8-IV-11.)

Q40. PLEASE DESCRIBE THE CITY'S COST CLASSIFICATION SYSTEM.

A40. Major classes of expenditures within each City department are defined as: personal services (Class 100), purchase of services (Class 200), materials, supplies and equipment (Class 300 and 400), contributions, indemnities and taxes (Class 500), real property (Class 600), debt service and transfers from the debt service reserve account to refunding escrows (Class 700), payments to other funds (Class 800), and advances and other miscellaneous payments (Class 900). The cost items included in these classes is described in greater detail below.

Class 100 – Personal Services – This category includes employee compensation and related expenses. Included items are the cost of both regular and overtime salaries, compensation for holidays, vacation, jury duty, funeral leave, military time, the cost of employer paid fringe benefits such as health, welfare, and insurance, the cost of employer paid taxes such as social security, Medicare, and unemployment, and the cost of pension contributions made on behalf of past and present employees.

Class 200 – Purchase of Services – This category includes the costs of outside services supplied on behalf of the Water Fund. It includes costs for electricity, telephone, natural gas, biosolids transportation, disposal, and application, repairs made by outside vendors, outside consultants and professionals, rented space, and advertising.

Class 300 – Materials and Supplies – This category includes the costs of chemicals, pump parts, supplies, fuel, heating oil, vehicle parts, lubricants, and other related items.

Class 400 – Equipment – This category includes the cost of heavy equipment, trucks, vehicles, boats, trailers, cranes, sewer cleaning machines, and other related items.

Class 500 – Indemnities, Taxes, Awards – This category includes payments made by the Law Department on behalf of the Water Department for liabilities, claims, and property damage. It also includes certain taxes and employee awards.

Class 700 – Sinking Fund – This includes the payment of principal and interest due on revenue bonds and other debt and related obligations of the Department. This also includes transfers from the debt service reserve account to refunding escrows.

Class 800 – Interfunds – This category includes payments to other City departments for services rendered to the Water Department. This also include transfers to the Residual Fund for further transfer to the capital account.

Class 900 - Advances and other miscellaneous payments.

Q41. HOW DOES THE CITY REPORT AND AUDIT ITS FINANCES?

A41. The City reports its financial performance on a consolidated basis in its audited Comprehensive Annual Financial Report ("CAFR"). The CAFR is audited by the City Controller. The Annual Financial Report for the Fiscal Year ending June 30, 2017 and the CAFR for the Fiscal Year ending June 30, 2016 are available on the City's Investor Website and are incorporated by reference in this rate filing.

Q42. HOW ARE THE CITY'S ACCOUNTING AND FINANCIAL POLICIES APPLIED TO THE WATER FUND ACCOUNTS?

A42. For purposes of rate setting, calculating compliance with the Rate Covenant and debt service coverage and budgeting, the Water Fund accounts are maintained on cash basis of accounting, also referred to as the "Legally Enacted Basis." Under this basis, revenues are recorded on a receipts basis, except revenues from other governments and interest, which are accrued as earned.

Q43. PLEASE EXPLAIN THE MEANING OF "ENCUMBRANCE" AND "LIQUIDATED ENCUMBRANCE" AS THOSE TERMS ARE USED IN THE CITY'S ACCOUNTING DOCUMENTS AND FINANCIAL STATEMENTS?

A43. An encumbrance is an expense that is anticipated to be charged to the Water Fund. Liquidated encumbrances represent cancelled commitments. The Department's budgetary statements treat liquidated encumbrances as contra-expense.

<u>Water Operating Fund – Water Fund Projection Summary</u>

Q44. PLEASE EXPLAIN SCHEDULE ML-5?

A44. Schedule ML-5, attached to my testimony, is the Water Fund Projection Summary for the Water Operating Fund. The column labeled "FY'16 Year-End Final" summarizes the Department's final revenues, obligations/appropriations, adjustments and balances for Fiscal Year 16. The column labeled "FY'17 Year-End Preliminary" contains the same preliminary (unaudited) information for Fiscal Year 2017. The column labeled "FY'18 Black &Veatch Projected Budget" summarizes the same information as budgeted for the Department in the City's Fiscal Year 2018 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 2019, 2020 and 2021, further adjustments were made to the budgeted data, where necessary, to ensure that the projections are representative of the levels that the Department expects to experience during the Rate Period.

Q45. PLEASE IDENTIFY THE MAJOR OPERATING COST PROJECTIONS THAT UNDERPIN THIS REQUEST FOR RATE RELIEF AS SHOWN ON SCHEDULE ML-5.

A45. The major cost projections that underpin this request for a rate increase are in the following expense areas:

- Workforce costs which are summarized on the rows labeled "Personal Services," "Personal Services – Employee Benefits," and "Sub-Total Employee Compensation".
- Consent Order and Agreement Costs which are summarized on the rows labeled "Purchase of Services". Additional COA costs are captured in the continued reduction of current revenues associated with increased stormwater credits ($2.2 million).
- Capital Improvement Program which are summarized on the Payments to Other Funds, lines "Capital Account Deposit" and "Residual Fund Transfer to Capital Account".

IV. <u>Wholesale Service</u>

Q46. PLEASE IDENTIFY THE SUBURBAN GOVERNMENTAL UNITS FOR WHICH THE DEPARTMENT PROVIDES WHOLESALE WASTEWATER AND/OR WATER SERVICES ON A CONTRACTUAL BASIS.

A46. Wholesale customers are listed in a table included in Wholesale Cost of Service White Paper, which is attached to Black & Veatch's direct testimony as WP-5 in

Schedule BV-E5. (See PWD Statement 9A, Scheduled BV-E5, WP-5, p. 7.) The table also shows the contractual end dates of the wholesale agreements and the percentage of COA, Long-Term Control Plan costs under the cost sharing provisions of the contracts.

Q47. DO THE DEPARTMENT'S CURRENT CONTRACTS FOR WHOLESALE SERVICE PROVIDE FOR THE RECOVERY OF FULL COST OF SERVICE FROM SUBURBAN TOWNSHIP CUSTOMERS?

A47. Yes. Wholesale service is provided to suburban townships and authorities pursuant to agreements negotiated with each customer which are wholly based upon recovering the costs of serving these customers. Each agreement provides for return on investment, depreciation or alternatively, charges for appropriate shares of capital costs. Additional information on the wholesale agreements, wholesale operating revenues and apportionment of the cost of service to wholesale customers is provided in the direct testimony of Black & Veatch. (See PWD Statement 9A.)

Q48. ARE WHOLESALE CUSTOMER RATES BEING REVISED IN PARALLEL WITH THIS RATE PROCEEDING?

A48. Yes. The Department will initiate a three-stage rate increase for wholesale customers in parallel with the proposed rate increase for retail customers, which will become effective September 2018.

V. <u>Proposed Rates and Charges for Retail Service</u>

Q49. PLEASE GENERALLY DESCRIBE THE DEPARTMENT'S PROPOSED CHANGES IN RATES AND CHARGES.

A49. The proposed rates and charges for retail service are provided with this rate filing as PWD Exhibit 3A, 3C and 3E. A redline version showing the change in wording and rates for each year of the three-year rate period is provided with this rate filing as PWD Exhibit 3B, 3D and 3F.

These exhibits set forth the proposed increases in basic water, sewer (sanitary wastewater) and stormwater rates, as well as related increases in miscellaneous charges. The layout has been changed from two columns per page to a single column per page, and the format has been changed to provide a separate complete set of rates and charges for each year of the three-year rate period. As explained by Black & Veatch in its direct testimony in PWD Statement 9A, the Department is proposing a new rate rider which, if approved, would enable the Department to reconcile actual lost revenues for the Tiered Assistance Program (TAP) and costs for the Low-Income Conservation Program (LiCAP) during the rate period. The change in format was made to reflect the typical format of tariffs of other utilities that include rate riders of the type proposed by the Department in this proceeding. The rate rider would be added to Rates and Charges in Section 10.0 through 10.2, as shown in Exhibit 3A through 3F. Additional information on the proposed rate rider is provided in the direct testimony and supplemental direct testimony of Black & Veatch. (See PWD Statements 9A at pp. 32-33 and 9B.)

The Department is proposing to continue the existing discounts for special customers, which include discounts of: (i) 25% for public and private schools, institutions of purely public charity and places used for actual religious worship (referred to in Section 13-101 of the Philadelphia Code as “charity water rates and charges”); (ii) 25% for eligible senior citizens (as authorized by Section 19-1902 of the Philadelphia Code); (iii) 5% for property of the Philadelphia Housing Authority (referred to in Section 13-101 of the Philadelphia Code as “public housing water rates and charge”); and (iv) a 100% discount on stormwater charges for eligible community gardens (as authorized by Section 19-1603 of the Philadelphia Code and approved by the Rate Board in the 2016 Special Rate Proceeding).

The Department is proposing to add two subparagraphs to Section 5.2 to codify the existing practices in response to other provisions of the Philadelphia Code. Specifically, a new subparagraph 5.2(l) is being proposed to reflect Section 19-1602 of the Philadelphia Code, which states as follows:

> ***§ 19-1602. Acquisition of Property by the City.*** *(1) When any vacant or unoccupied premises are acquired by the City, charges for water and sewer, including charges relating to storm water management and disposal, shall terminate on the date that such premises are acquired.*

The Department is aware from discussion in advance of the rate filing that the Philadelphia Land Bank will participate in this rate proceeding and will request the Rate Board to approve a special rate under which vacant and unoccupied premises acquired by the Philadelphia Land Bank would be treated in a similar manner to vacant and unoccupied property acquired by the City. If the Rate Board approves this request, the Department would propose to include the Philadelphia

Land Bank in this new subparagraph 5.2(l) by adding the information shown in brackets in Exhibits 3A through 3F so that this subparagraph would provide as follows

> (l) When any vacant or unoccupied premises are acquired by the City or the Philadelphia Land Bank, charges for water and sewer, including charges relating to storm water management and disposal, shall terminate on the date that such premises are acquired.

The Department also is proposing to add a new subparagraph (m) to Section 5.2 to address portions of the Philadelphia Code pertaining to property acquired by the Redevelopment Authority and a 1968 ordinance pertaining to property acquired by the Philadelphia Housing Development Corporation (PHDC). Specifically, Section 16-503 of the Philadelphia Code states as follows:

> ***§ 16-503. Abatement of Real Estate Taxes, Water and Sewer Charges and Other Municipal Claims.***
>
> *(1) The Revenue Commissioner is authorized to discharge liens and other municipal charges or fines against the properties acquired for this program and to abate all real estate taxes, water and sewer charges, and other municipal charges while the property is held by the City or The Redevelopment Authority, in accordance with and pursuant to Chapter 16-400 of The Philadelphia Code.*

Similarly, an ordinance approved on October 2, 1968, provides in pertinent part as follows:

> *Upon acquisition of any property by PHDC either by gift or purchase, all delinquent real estate taxes, water and sewer charges, and any other municipal charges or fines owed to the City which relate to the specific property so acquired or held by PHDC and while the property is held by PHDC all real estate taxes, water and sewer charges, and any other municipal charges which relate to the specific property so acquired or held by PHDC shall be abated, ...*

New subparagraph 5.2(m), as proposed by the Department, would cover these two categories of properties by providing as follows:

> (m) When any property is acquired or held by the Philadelphia Housing Development Corporation or acquired or held by the City or the Redevelopment Authority pursuant to Section 16-500 of the Philadelphia Code, charges for water and sewer, including charges relating to storm water management and disposal, shall be abated.

As noted in a footnote to Section 6.7 of the proposed Rates and Charges, Section 13-501 of the Philadelphia Code states that the Department, rather than the Rate Board, is responsible for issuing regulations for fixing fees for water connection permits and charges for water connection services. Therefore, during this rate proceeding, the Department intends to propose the charges in Section 6.7 as a regulation in Chapter 4 of the Department's regulations. Upon the effective date of the amendment to the Department's regulations, the water connection charges in the Water Department's regulations will supersede the water connection in Section 6.7 of Rates and Charges, and the text of this section in Rates and Charges will be revised to state that the Water Connection Charges have been relocated to Chapter 4 of the Water Department's regulations. Section 6.7 has been included in PWD Exhibit 3A through 3F as a placeholder and to show the water connection charges that the Department intends to propose as an amendment to Chapter 4 of its regulations.

VI. <u>Conclusion</u>

Q50. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A50. Yes, it does.

Schedule ML-1

Resume Melissa LaBuda

Melissa LaBuda

EXPERIENCE

City of Philadelphia, Philadelphia Water Department, Philadelphia, Pennsylvania
Deputy Water Commissioner, *2015 to Present*
Assistant Deputy Water Commissioner *2013 to 2014*

- Responsible for the Water Department's financial management including: accounting operations and financial reporting; budget formulation and execution; and financial planning.

Representative Accomplishments

- Lead the development of a long-range financial planning model for the Water Department.
- Project leader on the update of the Water Department's Cost Allocation Plan for FY2013 and FY2014
- Established protocols to monitor the Water Department's operating and capital budget spending.
- Encouraged and facilitated training for the Water Departments finance team members.

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

- Lead client relationship manager to Public Power and Combined Utility System's nationally.
- Structure and market various financing and refinancing options to municipal debt issuers. Work independently and as a team member on all aspects of business development, development of product marketing materials, responses to request for proposals, rating agency and investor materials.
- Relationship development expertise that resulted in expansion of the Firm's municipal client base, increasing revenues.

Representative Transaction

- Led marketing, structuring and execution of the South Carolina Public Service Authority's ("Santee Cooper") Series 2012ABC Transaction. Transaction included forward delivery and current delivery refinancing. Worked extensively with Santee Cooper on a presentation to investors and rating agencies that (i) effectively articulated current status of the Summer Nuclear Station expansion, (ii) detailed Santee Cooper's financial condition, and (iii) reviewed potential impact of pending EPA regulations on existing coal plants.

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

Representative Transactions

- 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, which generated in excess of $335 million of present value savings.

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

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

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

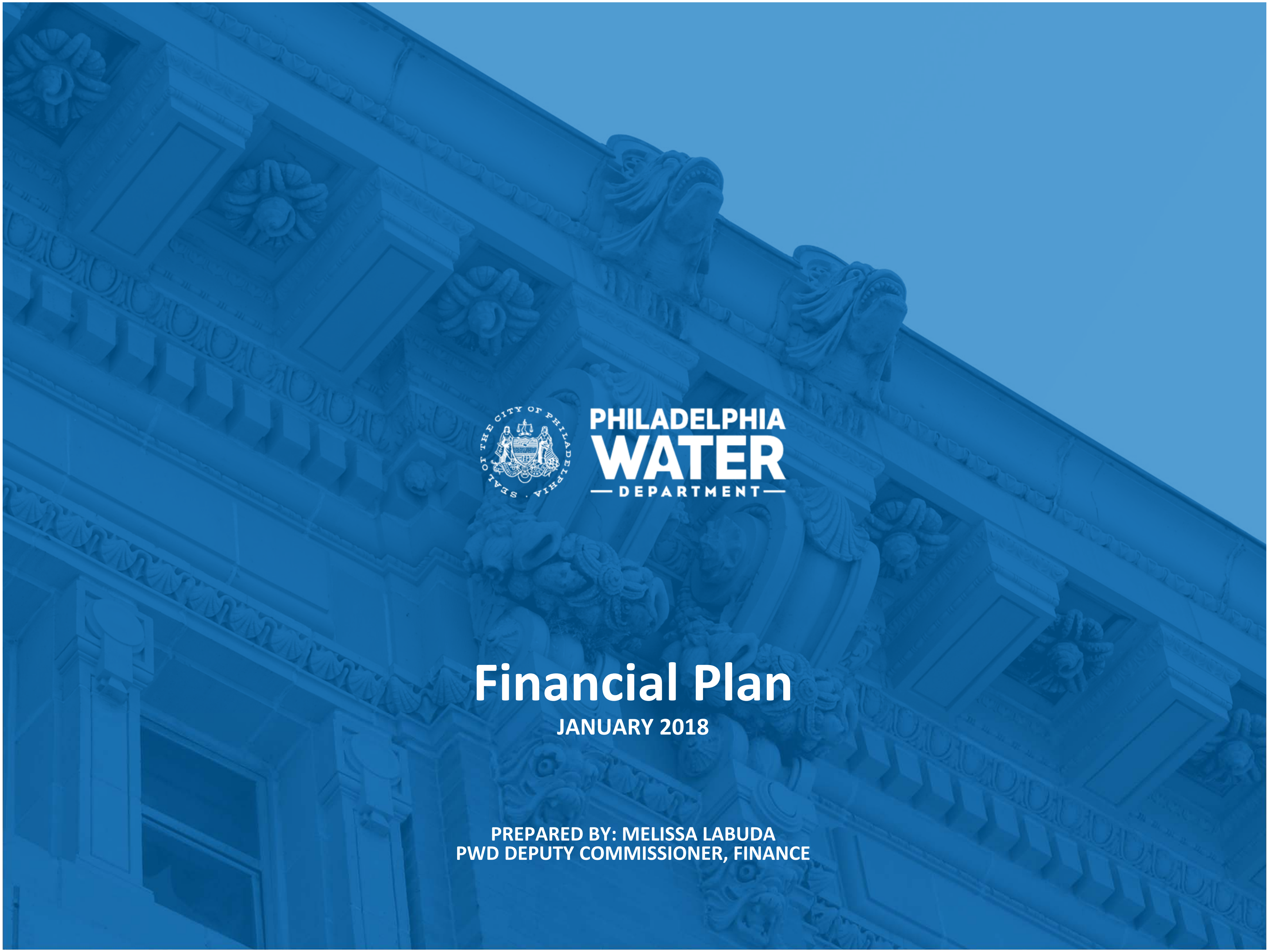
- Gained familiarity with handling of stock and bond trading from retail and institutional perspective.

EDUCATION

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

Schedule ML-2

Financial Plan



PHILADELPHIA WATER DEPARTMENT

Financial Plan

JANUARY 2018

PREPARED BY: MELISSA LABUDA
PWD DEPUTY COMMISSIONER, FINANCE

The Financial Plan Supports the PWD Vision, Mission and Values

"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."

Section 1	**FY16-17 Financial Results**
Section 2	**Key Policies**
Section 3	**Peer Utility Review**

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.

PHILADELPHIA WATER DEPARTMENT

FY16-17 Financial Results

- FY17 Revenue & Expense Summary
- FY16 Revenue & Expense Summary
- Debt Service Coverage
- Rating Agency Summary

PWD Outperformed FY17 Projections

Fiscal Year 2017 financial results show that PWD outperformed projections. This is primarily due to:

REVENUES

Actual revenue results exceeded projections by 3.5% from the previous rate case projections.

EXPENSES

Actual expense results were under projections by 0.02% from the previous rate case projections. The main reason for differences are related to under spending for:

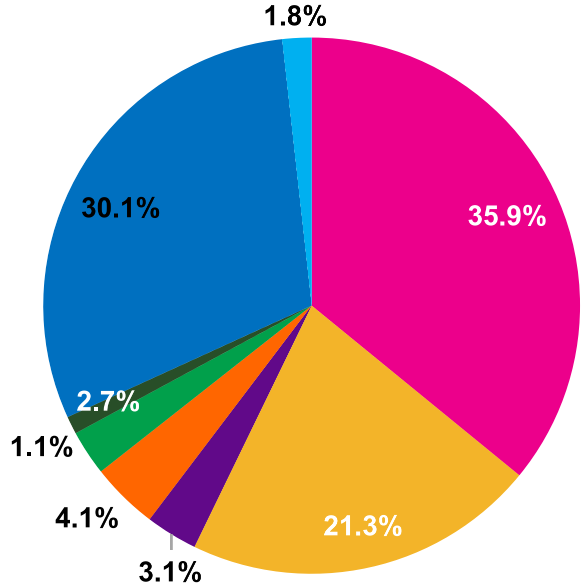
- Electricity and Natural Gas Costs
- Chemicals

Underspending in theses areas made up for increased costs in other categories.

Note: Expense results above exclude transfers and liquidated encumbrances. Because of the over performance of revenues and the under spending of expenses, the Net Revenues available for debt service were greater than projected, which lead to smaller withdrawals from Rate Stabilization Fund than projected

PHILADELPHIA WATER DEPARTMENT

FY2017 Preliminary Expense Summary



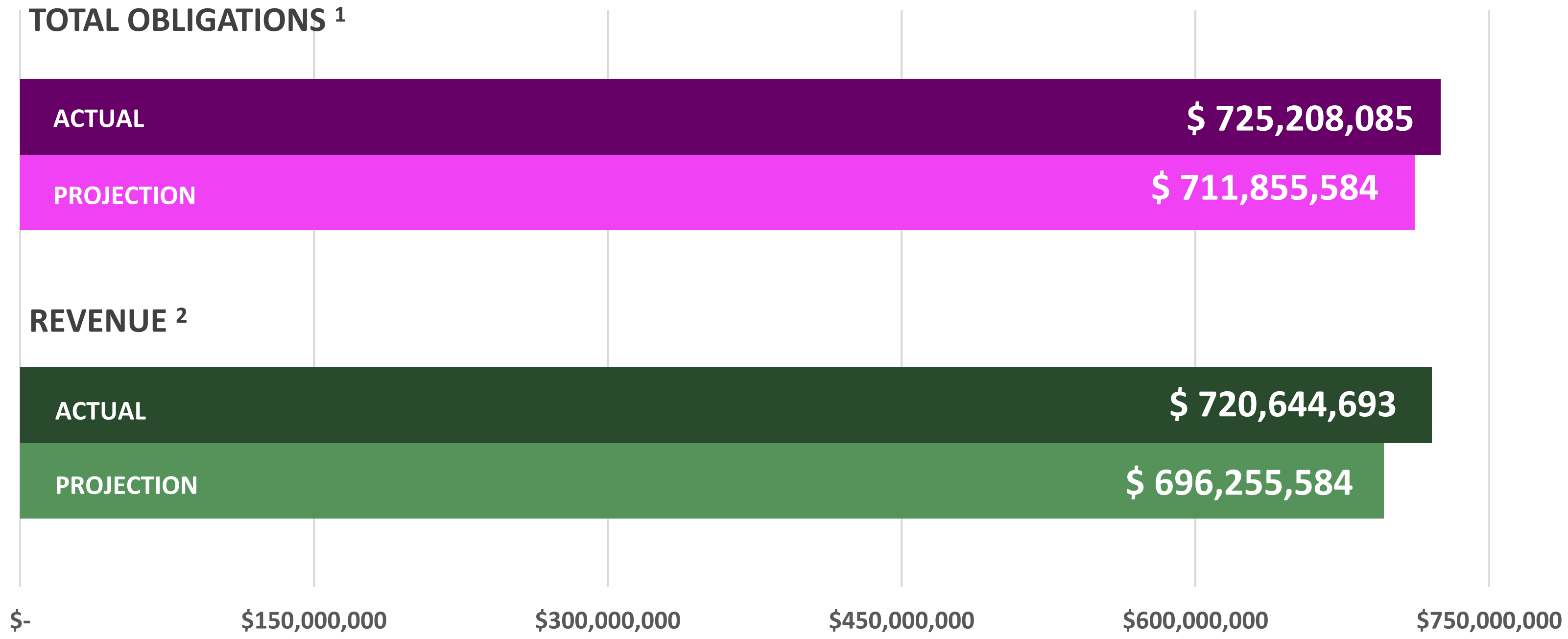
Expense Category	projected	actual	variance
Workforce Costs	$ 243,194,616	$ 246,576,907	1.4%
Services	$142,972,547	$146,179,730	2.2%
Electricity and Gas	$27,679,596	$ 21,429,374	22.7%
Materials , Equipment & Supplies	$27,735,991	$ 27,893,295	0.6%
Chemicals	$22,902,014	$ 18,728,508	18.2%
Indemnities	$6,037,000	$ 7,352,314	21.8%
Capital Program - Debt Service Payments	$207,714,501	$ 206,390,425	0.6%
General Fund Reimbursement	$8,542,000	$ 12,097,064	41.6%
Total	**$686,778,265**	**$686,647,616**	**0.02%**

FY2017 Capital Transfers and Liquidated Encumbrance Summary

FY2017 Transfers	projected	actual	variance
Capital Program (Deposits to Capital Account)	$ 51,968,000	**$ 53,602,936**	**+3.1%**

FY2017 Liquidated Encumbrances	projected	actual	variance
Liquidated Encumbrances	$ -26,887,463	**$ -24,549,755**	**-8.7%**

FY2017 Preliminary Results
Actuals vs. Projections



[1]Total obligations have been adjusted for liquidated encumbrances.
[2]Revenue totals presented include locally generated non-tax revenues and revenues from other governments and do not reflect revenue from the Rate Stabilization Fund.

PWD Outperformed FY16 Projections

Fiscal Year 2016 financial results show that PWD outperformed projections. This is primarily due to:

REVENUES

Actual revenue results exceeded projections by 1.6% from the previous rate case projections.

EXPENSES

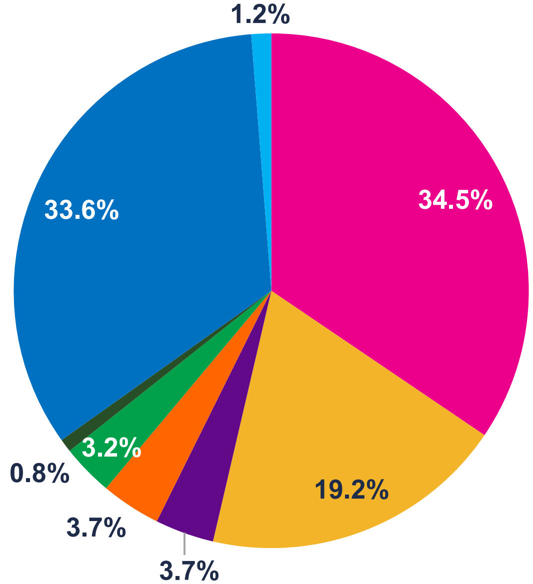
Actual expense results were under projections by 3.1% from the previous rate case projections. The main reason for differences are related to under spending for:

- Workforce Costs
- Professional Service Costs
- Electricity and Natural Gas Costs
- Materials, Supplies & Chemicals

Note: Expense results above exclude transfers and liquidated encumbrances. Because of the over performance of revenues and the under spending of expenses, the Net Revenues available for debt service were greater than projected, which lead to smaller withdrawals from Rate Stabilization Fund than projected

PHILADELPHIA WATER DEPARTMENT

FY2016 Final Expense Summary



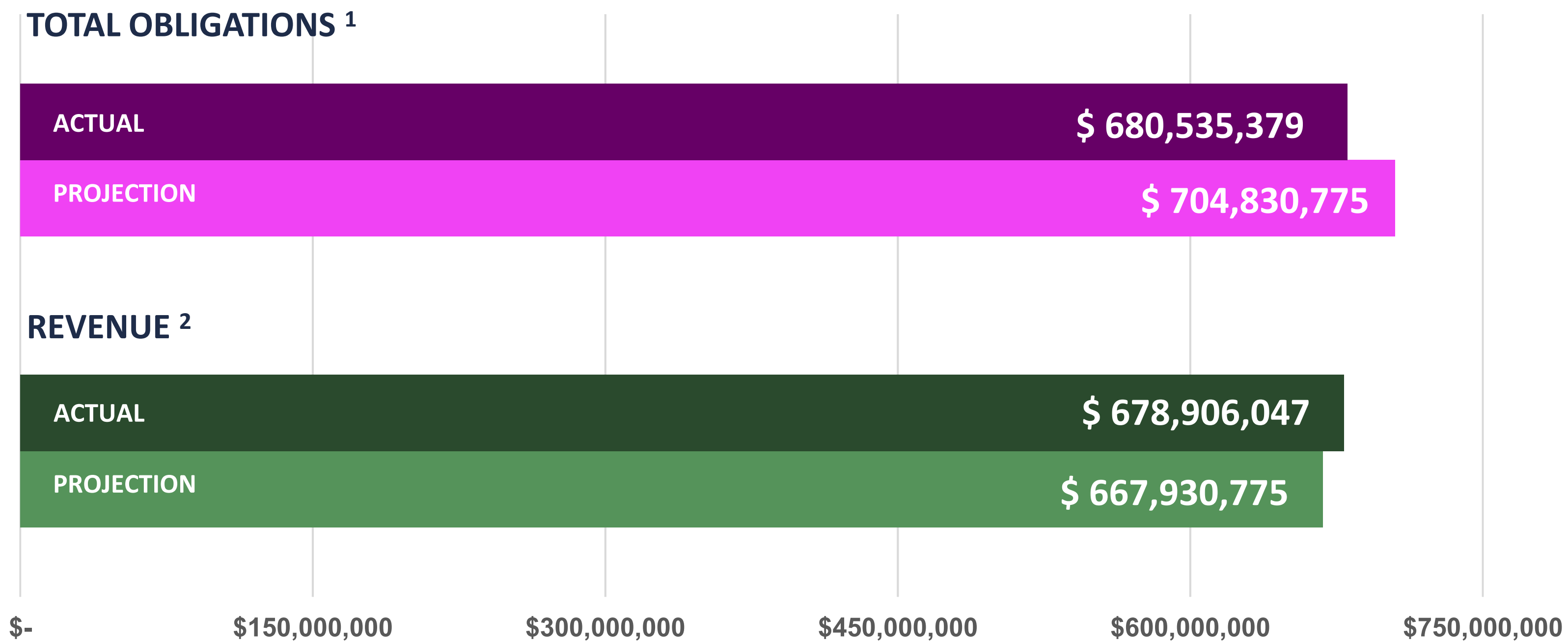
Expense Category	projected	actual	variance
Workforce Costs	$231,186,101	**$224,805,988**	- 2.8%
Services	$131,523,060	**$124,873,757**	- 5.1%
Electricity and Gas	$27,503,593	**$24,114,961**	- 12.3%
Materials , Equipment & Supplies	$26,745,171	**$24,425,002**	- 8.7%
Chemicals	$22,170,391	**$21,096,651**	- 4.8%
Indemnities	$6,505,000	**$5,440,820**	- 16.4%
Capital Program - Debt Service Payments	$220,713,353	**$219,132,799**	- 0.7%
General Fund Reimbursement	$6,545,000	**$8,100,186**	+ 23.8%
Total	**$ 672,891,669**	**$ 651,990,164**	**3.1%**

FY2016 Capital Transfers and Liquidated Encumbrance Summary

FY2016 Transfers	projected	actual	variance
Capital Program (Deposits to Capital Account)	$ 53,044,000	**$ 52,633,057**	- 0.8%

FY2016 Liquidated Encumbrances	projected	actual	variance
Liquidated Encumbrances	$ -21,104,592	**$ -24,087,843**	+14.1%

FY2016 Final Results
Actuals vs. Projections



[1]Total obligations have been adjusted for liquidated encumbrances.
[2]Revenue totals presented include locally generated non-tax revenues and revenues from other governments and do not reflect revenue from the Rate Stabilization Fund.

Debt Service Coverage

In Fiscal Years 2016 and 2017, the Water Department met debt service coverage requirements.

FY16-17 Debt Service Coverage Results

	FY2016 Target	FY2016 Final [1]	FY2017 Target	FY2017 Preliminary [2]
Revenue Bonds Debt Service Coverage	1.24	**1.24**	1.25	**1.31**
Total Debt Service Coverage	1.13	**1.13**	1.13	**1.18**

PWD currently has $1.9B of bonds outstanding with a final maturity in October 2052

- $1.8 billion of fixed rate bonds
- $53.2 million of unhedged variable-rate bonds
- $18.1 million of hedged variable-rate bonds with a swap that terminates on August 1, 2018
- $161 million borrowed under the PennVest Loan Program
- The City has no subordinated debt outstanding

1. In Fiscal Year 2016, the Water Department met debt service coverage requirements with a revenue bond debt service coverage ratio of 1.24 and a total coverage ratio of 1.13, after taking into account a withdrawal of approximately $1.6 million from the Rate Stabilization Fund.
2. For Fiscal Year 2017 Preliminary, the Water Department met debt service coverage requirements with a revenue bond debt service coverage ratio of 1.31 and a total coverage ratio of 1.18, after taking into account a withdrawal of approximately $4.6 million from the Rate Stabilization Fund.

Cash Balances

Residual Fund & Rate Stabilization Funds

There were no significant changes to the total cash reserves from 2015-2017. There were slight increases in the Residual Fund and small decreases in the Rate Stabilization Fund.

Historic Cash Balances

Fiscal Year	Residual Fund Year-End Balance	Rate Stabilization Fund Year-End Balance	Total Cash Reserves
2015	$ 14.9 million	$ 206.0 million	**$ 220.9 million**
2016	$ 15.1 million	$ 205.6 million	**$ 220.7 million**
2017[1]	$ 15.2 million	$201.7 million	**$ 216.9 million**

[1] Fiscal year 2017 balance is preliminary

Sources: PWD Financial Statements, 2016 Rate Case FINAL Tables (Black & Veatch)

PWD Current Credit Rating

In Fiscal Year 2017, PWD met its goal of maintaining credit ratings in the "A" category.

	Fitch[1]	Moody's[2]	S&P[3]
	A+ **Rated: Stable Outlook (7/2017)**	**A1** **Rated: Stable Outlook (7/2017)**	**A+** **Rated: Stable Outlook (7/2017)**
STRENGTHS	• Essential service provider to large and diverse regional service area • Satisfactory financial performance; well managed • Stable operations and robust system capacity • Healthy liquidity levels ("A+" level)	• Willingness to implement required annual rate increases • Proposed debt increases financially offset by drop in debt service in FY19 • Healthy cash reserves with new reserve policy	• Broad and diverse service base and rates viewed as affordable • Strong financial profile supported by rate stabilization fund and debt service coverage that exceeds minimum covenant levels • Strong operational and financial management assessments.
CHALLENEGES	• Relatively weak demographics in the City • Above average debt levels with sizeable additional borrowing plans • Narrow debt service coverage levels • Insufficient rate recovery in timely manner would prompt negative rating action	• Consent Order & Agreement and aging infrastructure necessitate hefty CIP and related debt issuance • Relatively untested rate board; continued rate increases are required to support debt and capital plan • Deterioration in cash and liquidity and material reductions in debt service coverage could lead to a downgrade.	• Income levels for Philadelphia City and County that are measurably weaker than surrounding areas • A large capital program combined with already high debt levels • Continued reliance on the rate stabilization fund for operations. • Fairly remote chance rating will improve
POSITIVE CREDIT IMPACT ITEMS	• Continued sound management and stable operations • Consistent annual rate increases	• Improvement in debt service coverage more consistent with peer credits • Increased improvements in service base • Cap on any general fund transfers results in a closed loop system, viewed favorably	• Financing performance needs to meet or exceed projections • Consistent rate adjustments • Controlling of overall costs

1. Source: Fitch Ratings. Fitch Rates Philadelphia (PA) Water & Wastewater Revs 'A+'; Outlook Stable – July 13, 2017. https://www.fitchratings.com/site/pr/1026466
2. Source: Moody's Investor's Report. Philadelphia Water & Sewer Enterprise, PA New Issue Report. July 13, 2017
3. Source: S&P Global Ratings – Philadelphia Water Sewer Ratings Direct Report. July 14, 2017

Key Policies

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

Rate Setting Guidelines

The PWD's rate-setting policies are based on the following principles:

- Rates and charges may not generate amounts in excess of the total appropriation from the Water Fund to the Water Department and to all other departments, boards or commissions, plus a reasonable sum to cover unforeseeable expenses
- In fixing rates and charges, the Rate Board shall recognize the importance of the Financial Plan
- Rates and charges must be in accordance with sound utility rate making principles
- Rates and charges must comply with governing bond documents and covenants
- Decision to approve, modify or reject a rate proposal must be made in a written report and in a timely manner, but no later than 120 days from the filing of notice to adjust rates by the Water Department
- Rates and charges shall be equitably apportioned among customer classes
- Rates and charges shall be just, reasonable and nondiscriminatory as to the same class of customers
- Special rates and charges shall be established for charities and pubic housing
- Rate increases, if required, are implemented transparently and predictably

PHILADELPHIA WATER DEPARTMENT

PWD Policy Goals

For FY18-FY21, PWD is focusing on four key financial policies to guide the strategic financial actions for the utility.

1. Capital Funding from Current Revenues

PWD is working towards the goal of funding at least 20% of its capital program from current revenues.

2. Debt Service Coverage

PWD hopes to extend the trend of improved debt service coverage seen in recent years.

3. Debt Issuance

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

4. Cash Reserves

PWD is strategically utilizing cash reserves to offset the level of the rate increase

PHILADELPHIA WATER DEPARTMENT

Capital Funding from Current Revenues

PWD is working towards the goal of funding at least 20% of its capital program from current revenues. While projections show an increase in transfers to Capital Account, the Department will not meet the 20% threshold over the next few years. This is the result of compromise between a revenue-funded capital program and mitigated rate increases.

	Total Transfer to Capital Account	Total Expenditures for Capital	%	Goal Met?
PROJECTED				
FY2018	**$ 61.5 million**	**$ 318 million**	**19.3%**	**N**
FY2019	**$ 55.9 million**	**$ 328 million**	**17.1%**	**N**
FY2020	**$ 62.6 million**	**$ 339 million**	**18.5%**	**N**
FY2021	**$ 62.7 million**	**$ 349 million**	**18.0%**	**N**

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

Debt Service Coverage

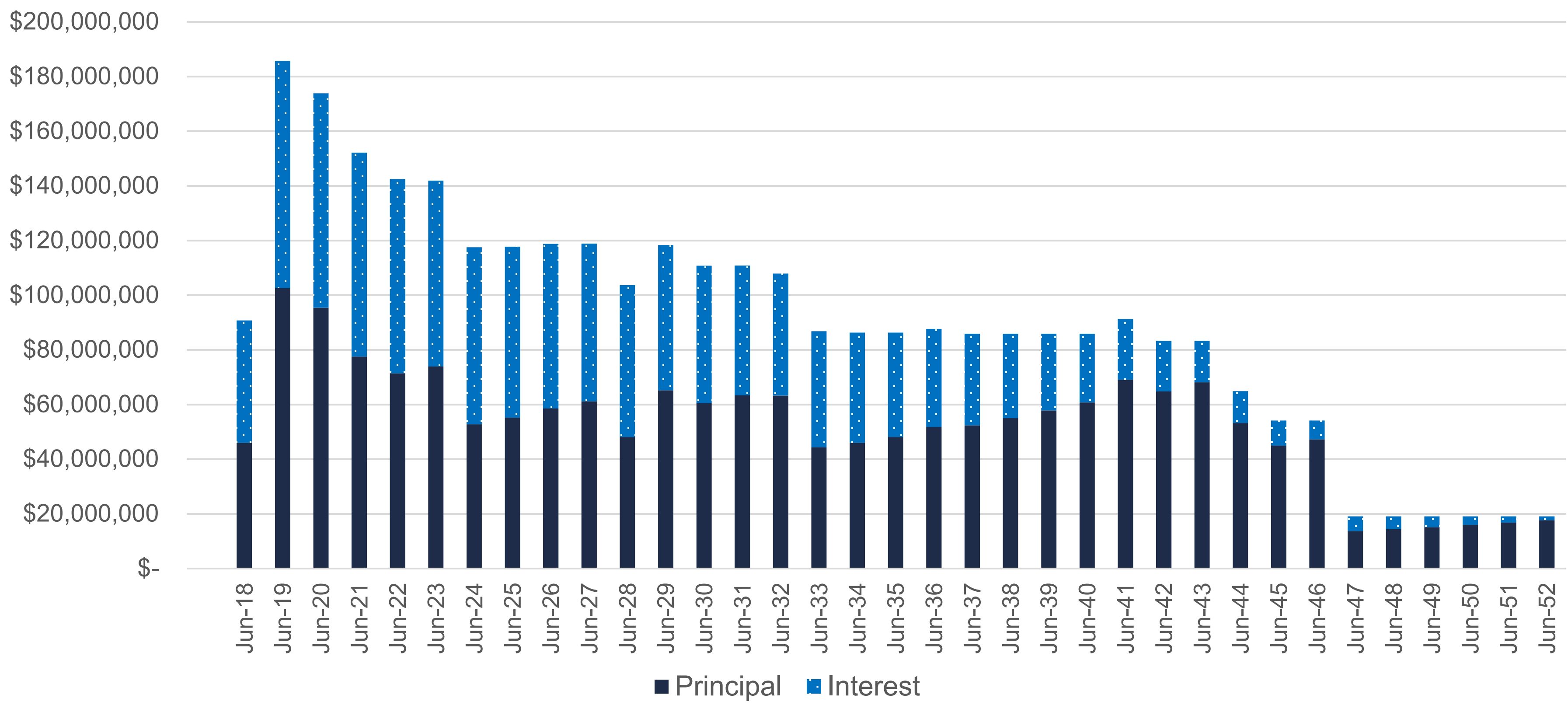
PWD will continue to meet its debt service coverage requirements and target funding 20% of the capital program from current revenues. In coming years, PWD will adjust coverage to balance the target of 20% with the rate increase level and overall leverage.

	PROJECTED			
	FY2018	**FY2019**	**FY2020**	**FY2021**
Revenue Bonds Debt Service Coverage	1.36	1.28	1.30	1.30
Total Coverage	1.23	1.08	1.10	1.09

source: PWD Financial Statements , Rate Compliance Schedule
NOTE: Fiscal Year 2018 coverage reflects the impact of a transfer from the debt reserve account of the sinking fund to the revenue fund for deposit to the sinking fund, refunding escrow.

Debt Issuance

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



NOTE: Fiscal Year 2018 debt service reflects remaining debt service due and payable.

Cash Reserves

PWD is strategically utilizing cash reserves to offset the level of the rate increase. Projections show a decrease in total cash reserves between 2018 – 2021.

- PWD aims to keep **$150M in the Rate Stabilization Fund** to cover annual expenditures when the revenues are less than projected. This serves as protection to rate payers and bondholders.
- PWD aims to maintain a minimum of **$15M in the Residual Fund**, which is established to maintain the remaining revenues after all other payments

Projected Cash Balances

Fiscal Year	**Residual Fund** Year-End Balance	Goal Met?	**Rate Stabilization Fund** Year-End Balance	Goal Met?	Total Cash Reserves
2018	$ 15 million	Y	$ 189 million	Y	**$ 204 million**
2019	$ 15 million	Y	$ 178 million	Y	**$ 193 million**
2020	$ 15 million	Y	$ 156 million	Y	**$ 171 million**
2021	$ 15 million	Y	$ 145 million	N	**$ 160 million**

sources: PWD Financial Statements, 2018 Rate Case FINAL Tables (Black & Veatch)

Peer Utility Review

- Rating Measures and Distribution
- Credit Factors Peer Comparison
- Rates & Capital Program Peer Comparison
- Cash Balances & Liquidity

Peer Utilities

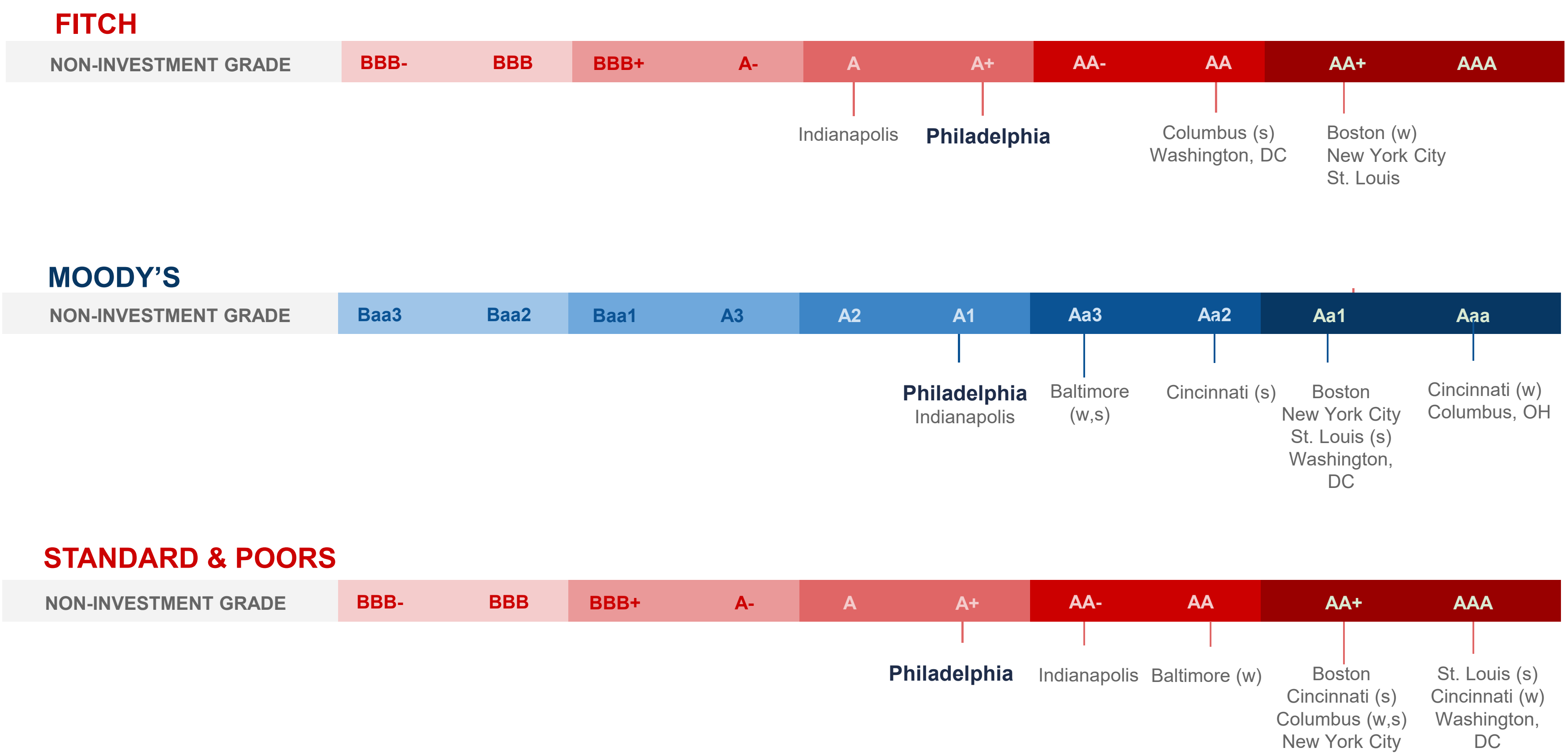
The utilities identified as peers for this comparison are mid-size to large utilities serving formerly industrial cities in the Northeast and Midwestern US.

City	Utility	Total Operating Revenue (*000*s)	Population Served	Total Accounts
Philadelphia	**Philadelphia Water Department**	**$ 670,820**	**1.6M (w) 2.3M (s)**	**480,000 (w) 545,000 (s)**
Baltimore	Baltimore City Dept of Public Works	$ 390,165	1.8M	383,700
Boston	Boston Water and Sewer Commission	$ 349,002	0.7M	89,000
Cincinnati	Greater Cincinnati Water Works	$147,748	1.0M	235,000
	Metropolitan Sewer District - Greater Cincinnati	$ 277,221	0.8M	226,000
Columbus, OH	City of Columbus, OH Water Enterprise	$ 197,679	1.2M	272,000
	City of Columbus, OH Sewer Enterprise	$250,366	1.2M	272,000
Washington, DC	District of Columbia Water & Sewer Authority	$ 549,915	2.2M	127,657
Indianapolis	Indianapolis Citizens Energy Group	$ 187,419	0.3M	317,200
New York	NYC Municipal Water Finance Authority	$ 3,892,465	9.5M	834,000
St. Louis	City of St. Louis Water Division	$ 56,538	1.3M	92,229
	St. Louis Metropolitan Sewer District	$ 318,463	1.3M	426,000

Note: Totals from Baltimore Public Works Water and Wastewater Division were added together to determine total operating revenue.

Rating Distribution of Peer Utilities

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



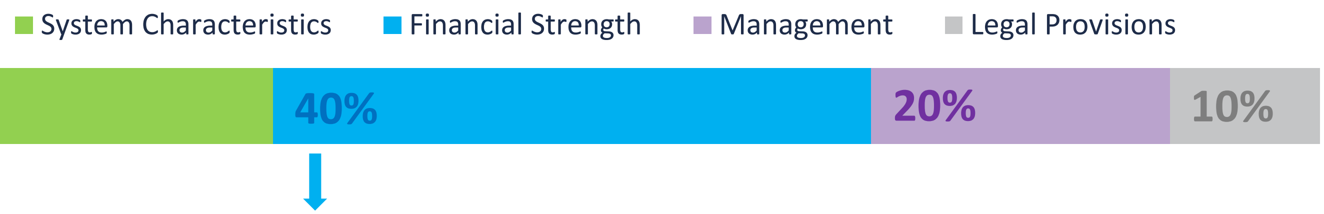
Note: City of St Louis (MO) Water Division rating withdrawn from Moody's in March 2013; S&P ratings not found for Baltimore Sewer Enterprise

PHILADELPHIA WATER DEPARTMENT

Utility Rating Factors

Moody's uses four broad scorecard factors to determine utility credit ratings: system characteristics, financial strength, management and legal provisions. The six sub-factors listed below make up 70% of the total credit rating and significantly impact PWD's current rating.

Municipal Utility Scorecard Factors [1]



Asset Condition (10%)
Service Area Wealth (12.5%)
System Size – O&M (7.5%)

Annual Debt Service Coverage (15%)
Days of Cash on Hand (15%)
Debt to Operating Revenue (10%)

	Asset Condition	Service Area Wealth	System Size – O&M	Annual Debt Service Coverage	Days of Cash on Hand	Debt to Operating Revenue
PWD Above or Below 'A" Utility Median?	BELOW	BELOW	BELOW	BELOW	ABOVE	ABOVE

Based off performance in these sub-factors, PWD believes it has been accurately rated in the "A" category. The goal for the utility is to maintain this credit rating and make significant progress on factors with the utility's control, such as asset condition and debt service coverage.

Peer Financial Metrics

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

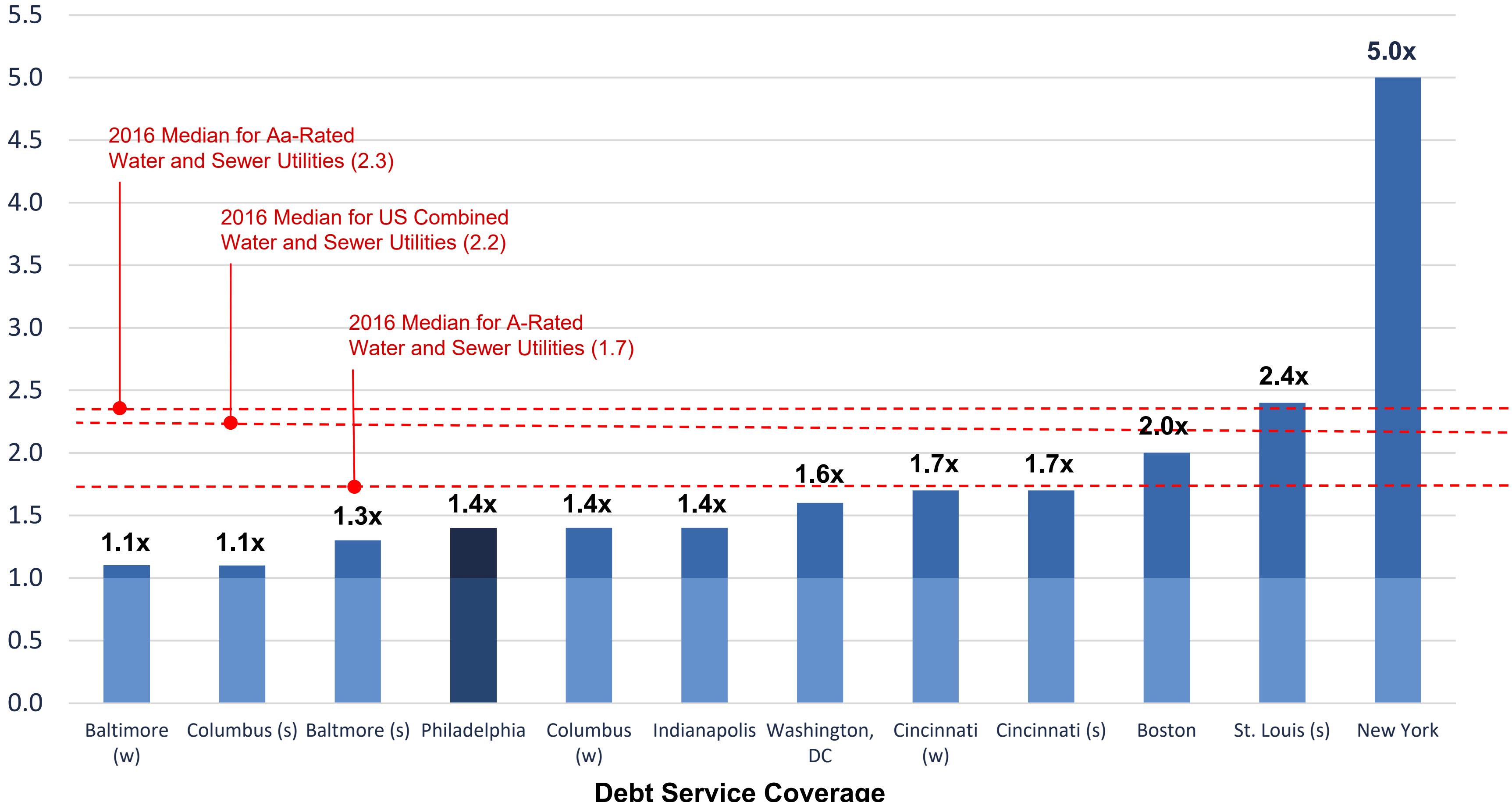
PEER CITY	TOTAL OPERATING REVENUE *$000s*	NET FUNDED DEBT *$000s*	TOTAL LONG TERM DEBT *$000s*	DEBT TO REVENUE	DEBT RATIO *%*
Philadelphia	**$670,820**	**$1,746,224**	**$1,967,114**	**2.6**	**66.4**
Baltimore (w)	$160,865	$637,726	$697,174	3.9	46.9
Baltimore (s)	$229,300	$929,069	$1,005,494	4.0	32.8
Boston (w)	$361,642	$487,301	$536,162	1.3	28.2
Cincinnati (w)	$147,748	$457,464	$523,763	3.1	39.4
Cincinnati (s)	$277,221	$836,390	$905,018	3.0	42.5
Columbus (w)	$197,679	$801,081	$801,081	4.0	58.6
Columbus (s)	$250,366	$1,781,715	$1,762,981	7.1	64.1
Indianapolis	$187,419	$923,678	$1,019,513	4.9	78.2
New York	$3,892,465	$30,240,906	$30,829,355	7.8	98.2
St. Louis (s)	$318,463	$1,136,538	$1,203,367	3.6	40.4
Washington, DC	$2,748,248	$2,900,329	$2,548,506	4.3	68.9

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

Source: Moody's Investor Services. Figures represent FY2016

Annual Debt Service Coverage

PWD has modest debt service coverage compared to peer utilities and is below median coverage for other ‘A’ rated utilities.



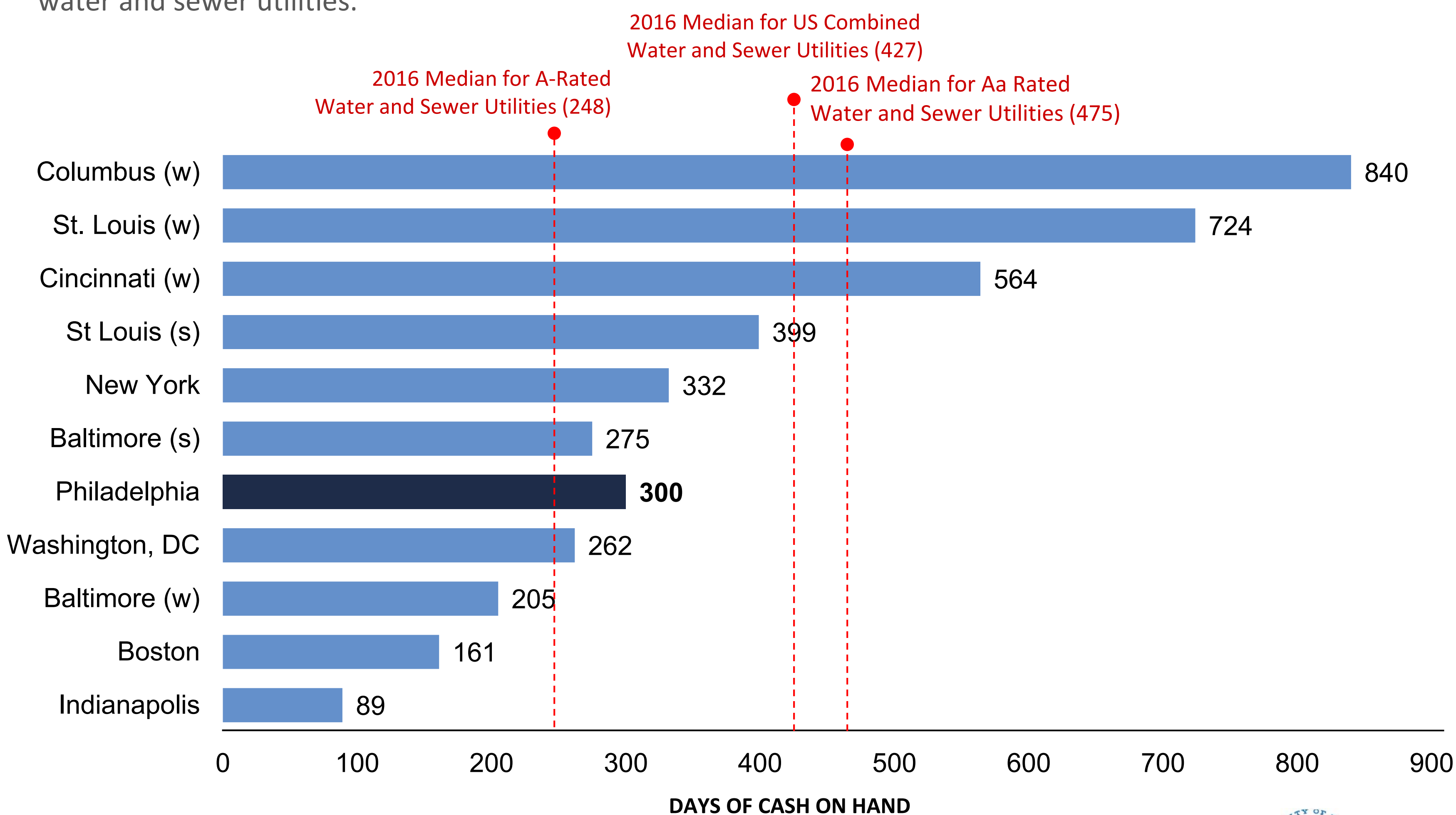
Key: (w): water only, (s): sewer only

Source: Moody’s Investor Services.
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)

PHILADELPHIA WATER DEPARTMENT

PWD Reserve Levels vs. Peer Utilities

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



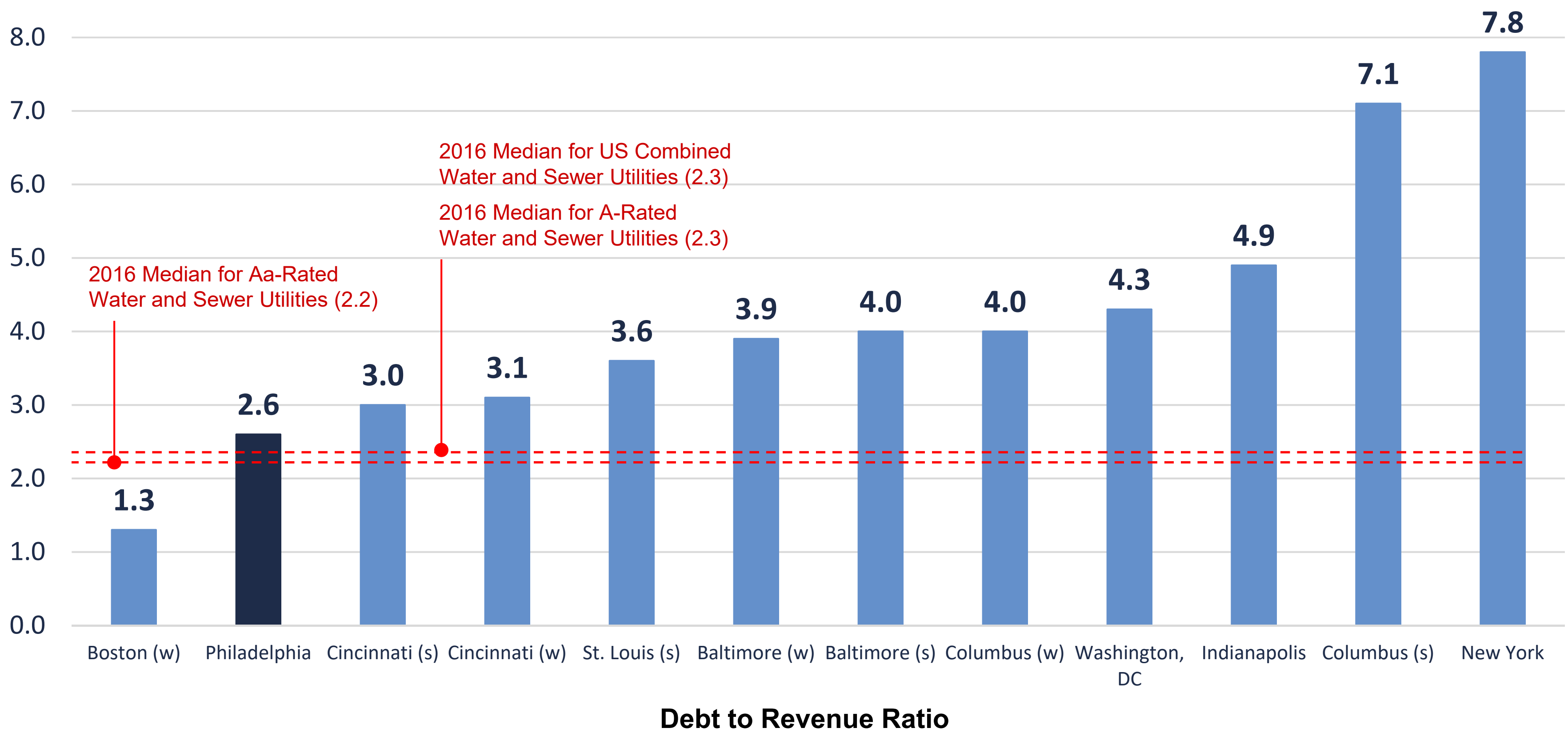
Key: (w): water only, (s): sewer only

Source: Moody's Investor Services.

NOTE: 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 slightly higher than the median for other 'A' rated utilities.



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

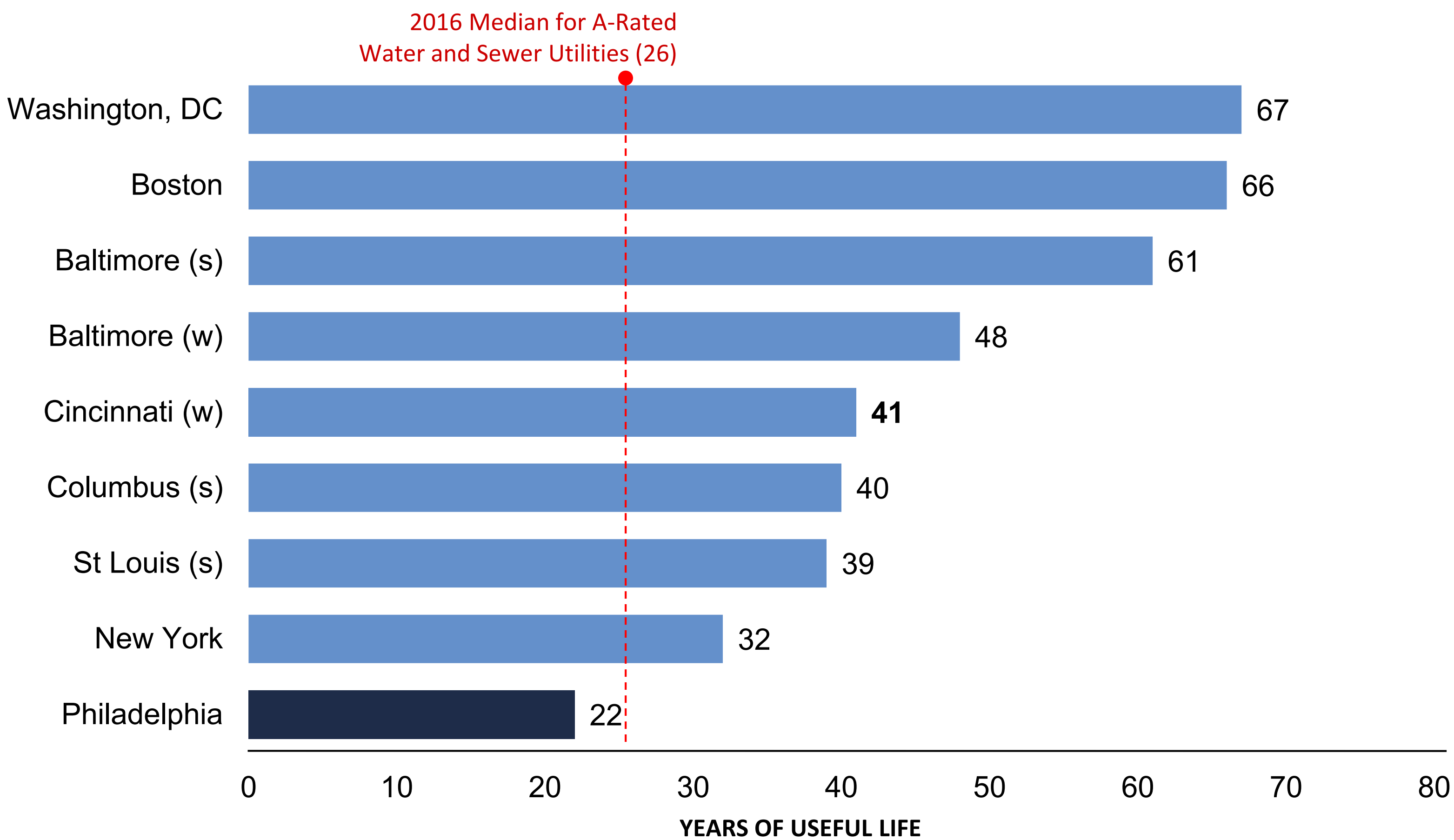
Source: Moody's Investor Services. Figures represent FY2016, unless information was not available

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)

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 US Municipal Utility Revenue Debt Rating Methodology – October 19, 2017)

Summary

- In FY16 and FY17, PWD improved debt coverage ratios, maintained liquidity, and increased capital projects funded by revenues
- PWD has a rapidly growing capital program and is working towards funding 20% of the program from current revenues. Given rising capital costs, PWD's goal is to maintain its "A" rating.
- PWD is strategically using its Rate Stabilization and Residual Funds to absorb costs and protect ratepayers from rising rates.
- PWD has modest reserves and low debt service coverage compared to peer utilities. PWD is looking long term for the best alignment between debt repayment and current cash flow.

Appendix 1

Financial Plan Projections

Table 1
City of Philadelphia
Water Operating Fund
Fund Balance Summary

Category	FY'16 Year-End Final	FY'17 Year-End Preliminary	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
REVENUES								
Locally Generated Non - Tax Revenues	678,161,586	719,236,865	751,425,000	728,978,000	749,401,000	773,810,000	816,748,000	865,398,000
Other Governments	744,461	1,407,828	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Revenue from Other Funds of City - Rate Stabilization Fund	1,629,332	4,563,392	12,200,000	11,400,000	21,200,000	11,100,000	3,900,000	700,000
Total Revenues and Other Sources	**680,535,378**	**725,208,085**	**764,625,000**	**741,378,000**	**771,601,000**	**785,910,000**	**821,648,000**	**867,098,000**

Category	FY'16 Year-End Final	FY'17 Year-End Preliminary	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
OBLIGATIONS / APPROPRIATIONS								
Personal Services	118,414,774	125,010,183	133,333,000	137,250,000	141,951,000	146,723,000	151,565,000	156,111,000
Personal Services - Pension (MMO)	46,646,526	68,914,800	73,522,000	75,742,000	78,093,000	79,290,000	80,529,000	82,123,000
Personal Services - Other Employee Benefits	59,744,688	52,651,923	54,998,000	58,339,000	61,192,000	64,113,000	67,148,000	70,350,000
Sub-Total Employee Compensation	224,805,988	246,576,906	261,853,000	271,331,000	281,236,000	290,126,000	299,242,000	308,584,000
Purchase of Services	124,873,757	146,179,730	142,909,000	152,014,000	156,254,000	160,636,000	165,250,000	169,956,000
Purchases of Services - Electricity	20,101,556	18,252,847	18,385,000	18,385,000	18,385,000	18,937,000	19,505,000	20,090,000
Purchases of Services - Gas	4,013,405	3,176,527	4,735,000	4,924,000	4,925,000	5,072,000	5,224,000	5,381,000
Sub-Total Purchase of Services	148,988,718	167,609,104	166,029,000	175,323,000	179,564,000	184,645,000	189,979,000	195,427,000
Materials, Supplies and Equipment	24,425,002	27,893,295	28,136,000	28,294,000	28,454,000	28,615,000	28,777,000	28,940,000
Materials - Chemicals	21,096,651	18,728,508	20,527,000	21,903,000	22,736,000	22,963,000	23,192,000	23,424,000
Sub Total -Materials, Supplies and Equipment	45,521,653	46,621,803	48,663,000	50,197,000	51,190,000	51,578,000	51,969,000	52,364,000
Contributions, Indemnities and Taxes	5,440,820	7,352,314	5,141,000	5,641,000	5,641,000	5,641,000	5,641,000	5,641,000
Debt Service	219,132,799	206,390,425	220,026,000	199,579,000	208,458,000	208,783,000	225,221,000	248,951,000
Transfer to Escrow		9,507,288	19,000,000					
Sub Total Debt Service	219,132,799	*215,897,713*	239,026,000	199,579,000	208,458,000	208,783,000	225,221,000	248,951,000
Advances and Miscellaneous Payments	-	-	-	-	-	-	-	-
Payment to Other Funds - Net of Payment to Rate Stabilization Fund	60,733,243	65,700,000	67,913,000	62,547,000	69,364,000	69,632,000	74,754,000	81,971,000
Payments to Other Funds - Rate Stabilization Fund	-	-	-	-	-	-	-	-
Total Obligations / Appropriations	**704,623,222**	**749,757,840**	**788,625,000**	**764,618,000**	**795,453,000**	**810,405,000**	**846,806,000**	**892,938,000**
Operating Surplus / (Deficit)	**(24,087,843)**	**(24,549,755)**	**(24,000,000)**	**(23,240,000)**	**(23,852,000)**	**(24,495,000)**	**(25,158,000)**	**(25,840,000)**
OPERATIONS IN RESPECT TO PRIOR FISCAL YEARS								
Net Adjustments - Prior Year (Liquidated Encumbrance)	24,087,843	24,549,755	24,000,000	23,240,000	23,852,000	24,495,000	25,158,000	25,840,000
Total Net Adjustments	**24,087,843**	**24,549,755**	**24,000,000**	**23,240,000**	**23,852,000**	**24,495,000**	**25,158,000**	**25,840,000**
Year End Balance	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

- Source for Projected FY 2018 to FY 2023 is Black and Veatch financial plan.
- Total Revenues and Other Sources as projected for FY 2017 to FY 2023 align with Exhibit BV- E1, Table C-1, line number 16 + line number 20 (excluding transfers to RSF) .
- Total Obligations / Appropriations as projected for FY 2017 to FY 2023 minus liquidated encumbrances align with Exhibit BV-E1, Table C-1, line number 19 + line 20 (excluding transfers from RSF) + line number 31+ line number 32 - line number 36.

Category PAYMENTS TO OTHER FUNDS	FY'16 Year-End Final	FY'17 Year-End Preliminary	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
Payment to Other Funds - Net of Payment to Rate Stabilization Fund								
Capital Account Deposit	21,496,800.00	22,302,330	23,061,000	35,767,000	36,983,000	38,241,000	39,541,000	40,885,000
Residual Fund Transfer	31,136,257.36	31,300,606	38,421,000	20,188,000	25,625,000	24,466,000	28,115,000	33,810,000
Transfer to GF for Services	8,100,186.00	12,097,064	6,431,000	6,592,000	6,756,000	6,925,000	7,098,000	7,276,000
Total	60,733,243	65,700,000	67,913,000	62,547,000	69,364,000	69,632,000	74,754,000	81,971,000


PHILADELPHIA
WATER
DEPARTMENT

Schedule ML-3

Memorandum from Bond Counsel

Ballard Spahr LLP

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MEMORANDUM

TO	City of Philadelphia Water Department
FROM	Valarie J. Allen
DATE	February 5, 2018
RE	Discussion of bond counsel regarding flow of 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 and expenditures 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 to this memorandum.

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). In 2016 and in 2017, Thompson Reuters ranked Ballard Spahr LLP as the #1 bond counsel in Pennsylvania and #11 in the U.S., by dollar volume of bonds issued.

I have served on Ballard's bond counsel team for the Water Department since 2007. I am a partner in the firm, resident in our Philadelphia offices, where I practice exclusively in the area of public finance law.

Flow of Funds Under Restated General Water and Wastewater Revenue Bond Ordinance of 1989, as amended

Prepared by Ballard Spahr LLP
Bond Counsel

February 5, 2018

Ballard Spahr LLP

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Appendix: GLOSSARY OF CERTAIN TERMS USED IN THE GENERAL BOND ORDINANCE

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 needs to repair and replace critical infrastructure on a regular basis. As noted in the annotations to the relevant provisions of the City Charter, paying the 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 the City's related capital costs through the issuance of debt payable solely from revenues generated by the System. City Counsel authorizes the City to make operating and capital expenditures and incur debt in respect of the System pursuant the General Bond Ordinance.

The City finances capital improvements to 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.[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 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 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.

---

[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.

Section 2. PURPOSES OF GENERAL BOND ORDINANCE

The General Bond Ordinance was enacted by the City of Philadelphia ("*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 it 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.

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

[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.

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 mean 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 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.[6] The Debt Reserve Requirement is generally met through the deposit of Bond proceeds each

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[6] "*Debt Reserve Requirement*" means with respect to all Bonds (other than Subordinated Bonds), an amount equal to the lesser of (i) the greatest amount of Debt Service Requirements[6] payable in any one Fiscal Year, determined as

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)

There currently is pending in City Council a supplemental ordinance that would, upon adoption and with the approval of the holders of 67% of Bond outstanding, amend the General Bond Ordinance and provide for the creation, by supplemental ordinance, of series subaccounts within the Debt Reserve Account whereby each such subaccount would secure only a specific series of Bonds. As such, each Series Debt Reserve Subaccount will have its own Series Debt Reserve Requirement. [7]

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)

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of any particular date and (ii) the maximum amount to be financed with proceeds of Bonds permitted by Section 148(d)(1) the Code (or any successor provision).

[7] The supplemental ordinance currently would add the following two definitions to the General Bond Ordinance.

> "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.

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*

The Construction Fund holds moneys to be expended for capital projects required for the operation, maintenance, repair, construction and improvement of the facilities comprising the System. 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 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 new capital projects (i.e., not for refunding purposes) for disbursement according to established procedures of the City.

Capital Account

The Capital Account holds Project Revenues accumulated over time primarily to pay capital expenditures, though such moneys may be used for certain other purposes. Amounts deposited in the Capital Account 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 ***5.3*** 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"[8] 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

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.

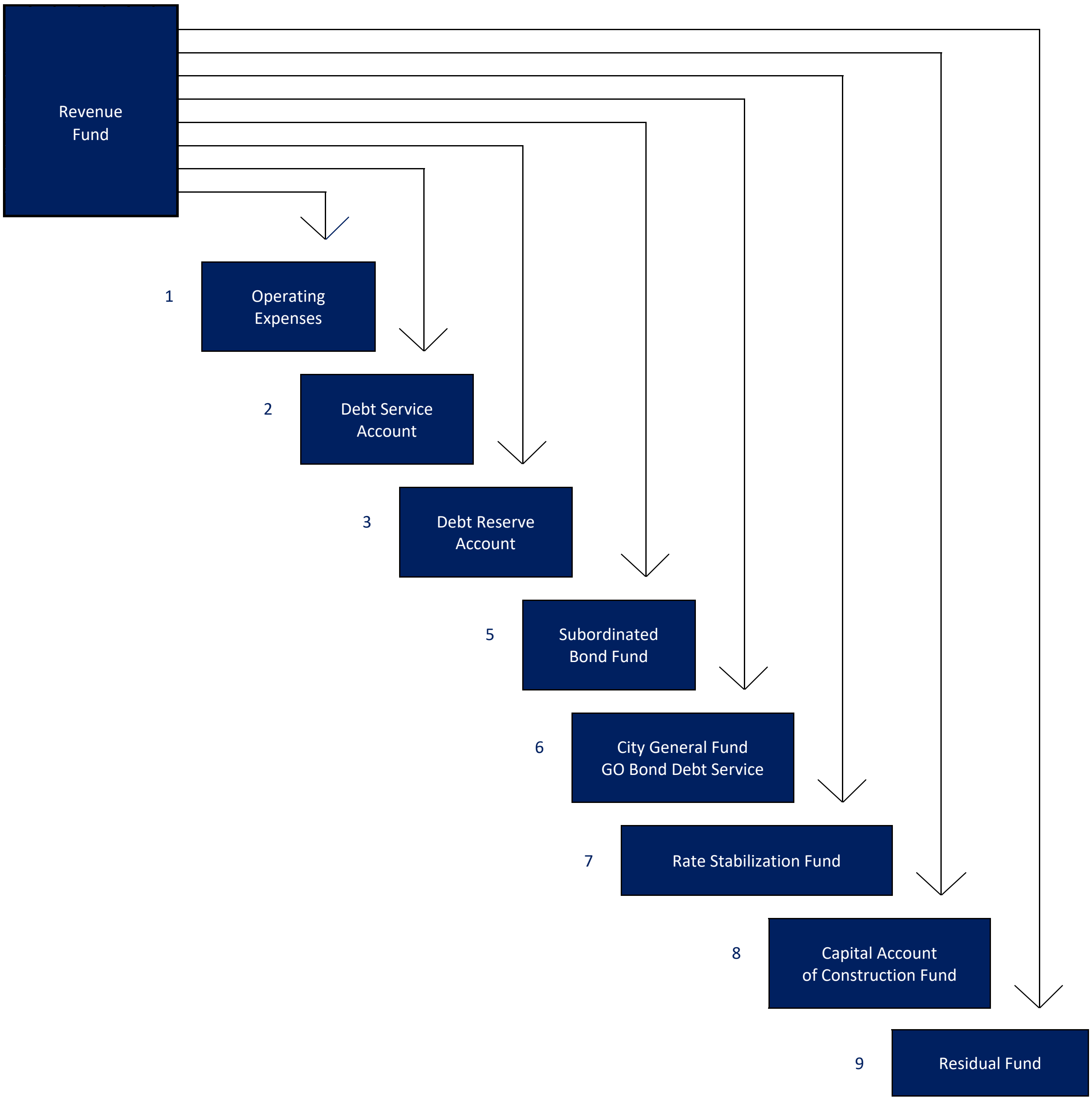
5.1 The Waterfall

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.[9]

[8] "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.

[9] 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.[10] *(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.[11]

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[12], (ii) the Debt Service Withdrawal[13] for the preceding Fiscal Year and (iii) the Operating Expense

[10] 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.

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

[12] "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.

[13] "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[14] 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.[15]
(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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[14] "Operating Expense Withdrawal" means the aggregate amount withdrawn from the Capital Account during a Fiscal Year and applied toward the payment of Operating Expenses.

[15] Under federal tax law, 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 Sources of 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 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)

5.4 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)

5.5 *Other Permitted Transfers from Funds*

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)

5.6 *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 %)[16] 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. ·

"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.[17]

"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).[18]

"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:

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[17] There currently is pending in City Council a supplemental ordinance that would, upon adoption and with the approval of the holders of 67% of Bond outstanding , amend the General Bond Ordinance and restate the definition of "Credit Facility" 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.

[18] There currently is pending in City Council a supplemental ordinance that would, upon adoption, amend the General Bond Ordinance and restate the definition of "Debt Reserve Requirement" 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 of the General Bond Ordinance, 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).

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 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.[19]

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[19] There currently is pending in City Council a supplemental ordinance that would, upon adoption and with the approval of the holders of 67% of Bond outstanding , amend the General Bond Ordinance and 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.

"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.

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 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.

"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 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 April21, 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 at1d 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

Rating Agency Reports

Philadelphia, Pennsylvania

New Issue Report

Ratings

New Issue

Water and Wastewater Revenue Refunding Bonds, Series 2017	A+

Outstanding Debt

Water and Wastewater Revenue Bonds	A+

Rating Outlook

Stable

Related Research

2017 Water and Sewer Medians (December 2016)

2017 Outlook: Water and Sewer Sector (December 2016)

Fitch Rates Philadelphia, PA's Gas Works Rev Refunding Bonds'; Outlook Stable (August 2016)

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New Issue Details

Sale Information: Approximately $293,000,000 Water and Wastewater Revenue Bonds, Series 2017, scheduled to sell the week of April 3 via negotiated sale.

Security: First lien on net revenues of the Philadelphia Water Department's (PWD) combined water and sewer system.

Purpose: To finance capital improvements, make a deposit to the debt service reserve and pay issuance costs.

Final Maturity: Oct. 1, 2052.

Key Rating Drivers

Satisfactory Financial Performance: PWD generates narrow but consistent financial margins. All-in debt service coverage (DSC), calculated by Fitch Ratings, has averaged 1.3x over the past five years and was just 1.2x in fiscal 2016. While below Fitch's median for the rating category, PWD's consistency in setting rates annually to achieve 1.3x DSC and healthy liquidity levels support the 'A+' rating.

Significant Long-Term Capital Needs: PWD's capital improvement program (CIP) totals $2.2 billion through fiscal 2023. Longer-term capital needs are substantial, a result of required consent order projects and long-term maintenance needs associated with Philadelphia's (the city) aging infrastructure. Terms and conditions under the consent order provide the city with some flexibility as to the affordability and projected timeline of the projects.

Debt Burden to Rise: Debt levels are currently manageable but will increase significantly with sizable additional borrowing expected to fund 80% of PWD's long-term capital needs. Leverage levels are expected to become high with continued sizable borrowing planned over the next two decades.

Consistent Annual Rate Increases: PWD regularly raises water and sewer rates to support the increased capital spending and to achieve 1.3x DSC. Rates have risen by around 5% annually over the past decade. Rates are affordable but expected to continue trending higher to fund long-term capital improvements.

Economic Characteristics Remain Mixed: The service area is highly diverse and well anchored by a broad and stable economy. However, low income levels persist, contributing to below-average collection rates and high water loss.

Rating Sensitivities

Insufficient Rate Recovery: The Stable Rating Outlook reflects Fitch's expectation that consistent rate action will be taken to support planned capital spending. However, if PWD experiences any difficulty in achieving timely and sufficient rate recovery, financial margins could decline, which would likely prompt negative rating action.

Rating History — Revenue Bonds

Rating	Action	Outlook/ Watch	Date
A+	Affirmed	Stable	3/23/17
A+	Affirmed	Stable	10/6/16
A+	Affirmed	Stable	3/20/15
A+	Affirmed	Stable	12/31/13
A+	Affirmed	Stable	6/27/13
A+	Affirmed	Stable	10/9/12
A+	Revised	Stable	4/30/10
A–	Upgraded	—	6/7/00
BBB+	Assigned	—	12/1/98

Related Criteria

Revenue-Supported Rating Criteria (June 2014)

U.S. Water and Sewer Revenue Bond Rating Criteria (November 2016)

Credit Profile

Philadelphia's combined water and sewer utility system serves city residents on a retail basis and a small number of wholesale customers operating in neighboring counties. Service area characteristics include generally low wealth levels and higher than average unemployment rates that are sufficiently mitigated by a sizable and well-anchored employment base.

Management of the combined system falls under the water department, one of the city's 10 operating departments. The water department commissioner is appointed by the managing director of the city subject to mayoral approval. Financial results are reported as an enterprise fund in the city's audited financial statements, and financial management is centralized, with all city operating funds monitored by the city's finance and budget departments. While the revenues of the system are legally and practically separate from other city funds, the centralized system keeps the financial management of the city and water fund closely tied.

Of the PWD's roughly 2,067 employees, approximately 1,880 are unionized. A collective bargaining agreement recently reached for the vast majority established a four-year contract spanning fiscal years 2017–2020. Contract terms, including annual salary increases that will average 2.75%, appear manageable and are factored into the PWD's current financial forecast.

Customer Profile and Service Area

PWD serves a highly diverse and predominantly residential customer base. The water system serves all of the 1.6 million residents of the city as well as a small wholesale customer that serves customers in neighboring Montgomery and Delaware Counties. In total, the water system directly served 480,000 accounts in fiscal 2016. Limited growth in the customer base is anticipated.

The wastewater service area, which comprises greater portions of the surrounding counties, includes a larger population estimated at nearly 2.3 million. The system directly serves 450,000 wastewater customers and 50,000 storm water-only accounts. The combined system's 10 largest customers by revenue represent a stable mix of either large healthcare or governmental institutions that accounted for just 9.9% of fiscal 2016 total billings.

The city maintains 11 wholesale agreements for wastewater service and one wholesale contract for water service to customers outside the city's boundaries. Total wholesale revenue accounted for a moderate 5% of total system revenues in fiscal 2016. All of the wholesale agreements extend through at least fiscal 2023, with several running through fiscal 2025 or later.

Community Characteristics

Philadelphia's large population, sound economic underpinnings and distinct role as the economic driver for the broader metropolitan statistical area (MSA) ensure the continued stability of PWD's service area. Employment opportunities are fairly well diversified, despite being weighted towards a stable cluster of large higher education and healthcare institutions that dominate the city's 10 largest employers. The University of Pennsylvania remains by far the city's largest employer, followed by the Children's Hospital of Philadelphia. Tourism, government and financial services also play an important role in the city's economy.

Unemployment continues to trend downward but remains elevated relative to state and national levels. The city's November 2016 unemployment rate fell from the preceding months but increased slightly from the 5.8% recorded in November 2015. Weak income levels persist, as the city's poverty rate remains nearly twice the national rate, and median household income

(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. Including the collection of delinquent accounts, management estimates annual revenue collection at about 95%.

Operating Profile

Water System

Operations are stable and system capacity is robust. The city's water supply, significant excess treatment capacity and lack of growth pressures position PWD well to continue meeting customer demand from existing resources for the foreseeable future. Approximately 59% of the utility's current water supply is drawn from the Delaware River; the balance is taken from the Schuylkill River. Annual water sales, even on peak days, typically equal about one-half of the city's combined rated treatment capacity of 546 million gallons daily (mgd), and nearly one-third of the combined withdrawal (680 mgd) permitted from both water supply sources. Storage capacity of treated and untreated water exceeds 1 billion gallons.

The water system is compliant with all applicable permits and regulatory standards and guidelines. However, unbilled, unaccounted for water loss continues to be a concern. Unauthorized consumption was reduced by a notable 40% during the 1990s, but progress has since stalled as non-revenue, unauthorized water has remained at or close to 30% over the past several years. Ongoing efforts to reduce water loss include the implementation of an automatic meter reading system, utilization of a leak detection program, locking of fire hydrants and replacing water mains.

Sewer System

The wastewater collection system consists of approximately 19 pumping stations, nearly 760 miles of sanitary sewer, about 740 miles of storm sewer, roughly 1,850 miles of combined sanitary and storm sewer, and 135 miles of major interceptor sewer that convey wastewater to three city-owned treatment plants. Wastewater treatment capacity is ample, as the system typically operates at approximately 36% of the 1,059-mgd maximum flow capacity.

All three treatment plants are currently operating under five-year National Pollutant Discharge Elimination System (NPDES) permits that expired on Aug. 31, 2012. The city filed its applications for permit renewal on time (in February 2012) and does not expect any hindrances in eventually getting the permits renewed. The system continues to operate under an extension of the expired permits, as determined by the policies of the Pennsylvania Department of Environmental Protection (DEP).

While officials have previously stated that no hindrances to renewing the NPDES permit are expected, the fairly recent declaration that the Delaware River is impaired due to an elevated level of polychlorinated biphenyls could potentially impede the renewal process and result in a costly remediation process. No estimate on the potential cost has been determined.

Green City, Clean Waters Program

The city signed a consent order and agreement (the COA) with the DEP in 2011 requiring the city to address combined sewer overflows (CSOs) over a 25-year period ending in fiscal 2036. Terms of the agreement, including total cost and timeline, are considered by Fitch to be generally favorable when compared to alternative, likely more costly strategies.

The city's long-term control plan to substantially eliminate CSOs is reflected in its Green City, Clean Waters Program (the program). Under the program, the city will continue to implement green technologies, including significant increases to the number of greened acres (9,600 in total) throughout the city as a means to capture rainwater runoff that would otherwise overwhelm the utility's combined sewers and pollute the city's waterways. The program also includes wastewater treatment facility enhancements, pipe renewal and replacement and the offer of a credit to customers willing to reduce the amount of impervious area on their property.

The COA sets the ultimate water quality goal as the elimination or removal of pollutants that otherwise would be removed by the capture of 85% by volume (average citywide) of the combined sewage collected in the city's combined sewer system during precipitation events. To that end, the COA requires water quality milestones to be met in five-year intervals. The milestones require the city to green a certain number of acres, reduce overflow volume and line a certain number of miles of interceptor. The city met the first five-year milestone, including construction of more than 800 greened acres, and management believes it is on track to meet the second five-year interim milestone in 2021. Fitch will continue to monitor the city's performance as the project milestones escalate.

The COA provides the city with some flexibility. Escalation of COA costs in excess of 2.27% of the city's MHI would allow the city to petition the DEP for an extension of time to complete the COA so the financial burden does not become excessive on ratepayers. While fines may result for non-compliance with any of the milestones, the amounts would not be significant. Fitch notes that COA costs used to calculate the percentage of MHI are based on the monthly sewer charge only.

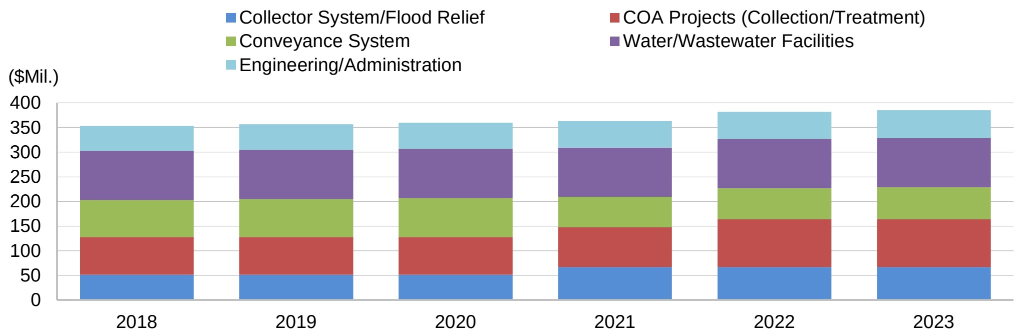
Environmental Regulations, R&R Drive Large Capital Program

Typical of most large, older urban combined utilities facing combined sewer overflow mitigation and long-term renewal and replacement issues, PWD's capital improvement plan (CIP) is substantial. Projected capital spending spanning fiscal years 2018–2023 totals $2.2 billion, or $366 million on average per year, and is over 20% higher than the CIP two years earlier. As only roughly 22% of the current CIP addresses CAO projects and infrastructure rehab and replacement are expected to be ongoing, Fitch expects capital spending will further increase over the intermediate term.

Water and wastewater treatment plant upgrades together with the COA and related long-term control plan projects account for the vast majority of planned spending and continue to be the primary drivers behind the ongoing escalation in costs. Other spending priorities include PWD's efforts to increase its sewer pipe and water main replacement programs to keep pace with the city's aging infrastructure. The city's average age of plant remains high at 22 years. However, much of the city's sewer collection system consists of brick sewer lines that typically have very long useful lives.

The current capital plan continues a trend of relying heavily on long-term debt as a funding source, primarily the result of modest operating margins and narrow debt service coverage that yield modest amounts of excess cash flow for pay-as-you-go capital funding. Including the current issuance, approximately 80% of project costs over the next six years will be financed with annual bond issuances averaging nearly $308 million through fiscal 2022. Equity contributions will fund the balance.

Capital Improvement Plan



Source: Philadelphia Water Department.

Debt Burden to Rise

PWD's debt burden is currently manageable but expected to rise significantly over time. As of fiscal year-end 2016, PWD had $1.8 billion of mostly fixed-rate long-term revenue bonds and $135 million in Pennsylvania Infrastructure Investment Authority loans outstanding. The utility's ratio of debt to net plant totaled 88% in fiscal 2016, which slightly exceeds Fitch's rating category median of 76%.

Debt to funds available for debt service was 7.5x as compared to the Fitch rating category median of 9.1x. Debt per customer, which includes an approximation of the number of retail customers served through wholesale contract, remains below the rating category median for the 'A' category at approximately $1,549 in fiscal 2016. However, Fitch expects all debt metrics to rise as PWD relies heavily on long-term debt as a funding source, primarily the result of narrow debt service coverage margins that yield modest amounts of excess cash flow. Including the current issuance, approximately 80% of project costs over the next six years will be financed with debt; annual bond issuances are projected to average roughly $308 million annually through fiscal 2022.

With long-term capital needs escalating, Fitch anticipates the amount of future debt will continue to outpace the rate of amortization of bonds outstanding, leading to a steady rise in leverage over time. Fitch believes the continued escalation in the size of the CIP, coupled with a strategy of funding capital costs almost entirely with long-term debt, could eventually begin pressuring financial margins.

Exposure to variable-rate debt and derivatives diminished significantly in recent years as management has taken a more conservative approach to debt management. As a result, total variable-rate debt comprises just 4% of the system's total debt portfolio, down from a peak of 30% in prior years. The system is party to a fixed payer swap with Citigroup (parent IDR rated 'A'/Stable by Fitch) as the counterparty. The notional amount is $51.6 million and the mark-to-market valuation is negative $1.5 million (as of June 30, 2016). The swap will terminate on Aug. 1, 2018 or may be terminated early by PWD if Citigroup's rating falls below 'A3'/'A–', or by Citigroup if PWD's rating falls below the same rating threshold (following a 30-day cure period).

Swap termination payments are subordinate to payment of senior-lien obligations, and there are no collateral posting requirements. If required, the city could easily absorb having to make a termination payment based on PWD's strong liquidity adjusted for swap exposure.

Charges and Rate Affordability

Rates for service generally consist of a service charge based on meter size as well as declining block consumption charges. Typical of most storm charges nationally, stormwater fees are based on a property's impervious surface area. Historically, management has typically taken a measured approach to raising rates, leading to combined charges that Fitch considers to be affordable for the majority of the rate base.

Consistent Rate Action

Financial margins have remained consistent as a result of regular annual rate action over at least the past 12 years. In early 2016, the rate board approved 5.1% and 4.5% increases for fiscals 2017 and 2018. 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, was established in 2014. The rate board has full rate-setting authority, and its decision regarding proposed rate adjustments must be made no later than 120 days following a rate filing. Rate board members are appointed by the mayor and approved by city council. Management reports that the rate approval process with the new rate board was timely and smooth. Fitch expects PWD's ability to continue to enact needed rate action to support planned capital spending is unchanged under the new process.

Before the rate board was created, PWD last established rates independently in fiscal 2012 by adopting a four-year rate plan that increased rates through fiscal 2015. Despite more than a decade of rate adjustments, including a 5.1% increase for fiscal 2017, the average monthly combined bill for water, sewer and storm remains fairly affordable at $74 per month (for 4,500 gallons), equal to approximately 2% of the city's MHI.

PWD continues to struggle with below-average collection rates. With delinquent collections factored in, roughly 95% of budgeted revenues are collected each year. Implementation of an income-based water rate assistance program within the current forecast period could aid in reducing receivables and increasing collections, although any improvement on both fronts would likely be offset by reduced rate revenue, which PWD estimates will be equal to roughly 2% of total revenue. Rates for fiscal years 2017 and 2018 factor in this anticipated loss of revenues.

Financial Performance

Fitch considers PWD's financial operations to be well managed, despite historically narrow DSC levels. Management budgets to meet a 1.3x DSC target, which in some years requires transfers from the rate stabilization fund (RSF) to balance lower projected cash flow amounts.

Depending on yearly customer demand, collections and containment of operating expenditures, the RSF is utilized to supplement operating revenues. However, rate revenues have historically covered annual debt service obligations by a satisfactory margin without the use of the RSF. Financial projections have historically shown annual drawdowns of the RSF, although actual results have either reduced or eliminated the need for the planned transfers.

Operating results for fiscal 2016 were in line with prior projections, continuing a consistent trend of satisfactory financial performance. DSC declined slightly to 1.2x from fiscal 2015's 1.3x, leaving the RSF largely unchanged at $205.7 million. Fitch's DSC calculation incorporates below the line transfers out of the water and sewer fund related to various contractual obligations. Total available liquidity, which includes the RSF, PWD's residual fund and unrestricted cash and investments also showed modest improvement, increasing to a robust 265 days of cash on hand. Fitch's DSC calculation incorporates below the line transfers out of the water and sewer fund related to various contractual obligations.

Financial Projections

Updated projected financial results provided by PWD's rate consultant show a continued trend of low but stable coverage and acceptable liquidity levels through fiscal 2022. DSC net of RSF transfers is forecast to remain in a relatively weak range of 1.15x–1.20x in fiscal years 2017 and 2018. DSC improves in fiscal 2019 as a scheduled decline in debt service is expected to lead to coverage of 1.30x–1.40x (not including RSF transfers). With sizable long-term capital spending needs and cost recovery expected to remain steady, stronger financial results are not anticipated.

RSF balances are anticipated to decline slightly with a projected ending balance in fiscal 2022 of $184 million. While liquidity will fluctuate somewhat over the next few years, Fitch expects PWD to sustain cash at levels generally consistent with the current 'A+' rating.

Assumptions built into the forecast appear reasonable, although anticipated future rate increases will depend on rate board approval. The rate board's approval of increases for fiscal years 2017 and 2018 are viewed positively by Fitch, and the board's role in rate approval is largely viewed to be neutral to the revenue bond rating. Modest declines in consumption are incorporated into the projections, and no additional growth in customer accounts is assumed.

Covenants

Security

The current offering and outstanding parity bonds are secured by a first lien on net revenues of the combined water and sewer system.

Rate Covenant

The rate covenant requires that rates, charges and fees be sufficient to yield net revenues at least equal to 1.2x senior-lien annual debt service (ADS) and 1.0x all-in ADS and all required deposits.

Additional Bonds Test

Additional parity debt can be issued if a consulting engineer certifies that with the issuance of the additional bonds, the rate covenant will be satisfied in the fiscal year the debt is issued in addition to the following two fiscal years. If capitalized interest is part of the debt structure, the two-year lookout provision begins the year after the capitalized interest period ends.

Debt Service Reserve Fund

The current offering will carry a cash-funded debt service reserve fund (DSRF). The DSRF requirement is the lesser of maximum annual debt service or the maximum amount permitted to be deposited under IRS regulations. Outstanding parity bonds carry a parity reserve that is fully funded with over $200 million in cash and accrued interest.

Financial Summary

($000, Audited Fiscal Years Ended June 30)

	2011	2012	2013	2014	2015	2016
Balance Sheet						
Unrestricted Cash and Investments	60,994	80,654	82,524	71,166	80,070	79,074
Other Unrestricted Current Assets	39,788	31,646	146,613	140,383	147,747	141,670
Available Restricted Cash and Investments	191,963	210,551	162,311	210,008	221,383	220,890
Current Liabilities Payable from Unrestricted Assets	(186,826)	(200,381)	(211,872)	(214,671)	(225,234)	(238,542)
Net Working Capital	**105,919**	**122,470**	**179,576**	**206,886**	**223,966**	**203,092**
Net Fixed Assets	1,886,726	1,938,001	2,019,350	2,070,492	2,149,680	2,230,233
Net Long-Term Debt Outstanding	1,739,179	1,819,891	1,830,387	1,935,252	2,110,797	1,967,114
Operating Statement						
Operating Revenues	558,483	601,801	610,988	639,974	676,867	670,820
Non-Operating Revenues Available for Debt Service	4,659	3,334	12,079	4,207	3,732	5,850
Connection Fees	2,038	—	—	—	—	—
Total Revenues Available for Debt Service	**565,180**	**605,135**	**623,067**	**644,181**	**680,599**	**676,670**
Operating Expenditures (Excluding Depreciation)	337,241	328,289	366,789	383,019	406,786	413,894
Depreciation	86,924	92,113	89,045	90,523	103,763	101,711
Fitch-Calculated Operating Income	**141,015**	**184,733**	**167,233**	**170,639**	**170,050**	**161,065**
Net Revenues Available for Debt Service	**227,939**	**276,846**	**256,278**	**261,162**	**273,813**	**262,776**
All-In Annual Debt Service (ADS)	185,500	192,400	201,000	201,710	205,270	219,304
Financial Statistics						
All-In ADS (x)	1.23	1.44	1.28	1.29	1.33	1.20
Days Cash on Hand	274	324	244	268	270	265
Days Working Capital	115	136	179	197	201	179
Debt/Net Plant (%)	92	94	91	93	98	88
Outstanding Long-Term Debt Per Customer ($)	1,337	1,401	1,410	1,549	1,663	1,549
Free Cash/Depreciation (%)	49	92	62	66	66	43

Note: Fitch may have reclassified certain financial statement items for analytical purposes.

Source: Philadelphia and Fitch.

The ratings above were solicited by, or on behalf of, the issuer, and therefore, Fitch has been compensated for the provision of the ratings.

MOODY'S INVESTORS SERVICE

CREDIT OPINION
21 March 2017

New Issue

Rate this Research

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Philadelphia Water & Sewer Enterprise

New Issue - Moody's Assigns A1 to Philadelphia Water & Sewer Enterprise, PA's $285M Series 2017; Outlook Stable

Summary Rating Rationale

Moody's Investors Service has assigned an A1 rating to Philadelphia Water & Sewer Enterprise, PA's $285 million Water and Wastewater Revenue Bonds, Series 2017. Concurrently, Moody's has affirmed the A1 rating on $1.97 billion of outstanding parity debt. The outlook remains stable.

The A1 rating reflects the system's healthy cash position and consistent debt service coverage, as well as its large and diverse service area. These positive characteristics are moderated by a sizeable consent order and the system's aging infrastructure, both of which will require significant capital investment going forward.

Credit Strengths

» Willingness to implement required annual rate increases

» Proposed debt increases financially offset by debt service cliff in 2018

» Healthy cash reserves and newly formalized reserve policy

» Closed-loop legal framework

Credit Challenges

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

» Relatively untested rate board; 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 positive trend. Rates are approved in concert with increases to debt service, which should keep annual debt costs manageable. Engineer and financial consultant reports are required for each bond issuance, 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 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 Water and Sewer Enterprise, PA					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	22 years				
System Size - O&M (in $000s)	364,197				
Service Area Wealth: MFI % of US median	71.%				
Legal Provisions					
Rate Covenant (x)	1.20				
Debt Service Reserve Requirement	DSRF funded at MADS				
Financial Strength					
	2012	2013	2014	2015	2016
Operating Revenue ($000)	601,801	610,988	639,974	676,867	670,820
O&M ($000)	300,829	345,409	354,686	376,528	364,197
Net Funded Debt ($000)	1,667,321	1,619,397	1,716,239	1,889,599	1,746,224
Annual Debt Service Coverage (x)	1.58	1.40	1.42	1.48	1.42
Cash on Hand	371 days	260 days	289 days	292 days	300 days
Debt to Operating Revenues (x)	2.8x	2.7x	2.7x	2.8x	2.6x

Source: Moody's Investors Service

Recent Developments: Significant, Proactive Capital Improvement Plan

The Series 2017 bonds are being issued as part of a six-year Capital Improvement Plan. As of January 2017, the full cost of the program is expected to be $2.2 billion, with new bond issuance through 2022 to contribute $1.72 billion, or roughly 78%. The rest of the plan will be funded through capital reserves and pay-go spending.

About 23% of planned capital expenditures are related to the system's 2011 Consent Order & Agreement with the Pennsylvania Department of Environmental Protection (PaDEP) and the US Environmental Protection Agency (EPA). This consent order addresses the system's combined sewer overflow discharge to the Delaware and Schuylkill rivers.

To address the consent order, management has outlined a twenty-five year "Green Waters, Clean City" initiative, which utilizes green as well as traditional infrastructure expenditures to address stormwater management needs. The Department has partnered with other city departments in Philadelphia and also private business owners as part of this effort. As of fiscal 2016, the Department has met all of its initial five-year milestones.

Detailed Rating Considerations

Service Area and System Characteristic: Large and Diverse Service Area

The Philadelphia Water and Sewer Enterprise ("the system", or "the Department") serves a large and diverse urban and suburban base, consisting primarily of the City of Philadelphia (A2 negative). 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 238 MGD and 258 MGD, respectively, for 2016. 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 2016. 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, and has realized approximately $10 million in annual savings since initiating the contract.

With a population of more than 1.5 million, Philadelphia is the fifth-largest city in the US. The population is growing, albeit slowly. The growth is primarily attributable 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), Honeywell Resin & Chemicals, 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 December 2016, unemployment is 5.9% for the city, versus 4.9% for the Commonwealth as a whole and 4.5% 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 (Aa1 stable), Bucks (Aaa stable), and Delaware (Aa1) counties.

Debt Service Coverage and Liquidity: Healthy Liquidity and Consistent Debt Service Coverage

The Department's commitment over the past decade to consistently increasing rates has led to stable debt service coverage, though coverage is moderately more narrow than peers. In 2016, Moody's adjusted net revenues covered debt service by approximately 1.42 times, and has been relatively stable in the 1.4 times range 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 system's calculation, senior-lien coverage, on a legally enacted basis, was 1.24 times for fiscal 2016. Though somewhat slim versus peers, coverage is consistent even on this basis, averaging 1.23 times for the last three fiscal years.

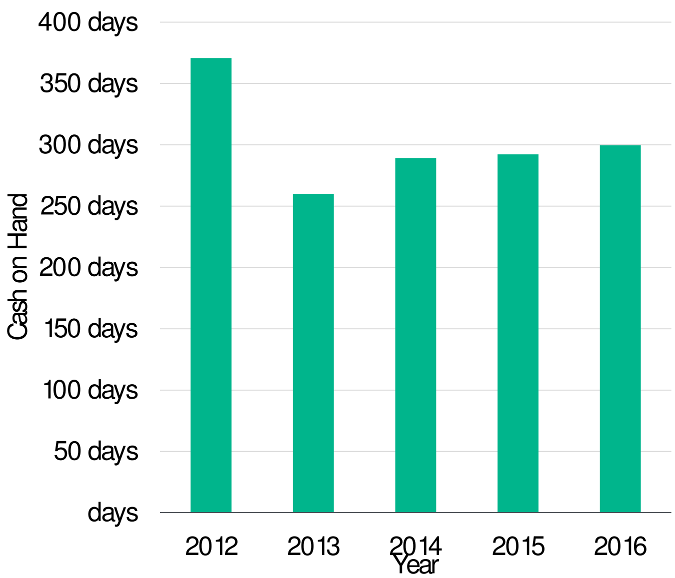
As noted, the Department's long term capital plans include significant additional debt. Based on management's five-year projections, which include a level customer base, additional annual rate increases, and modest revenue (4% average annual increase) and expenditure (3.5% average annual increase) growth, senior lien debt service coverage is expected to increase slightly from 1.25 times (fiscal 2017) to 1.30 times in fiscal 2019. Favorably, the system has a history of outperforming budgeted figures.

LIQUIDITY

The Department maintains ample liquidity. Favorably, as part of its transition to a rate board, management formalized reserve policies outside the indenture requirements, to ensure that liquidity remains strong. Management has adopted a formal a policy to maintain at least $110 million in its Rate Stabilization Fund and $15 million in its Residual Fund (adjusted for inflation). Additionally, the Department maintains Capital and Construction accounts that will be used to fund pay-go capital improvement.

At year-end 2016, total available operating cash in the Rate Stabilization and Residual funds amounted to $221 million, almost double the minimum requirement, and equating to approximately 217 day's cash on hand. In addition to these funds, the Department maintained $79 million in cash for operations during the same period. When all available cash is considered, unrestricted reserves as a percent of O&M increases to 82%, in line with national peers in the A1 rating category.

Exhibit 2



Source: Moody's Investors Service, Philadelphia Water & Sewer Enterprise CAFR 2012 - 2016

Debt and Legal Covenants

The Department's $1.97 billion of outstanding debt at year-end 2016 is manageable, but projected to grow significantly as part of its capital plan. Current debt is roughly 2.9 times revenues, and net funded debt is a significantly above average 78% of net fixed assets. Favorably, the existing debt structure is front-loaded, resulting in a debt service "cliff" in 2018, as debt service decreases from $206 million (fiscal 2017) to $156 million (fiscal 2019), a reduction of more than 30%. However, this annual savings is expected to be eliminated with the issuance of new debt in 2017 and beyond, resulting instead in relatively level debt service in the coming years.

The Department's five-year capital improvement plan, which reflects the consent order as well as other capital needs, totals $2.2 billion and is 78% debt-funded. If the capital plan is executed as currently structured, the system's debt burden will continue to grow.

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 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. Effectively, the debt service reserve is currently funded at 1.34 times MADS.

DEBT STRUCTURE

Debt is mostly fixed; there are only two variable rate issuances outstanding, with total principal of $71.4 million (4% of total debt). The 1997B bonds, with principal outstanding of $53.2 million (3% total debt), are unhedged and mature in 2027. The other variable rate series is the 2005B, with current principal outstanding of $18.18 million (1% total debt).

DEBT-RELATED DERIVATIVES

The 2005B series is hedged through a fixed-payor swap with Citigroup Financial Products. As of June 2016, the swap mark-to-market is -$1.5 million. The 2005B bonds and related swap mature in 2018.

PENSIONS AND OPEB

The city of Philadelphia 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, the city reduced its assumed rate of return on its pension plan, to 7.75% (2015) from 8.75% (2005), and increased employee contributions under current union contracts. In addition, the city recently negotiated for new DC 33 union employees to enter a stacked hybrid plan. However, the city's rate of return is still above-average when compared to other local governments, and as a result of poor market performance last year, the city revised its fiscal 2017 contribution by an additional $12 million.

The city's minimum municipal obligation (MMO) for the plan was $598.5 million for fiscal 2016, while the city's actual contribution was $660 million, or about 9% above the required amount. Of this amount, $55.1 million (8% of operating expenses) represented the contribution from the water and sewer system. The system's pension contribution has increased by $10.6 million or 28.1% over the last five years. Going forward, the system's contribution is projected to increase by another 33% to $64.3 million (9% of fiscal 2016 expenses) through fiscal 2021.

Management and Governance

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 2022.

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. Despite level rates in fiscal 2016, the board adopted a 5.1% and 4.5% increase for fiscal 2017 and 2018, respectively.

Current projections include additional rate increases through fiscal 2021, though these rates have not yet been adopted by the board.

Legal Security

The system's bonds are secured by a senior lien on the net revenues of its water and sewer systems. The bonds are on parity with PennVest state revolving fund loans. The system currently has no subordinate debt.

Use of Proceeds

Proceeds of the Series 2017 bonds will be used to fund various capital projects for the water and wastewater infrastructures of the Philadelphia Water and Sewer Enterprise system.

Obligor Profile

The Philadelphia Water & Sewer Enterprise provides water and sewer treatment service to the City of Philadelphia and some of its surrounding suburbs.

Methodology

The principal methodology used in this rating was US Municipal Utility Revenue Debt published in December 2014. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

Ratings

Exhibit 3

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

Issue	Rating
Water and Wastewater Revenue Bonds, Series 2017	A1
Rating Type	Underlying LT
Sale Amount	$285,575,000
Expected Sale Date	04/05/2017
Rating Description	Revenue: Government Enterprise

Source: Moody's Investors Service

REPORT NUMBER 1063466

Moody's
INVESTORS SERVICE

S&P Global
Ratings

RatingsDirect®

Summary:
Philadelphia; Joint Criteria; Water/Sewer

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Rationale

Outlook

Summary:

Philadelphia; Joint Criteria; Water/Sewer

Credit Profile		
US$293.295 mil wtr and wastewtr rev bnds ser 2017 due 10/01/2052		
Long Term Rating	A+/Stable	New
Philadelphia wtr & swr		
Long Term Rating	A+/Stable	Affirmed

Rationale

S&P Global Ratings assigned its 'A+' long-term rating to Philadelphia's series 2017 water and wastewater revenue bonds, affirmed its 'A+' long-term ratings and underlying ratings (SPURs) on the city's existing water and wastewater revenue, and also affirmed its 'AA+/A-1+' rating on Philadelphia's series 1997B bonds, which are jointly secured by the city and the letter of credit (LOC) 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 city will use the series 2017 bond proceeds to finance capital improvements to its water and wastewater system.

The 'A+' rating is based on the following characteristics:

- A very strong enterprise risk profile generally reflecting a broad and diverse service base and rates we view as affordable,
- A very strong financial risk profile primarily supported by a large available rate stabilization fund and debt service coverage (DSC) that exceeds covenanted minimum levels, and
- "Strong" operational and financial management assessments (OMA, FMA), reflecting robust policies and procedures that are well-embedded.

We view as credit weaknesses the following:

- Income levels for Philadelphia city and county that are measurably weaker than surrounding areas, and
- A sizable capital improvement plan (CIP) combined with an already high debt-to-capitalization ratio.

Securing debt service are net revenues of the water and sewer fund, which includes (net of operating expenses) rates and charges of the system, transfers from the rate stabilization fund, and interest earnings. Rates must be set to generate revenues and charges plus transfers from the rate stabilization fund 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. As long as Assured Guaranty Municipal Corp. (AGM; formerly FSA) insures any of the city's 2005A, 2005B, and a portion of the 2010A bonds, it requires that the city maintain net system revenues (excluding transfers from the rate stabilization fund) 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 rate stabilization fund. This provision also applies to the additional bonds test.

Philadelphia's combined water and sewer system is highly leveraged and the $2.2 billion 2018-2023 CIP is likely to require significant additional debt funding. 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 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 4% of the city's water and sewer revenue debt outstanding at the end of the 2016 fiscal year is variable rate, and just 3% remains unhedged after taking into account a floating-to-fixed interest rate swap related to the city's 2005B bonds (notional amount of $18.2 million); these bonds have been purchased by Bank of America pursuant to a variable-rate securities agreement that expires at bond maturity in 2018 and payable at 68.5% of LIBOR. The swap counterparty is Citigroup Inc. Under the swap, the city receives the 2005B bond rate or 68.5% of LIBOR and pays a fixed rate of 4.53%. The additional termination event for the counterparty and city are the same: if the ratings fall below 'A-'. As long as AGM insures the city's swap payments, no termination event based on the city's water and wastewater rating can occur as long as we rate AGM at least 'A'. Counterparty risk is somewhat elevated since we rate Citigroup 'A-/Negative'. The city, however, maintains the option of terminating the swap if Citigroup's ratings fall below the rating trigger; according to management, there are no current plans to change counterparties or terminate the swap.

Enterprise and financial risk profiles

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, but also serve 12 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 2016. 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.

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 5.9% for December 2016, 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 72% of national levels; meanwhile, we consider combined metropolitan area median household incomes good at 114% of the national average. Portions of Bucks, Delaware, and Montgomery counties are part of the service base, which 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. Since 2006, management has generally been raising rates by about 4%-7%, including the last 4.5% increase effective July 1, 2017. Management estimates that the average monthly combined bill currently totals $74.06 for 600 cubic feet of use.

Despite generally stable financial performance, the city does rely on periodic draws on its rate stabilization fund (RSF) to support operations. During the prior three fiscal years, it drew $1.6 million from its RSF 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 periodically on RSF draws to meet its minimum coverage requirements, but the projections do not indicate the balance dropping below $174 million.

As reported on an unaudited basis, the system has been able to meet its targeted coverage of debt service by 1.2x. Management can reach this 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. On an audited basis, DSC has also generally remained at or above this 1.2x figure, and we calculate DSC for the fiscal year ended June 30, 2016 at 1.2x. We base our calculation on net audited operating revenues backing out depreciation and including miscellaneous non-operating revenues and expenses, and debt service on all revenue bonds and Pennvest loans. While operating transfers out for cost reimbursement to other departments is subtracted from net available for debt service, we do not count rate stabilization 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 (totaling $551 million at 2016 fiscal year-end) can all can 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.

We view both the operational and financial management policies for the water department as strong and well-embedded. The city has a full asset management program that helps inform its CIP project prioritization, good communication to ratepayers, related especially to implementation of its long-term control plan, green infrastructure projects, and rate plans; consistent rate adjustments through an independent rate board; and generally overall strong financial management practices applied to all its financial operations.

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 socio-economic 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, at least within the two-year outlook horizon, given the city's large amount of capital and debt needs that we believe will support future financial performance more likely to be in line with what the current projections show, which is generally steady improvement in financial metrics as opposed to significant changes compared to historical trends.

Downside scenario

If financial metrics deteriorate, 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 March 22, 2017)		
Philadelphia wtr & wastewtr (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & swr		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & wastewtr		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & wastewtr VRDB - 1997B		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Long Term Rating	AA+/A-1+	Affirmed

Many issues are enhanced by bond insurance.

Certain terms used in this report, particularly certain adjectives used to express our view on rating relevant factors, have specific meanings ascribed to them in our criteria, and should therefore be read in conjunction with such criteria. Please see Ratings Criteria at www.standardandpoors.com for further information. Complete ratings information is available to subscribers of RatingsDirect at www.globalcreditportal.com. All ratings affected by this rating action can be found on the S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
13 July 2017

New Issue

Rate this Research

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Philadelphia Water & Sewer Enterprise, PA

New Issue - Moody's Assigns A1 to Philadelphia Water & Sewer Enterprise, PA's $152.52M Series 2017B; Outlook Stable

Summary Rating Rationale

Moody's Investors Service assigns an A1 rating to Philadelphia Water & Sewer Enterprise, PA's $152.52 million Water and Wastewater Revenue Refunding Bonds, Series 2017B. Concurrently, Moody's maintains the A1 rating on $2.0 billion of outstanding parity debt. The outlook remains stable.

The A1 rating reflects the system's healthy cash position and consistent debt service coverage, as well as its large and diverse service area. These positive characteristics are moderated by a sizeable consent order and the system's aging infrastructure, both of which will require significant capital investment going forward.

Credit Strengths

» Willingness to implement required annual rate increases

» Proposed debt increases financially offset by debt service cliff in 2018

» Healthy cash reserves and newly formalized reserve policy

» Closed-loop legal framework

Credit Challenges

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

» Relatively untested rate board; 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 positive trend. Rates are approved in concert with increases to debt service, which should keep annual debt costs manageable. Engineer and financial consultant reports are required for each bond issuance, 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 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) Water and Sewer Enterprise, PA					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	22 years				
System Size - O&M (in $000s)	364,197				
Service Area Wealth: MFI % of US median	71.00%				
Legal Provisions					
Rate Covenant (x)	1.20x				
Debt Service Reserve Requirement	DSRF funded at MADS				
Financial Strength					
	2012	2013	2014	2015	2016
Operating Revenue ($000)	601,801	610,988	639,974	676,867	670,820
System Size - O&M (in $000s)	300,829	345,409	354,686	376,528	364,197
Net Funded Debt ($000)	1,667,321	1,619,397	1,716,239	1,889,599	1,746,224
Annual Debt Service Coverage (x)	1.58x	1.40x	1.42x	1.48x	1.42x
Cash on Hand	98 days	87 days	73 days	78 days	79 days
Debt to Operating Revenues (x)	2.8x	2.7x	2.7x	2.8x	2.6x

Source: Moody's Investors Service and Philadelphia Water Department

Recent Developments: Significant, Proactive Capital Improvement Plan

The Series 2017B bonds are being issued as part of a six-year Capital Improvement Plan. As of January 2017, the full cost of the program is expected to be $2.2 billion, with new bond issuance through 2022 to contribute $1.72 billion, or roughly 78%. The rest of the plan will be funded through capital reserves and pay-go spending.

About 23% of planned capital expenditures are related to the system's 2011 Consent Order & Agreement with the Pennsylvania Department of Environmental Protection (PaDEP) and the US Environmental Protection Agency (EPA). This consent order addresses the system's combined sewer overflow discharge to the Delaware and Schuylkill rivers.

To address the consent order, management has outlined a twenty-five year "Green Waters, Clean City" initiative, which utilizes green as well as traditional infrastructure expenditures to address stormwater management needs. The Department has partnered with other city departments in Philadelphia and also private business owners as part of this effort. As of fiscal 2016, the Department has met all of its initial five-year milestones.

Detailed Rating Considerations

Service Area and System Characteristics: Large and Diverse Service Area

The Philadelphia Water and Sewer Enterprise ("the system", or "the Department") serves a large and diverse urban and suburban base, consisting primarily of the City of Philadelphia (A2 negative). 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 238 MGD and 258 MGD, respectively, for 2016. 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 2016. 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, and has realized approximately $10 million in annual savings since initiating the contract.

With a population of more than 1.57 million, Philadelphia is the sixth-largest city in the US. The population is growing, albeit slowly. The growth is primarily attributable 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), Honeywell Resin & Chemicals, 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 2017, unemployment is 6.7% for the city, versus 5.2% for the Commonwealth as a whole and 4.1% 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 (Aa1 stable), Bucks (Aaa negative), and Delaware (Aa1) counties.

Debt Service Coverage and Liquidity: Healthy Liquidity and Consistent Debt Service Coverage

The Department's commitment over the past decade to consistently increase rates has lead to stable debt service coverage, though coverage is moderately more narrow than peers. In 2016, Moody's adjusted net revenues covered debt service by approximately 1.42 times, and has been relatively stable in the 1.4 times range 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 system's calculation, senior-lien coverage, on a legally enacted basis, was 1.24 times for fiscal 2016. Though somewhat slim versus peers, coverage is consistent even on this basis, averaging 1.23 times for the last three fiscal years.

As noted, the Department's long term capital plans include significant additional debt. Based on management's five-year projections, which include a level customer base, additional annual rate increases, and modest revenue (4% average annual increase) and expenditure (3.5% average annual increase) growth, senior lien debt service coverage is expected to increase slightly from 1.25 times (fiscal 2017) to 1.30 times in fiscal 2019. Favorably, the system has a history of outperforming budgeted figures.

As of June 2017, operating results, as projected by a consulting engineer, reflect net revenues available for debt service to be approximately $257 million, a decline of roughly 6% from actual fiscal 2016 results. Management has traditionally adhered to conservative budget projections, and expects actual results to exceed the consulting engineers projections for FY17. Senior lien debt service coverage is expected to be maintained at about 1.25 times.

LIQUIDITY

The Department maintains ample liquidity. Favorably, as part of its transition to a rate board, management formalized reserve policies outside the indenture requirements, to ensure that liquidity remains strong. Management has adopted a formal a policy to maintain at least $110 million in its Rate Stabilization Fund and $15 million in its Residual Fund (adjusted for inflation). Additionally, the Department maintains Capital and Construction accounts that will be used to fund pay-go capital improvement.

At year-end 2016, total available operating cash in the Rate Stabilization and Residual funds amounted to $221 million, almost double the minimum requirement, and equated to approximately 217 day's cash on hand. In addition to these funds, the Department maintained $79 million in cash for operations during the same period. When all available cash is considered, unrestricted reserves as a percent of O&M increases to 82%, in line with national peers in the A1 rating category.

Debt and Legal Covenants

The Department's $1.97 billion of outstanding debt at year-end 2016 is manageable, but projected to grow significantly as part of its capital plan. Current debt is roughly 2.9 times revenues, and net funded debt is a significantly above average 78% of net fixed assets. Favorably, the existing debt structure is front-loaded, resulting in a debt service "cliff" in 2018, as debt service decreases from $206 million (fiscal 2017) to $156 million (fiscal 2019), a reduction of more than 30%. However, this annual savings is expected to be eliminated with the issuance of new debt in 2017 and beyond, resulting instead in relatively level debt service in the coming years.

The Department's five-year capital improvement plan, which reflects the consent order as well as other capital needs, totals $2.2 billion and is 78% debt-funded. If the capital plan is executed as currently structured, the system's debt burden will continue to grow.

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 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. Effectively, the debt service reserve is currently funded at 1.34 times MADS.

DEBT STRUCTURE

Debt is mostly fixed; there are only two variable rate issuances outstanding, with total principal of $71.4 million (4% of total debt). The 1997B bonds, with principal outstanding of $53.2 million (3% total debt), are unhedged and mature in 2027. The other variable rate series is the 2005B, with current principal outstanding of $18.18 million (1% total debt).

DEBT-RELATED DERIVATIVES

The 2005B series is hedged through a fixed-payor swap with Citigroup Financial Products. As of June 2016, the swap mark-to-market is -$1.5 million. The 2005B bonds and related swap mature in 2018.

PENSIONS AND OPEB

The city of Philadelphia 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, the city reduced its assumed rate of return on its pension plan, to 7.75% (2015) from 8.75% (2005), and increased employee contributions under current union contracts. In addition, the city recently negotiated for new DC 33 union employees to enter a stacked hybrid plan. However, the city's rate of return is still above-average when compared to other local governments, and as a result of poor market performance last year, the city revised its fiscal 2017 contribution by an additional $12 million.

The city's minimum municipal obligation (MMO) for the plan was $598.5 million for fiscal 2016, while the city's actual contribution was $660 million, or about 9% above the required amount. Of this amount, $55.1 million (8% of operating expenses) represented the contribution from the water and sewer system. The system's pension contribution has increased by $10.6 million or 28.1% over the last five years. Going forward, the system's contribution is projected to increase by another 33% to $64.3 million (9% of fiscal 2016 expenses) through fiscal 2021.

Management and Governance

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 2022.

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. Despite level rates in fiscal 2016, the board adopted a 5.1% and 4.5% increase for fiscal 2017 and 2018, respectively.

Current projections include additional rate increases through fiscal 2021, though these rates have not yet been adopted by the board.

Legal Security

The system's bonds are secured by a senior lien on the net revenues of its water and sewer systems. The bonds are on parity with PennVest state revolving fund loans. The system currently has no subordinate debt.

Use of Proceeds

Proceeds of the Series 2017B bonds will be used to currently refund the outstanding Water & Wastewater Revenue Refunding Bonds, Series 2007B, and to refund on an advanced basis portions of the outstanding Water & Wastewater Revenue bonds Series 2010C and Series 2012. The city expects net present value savings of approximately $23 million or 15% of refunded principal.

Obligor Profile

The Philadelphia Water & Sewer Enterprise provides water and sewer treatment service to the City of Philadelphia and some of its surrounding suburbs.

Methodology

The principal methodology used in this rating was US Municipal Utility Revenue Debt published in December 2014. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

Ratings

Exhibit 2

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

Issue	Rating
Water and Wastewater Revenue Refunding Bonds, Series 2017B	A1
Rating Type	Underlying LT
Sale Amount	$152,520,000
Expected Sale Date	08/10/2017
Rating Description	Revenue: Government Enterprise

Source: Moody's Investors Service

REPORT NUMBER 1079786

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

Fitch Ratings-New York-13 July 2017: Fitch Ratings has assigned an 'A+' rating to the following Philadelphia, PA (the city) revenue bonds:

--Approximately $152 million water and wastewater revenue refunding bonds, series 2017B.

The city expects to sell the bonds in a negotiated sale the week of July 24. Proceeds will be used to current-refund all or a portion of the city's outstanding series 2007B and advance-refund all or a portion of the outstanding series 2010C and 2012 bonds for savings and pay issuance costs. The majority of the savings, which will be taken annually, are expected to occur at the end of the scheduled amortization through 2032.

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: PWD generates narrow but consistent financial margins. Fitch-calculated all-in debt service coverage (DSC) has averaged 1.3x over the past five years and was just 1.2x in fiscal 2016. While below Fitch's median for the rating category, PWD's consistency in setting rates annually to achieve 1.3x DSC and healthy liquidity levels support the 'A+' rating.

SIGNIFICANT LONG-TERM CAPITAL NEEDS: PWD's capital improvement program (CIP) totals $2.2 billion through 2023. Longer-term capital needs are substantial, a result of required consent order projects and long-term maintenance needs associated with the city's aging infrastructure. Terms and conditions under the consent order provide the city with some flexibility as to its affordability and projected timeline.

DEBT BURDEN TO RISE: Debt levels are currently manageable but will increase significantly with sizeable additional borrowing expected to fund 80% of PWD's long-term capital needs.

CONSISTENT ANNUAL RATE INCREASES: PWD regularly raises water and sewer rates to support the increased capital spending and to achieve 1.3x DSC. Rates have risen by around 5% on average over the past decade. Rates are affordable but expected to continue trending higher to fund long-term capital improvements.

ECONOMIC CHARACTERISTICS REMAIN MIXED: The service area is highly diverse and well anchored by a broad and stable economy. However, low income levels and high unaccounted-for water persist, contributing to historically below-average collection rates. However, implementation of automatic meters and other programs have led to improvement in both areas over the past few years.

RATING SENSITIVITIES

INSUFFICIENT RATE RECOVERY: The Stable Outlook reflects Fitch's expectation that consistent rate action will be taken to support planned capital spending. However, if Philadelphia Water Department experiences any difficulty in achieving timely and sufficient rate recovery, financial margins could decline, which would likely prompt negative rating action.

CREDIT PROFILE

LARGE, DIVERSE CUSTOMER BASE

PWD 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 9.9% of fiscal 2016 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. Available water supplies from the Delaware and Schuylkill rivers are sufficient for the foreseeable future.

SOUND FINANCIAL MANAGEMENT, CONSISTENT OPERATING RESULTS

Fitch considers the system's financial operations to be well managed, despite historically narrow DSC levels. Management budgets to meet a 1.3x DSC target, which in some years requires transfers from the department's rate stabilization fund (RSF) to balance lower projected cash flow amounts.

Operating results for fiscal 2016 were in line with prior projections, continuing a consistent trend of satisfactory financial performance. DSC declined slightly to 1.2x from fiscal 2015's 1.3x, leaving the RSF largely unchanged at $205.7 million, or 265 days cash on hand. Fitch's DSC calculation incorporates below-the-line transfers out of the water and sewer fund related to various contractual obligations.

Updated projected financial results provided by PWD's rate consultant show a continued trend of low but stable coverage, and acceptable liquidity levels through fiscal 2022. DSC net of RSF transfers, but including one-time moneys released from the debt service reserve as a result of this refunding, is forecast to remain in the relatively weak range of 1.14x-1.25x in fiscals 2017 and 2018. In fiscals 2019-2022, the city's forecast shows DSC remaining steadily in the range of 1.2x-1.3x (not including RSF transfers). With sizeable long-term capital spending needs and cost recovery expected to remain steady, stronger financial results are not anticipated.

RSF balances are anticipated to decline with a projected ending balance in 2022 of $160 million. While liquidity will fluctuate somewhat over the next few years, Fitch expects PWD to sustain cash at levels generally consistent with the current rating.

Assumptions built into the forecast appear reasonable, although anticipated future rate increases will depend on rate board approval for rates beyond 2018. The rate board's approval of increases for fiscals 2017 and 2018 are viewed positively by Fitch and its role in rate approval is largely viewed to be neutral to the rating at this time. Modest declines in consumption are incorporated into the projections, and no additional growth in customer accounts is assumed.

ENVIRONMENTAL REGULATIONS, R&R DRIVE LARGE CAPITAL PROGRAM

The city continues to operate under a consent order and agreement (COA) that was 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 to alternative, likely more costly strategies.

Typical of most large, older urban utilities facing combined sewer overflow mitigation and long-term renewal and replacement issues, PWD's CIP is substantial. Projected capital spending spanning fiscal years 2018-2023 totals $2.2 billion, or $366 million on average per year, and is over 20% higher than the CIP two years earlier. As only roughly 22% of the current CIP addresses CAO projects, and infrastructure renewal and replacement (R&R) needs are expected to be ongoing, Fitch expects capital spending will further increase over the intermediate term.

DEBT BURDEN TO RISE

Prior to this 2017 issuance, PWD has roughly $2 billion of mostly fixed-rate long-term revenue bonds and $220 million in Pennsylvania Infrastructure Investment Authority (PENNVEST) loans outstanding. The utility's ratio of debt to net plant totaled 88% in fiscal 2016 and is just above Fitch's rating category median of 76%.

Debt to funds available for debt service (FADS) was 7.5x as compared to the Fitch rating category median of 9.1x. Debt per customer, which includes an approximation of the number of retail customers served through wholesale contract, remains below the median for 'A' category at approximately $1,549 in 2016. However, Fitch expects all debt metrics to rise over time.

PWD relies heavily on long-term debt as a funding source, primarily the result of narrow DSC margins that yield modest amounts of excess cash flow. Approximately 83% of project costs over the next six years will be financed with debt with annual bond issuances projected to average roughly $316 million annually through 2023.

With long-term capital needs escalating, Fitch anticipates the amount of future debt will continue to outpace the rate of amortization of bonds outstanding, leading to a steady rise in leverage over time. Fitch believes the continued escalation in the size of the CIP coupled with a strategy of funding capital costs almost entirely with long-term debt could further pressure financial margins.

CONSISTENT RATE ACTION

Financial margins have remained consistent as a result of regular annual rate action. The five-member rate board, established in 2014 with members appointed by the mayor and approved by the city council, has full rate-setting authority. In 2016, the rate board approved 5.1% and 4.5% increases for fiscals 2017 and 2018, respectively. Management reports that the rate approval process with the new rate board was timely and smooth.

The city expects to begin the process for the next rate approval later this year with the expectation for new rates to be adopted by the start of fiscal 2019. Fitch believes PWD's ability to continue to enact needed rate increases to support planned capital spending is unchanged under the new process.

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. Weak income levels persist, as the city's 26.7% poverty rate remains nearly twice the national rate and median household income 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
Revenue-Supported Rating Criteria — Effective June 16, 2014 to June 5, 2017 (pub. 16 Jun 2014)
https://www.fitchratings.com/site/re/750012
U.S. Water and Sewer Revenue Bond Rating Criteria (pub. 30 Nov 2016)
https://www.fitchratings.com/site/re/890402

S&P Global
Ratings

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Summary:

Philadelphia; Joint Criteria; Water/Sewer

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Rationale

Outlook

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Summary:

Philadelphia; Joint Criteria; Water/Sewer

Credit Profile		
US$145.435 mil wtr and wastewtr rev rfdg bnds ser 2017B due 11/01/2031		
Long Term Rating	A+/Stable	New
Philadelphia wtr & wastewtr (BAM)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr (BAM) (SECMKT)		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & swr		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Long Term Rating	A+/Stable	Affirmed
Philadelphia wtr & wastewtr		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Philadelphia wtr & wastewtr VRDB - 1997B		
Unenhanced Rating	A+(SPUR)/Stable	Affirmed
Long Term Rating	AA+/A-1+	Affirmed

Many issues are enhanced by bond insurance.

Rationale

S&P Global Ratings assigned its 'A+' long-term rating to Philadelphia's series 2017B water and wastewater revenue refunding bonds, affirmed its 'A+' long-term ratings and underlying ratings (SPURs) on the city's existing water and wastewater revenue bonds, and also affirmed its 'AA+/A-1+' rating on Philadelphia 's series 1997B bonds, which are jointly secured by the city and the letter of credit (LOC) 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 city will use the series 2017 bond proceeds to refund the existing 2007B bonds and advance refund the series 2010C and series 2012 bonds.

The 'A+' rating is based on the following characteristics:

- A very strong enterprise risk profile generally reflecting a broad and diverse service base and rates we view as affordable;
- A very strong financial risk profile primarily supported by a large available rate stabilization fund and debt service coverage (DSC) that exceeds covenanted minimum levels; and
- "Strong" operational and financial management assessments (OMA, FMA), reflecting robust policies and procedures that are well-embedded.

We view as credit weaknesses the following:

- Income levels for Philadelphia city and county that are measurably weaker than surrounding areas, and
- A sizable capital improvement plan (CIP) combined with an already high debt-to-capitalization ratio.

Securing debt service are net revenues of the water and sewer fund, which includes (net of operating expenses) rates and charges of the system, transfers from the rate stabilization fund, and interest earnings. Rates must be set to generate revenues and charges plus transfers from the rate stabilization fund 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. As long as Assured Guaranty Municipal Corp. (AGM; formerly FSA) insures any of the city's 2005A, 2005B, and a portion of the 2010A bonds, it requires that the city maintain net system revenues (excluding transfers from the rate stabilization fund) 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 rate stabilization fund. This provision also applies to the additional bonds test.

Philadelphia's combined water and sewer system is highly leveraged and the $2.2 billion 2018-2023 CIP is likely to require significant additional debt funding. 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 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 4% of the city's water and sewer revenue debt outstanding at the end of the 2016 fiscal year is variable rate, and just 3% remains unhedged after taking into account a floating-to-fixed interest rate swap related to the city's 2005B bonds (notional amount of $18.2 million); these bonds have been purchased by Bank of America pursuant to a variable-rate securities agreement that expires at bond maturity in 2018 and payable at 68.5% of LIBOR. The swap counterparty is Citigroup Inc. Under the swap, the city receives the 2005B bond rate or 68.5% of LIBOR and pays a fixed rate of 4.53%. The additional termination event for the counterparty and city are the same: if the ratings fall below 'A-'. As long as AGM insures the city's swap payments, no termination event based on the city's water and wastewater rating can occur as long as we rate AGM at least 'A'. Counterparty risk is somewhat elevated because we rate Citigroup 'BBB+/Stable'. The city maintains the option of terminating the swap as the rating is below the trigger; according to management, there are no current plans to change counterparties or terminate the swap.

Enterprise and financial risk profiles

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, but also serve 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 2016. 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.

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 6.2% for May 2017, 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 73% of national levels; meanwhile, we consider combined metropolitan area median household incomes good at 114% of the national average. Portions of Bucks, Delaware, and Montgomery counties are part of the service base, which 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. Since 2006, management has generally been raising rates by about 4%-7%, including the last 4.5% increase effective July 1, 2017. Management estimates that the average monthly combined bill currently totals $74.06 for 600 cubic feet of use. Due to the size of the capital plan and the customer profile, affordability will be pressured in the coming years; however, the department is introducing a Tiered Assistance Program, which may help alleviate these pressures for low-income residents.

Despite generally stable financial performance, the city does rely on periodic draws on its rate stabilization fund (RSF) to support operations. In the last three fiscal years, it drew $1.6 million from its RSF 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 periodically on RSF draws to meet its minimum coverage requirements, but the projections do not indicate the balance dropping below $149 million.

As reported on an unaudited basis, the system has been able to meet its 1.2x target for debt service coverage. Management can reach this 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. On an audited basis, DSC has also generally remained at or above this 1.2x figure, and we calculate DSC for the fiscal year ended June 30, 2016, at 1.2x without RSF support. We base our calculation on net audited operating revenues backing out depreciation and including miscellaneous non-operating revenues and expenses, and debt service on all revenue bonds and Pennvest loans. While operating transfers out for cost reimbursement to other departments is subtracted from net available for debt service, we do not count rate stabilization 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 (totaling $551 million at 2016 fiscal year-end) can all can 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.

We view both the operational and financial management policies for the water department as strong and well-embedded. The city has a full asset management program that helps inform its CIP project prioritization, good communication to ratepayers, related especially to implementation of its long-term control plan, green infrastructure projects, and rate plans; consistent rate adjustments through an independent rate board; and generally overall strong financial management practices applied to all its financial operations.

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 socio-economic 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, 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 financial metrics deteriorate, 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.

Schedule ML-5

Water Fund Projection Summary

Schedule ML5

Table 1
City of Philadelphia
Water Operating Fund
Fund Balance Summary

Category	FY'16 Year-End Final	FY'17 Year-End Preliminary	*FY'18 B&V Projected Rate Case Decision*	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
REVENUES									
Locally Generated Non - Tax Revenues	678,161,586	719,236,865	*706,177,638*	751,425,000	728,978,000	749,401,000	773,810,000	816,748,000	865,398,000
Other Governments	744,461	1,407,828	*1,000,000*	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Revenue from Other Funds of City - Rate Stabilization Fund	1,629,332	4,563,392	*42,700,000*	12,200,000	11,400,000	21,200,000	11,100,000	3,900,000	700,000
Total Revenues and Other Sources	**680,535,378**	**725,208,085**	***749,877,638***	**764,625,000**	**741,378,000**	**771,601,000**	**785,910,000**	**821,648,000**	**867,098,000**

Category	FY'16 Year-End Final	FY'17 Year-End Preliminary	*FY'18 B&V Projected Rate Case Decision*	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
OBLIGATIONS / APPROPRIATIONS									
Personal Services	118,414,774	125,010,183	*133,888,818*	133,333,000	137,250,000	141,951,000	146,723,000	151,565,000	156,111,000
Personal Services - Pension (MMO)	46,646,526	68,914,800	*67,631,078*	73,522,000	75,742,000	78,093,000	79,290,000	80,529,000	82,123,000
Personal Services - Other Employee Benefits	59,744,688	52,651,923	*49,625,900*	54,998,000	58,339,000	61,192,000	64,113,000	67,148,000	70,350,000
Sub-Total Employee Compensation	224,805,988	246,576,906	*251,145,796*	261,853,000	271,331,000	281,236,000	290,126,000	299,242,000	308,584,000
Purchase of Services	124,873,757	146,179,730	*144,188,375*	142,909,000	152,014,000	156,254,000	160,636,000	165,250,000	169,956,000
Purchases of Services - Electricity	20,101,556	18,252,847	*22,474,933*	18,385,000	18,385,000	18,385,000	18,937,000	19,505,000	20,090,000
Purchases of Services - Gas	4,013,405	3,176,527	*5,386,827*	4,735,000	4,924,000	4,925,000	5,072,000	5,224,000	5,381,000
Sub-Total Purchase of Services	148,988,718	167,609,104	*172,050,135*	166,029,000	175,323,000	179,564,000	184,645,000	189,979,000	195,427,000
Materials, Supplies and Equipment	24,425,002	27,893,295	*28,397,761*	28,136,000	28,294,000	28,454,000	28,615,000	28,777,000	28,940,000
Materials - Chemicals	21,096,651	18,728,508	*23,657,780*	20,527,000	21,903,000	22,736,000	22,963,000	23,192,000	23,424,000
Sub Total -Materials, Supplies and Equipment	45,521,653	46,621,803	*52,055,541*	48,663,000	50,197,000	51,190,000	51,578,000	51,969,000	52,364,000
Contributions, Indemnities and Taxes	5,440,820	7,352,314	*6,037,000*	5,141,000	5,641,000	5,641,000	5,641,000	5,641,000	5,641,000
Debt Service	219,132,799	206,390,425	*223,661,499*	220,026,000	199,579,000	208,458,000	208,783,000	225,221,000	248,951,000
Transfer to Escrow		9,507,288		19,000,000					
Sub Total Debt Service	219,132,799	*215,897,713*	*223,661,499*	239,026,000	199,579,000	208,458,000	208,783,000	225,221,000	248,951,000
Advances and Miscellaneous Payments	-	-		-	-	-	-	-	-
Payment to Other Funds - Net of Payment to Rate Stabilization Fund	60,733,243	65,700,000	*68,680,351*	67,913,000	62,547,000	69,364,000	69,632,000	74,754,000	81,971,000
Payments to Other Funds - Rate Stabilization Fund	-	-		-	-	-	-	-	-
Total Obligations / Appropriations	**704,623,222**	**749,757,840**	***773,630,322***	**788,625,000**	**764,618,000**	**795,453,000**	**810,405,000**	**846,806,000**	**892,938,000**
Operating Surplus / (Deficit)	**(24,087,843)**	**(24,549,755)**	***(23,752,684)***	**(24,000,000)**	**(23,240,000)**	**(23,852,000)**	**(24,495,000)**	**(25,158,000)**	**(25,840,000)**
OPERATIONS IN RESPECT TO PRIOR FISCAL YEARS									
Net Adjustments - Prior Year (Liquidated Encumbrance)	24,087,843	24,549,755	*23,752,684*	24,000,000	23,240,000	23,852,000	24,495,000	25,158,000	25,840,000
Total Net Adjustments	**24,087,843**	**24,549,755**	***23,752,684***	**24,000,000**	**23,240,000**	**23,852,000**	**24,495,000**	**25,158,000**	**25,840,000**
Year End Balance	**0**	**0**	***0***	**0**	**0**	**0**	**0**	**0**	**0**

- Source for Projected FY 2018 to FY 2023 is Black and Veatch financial plan.
- Total Revenues and Other Sources as projected for FY 2017 to FY 2023 align with Exhibit BV- E1, Table C-1, line number 16 + line number 20 (excluding transfers to RSF) .
- Total Obligations / Appropriations as projected for FY 2017 to FY 2023 minus liquidated encumbrances align with Exhibit BV-E1, Table C-1, line number 19 + line 20 (excluding transfers from RSF) + line number 31+ line number 32 - line number 36.

Category PAYMENTS TO OTHER FUNDS	FY'16 Year-End Final	FY'17 Year-End Preliminary	*FY'18 B&V Projected Rate Case Decision*	FY'18 B&V Projected	FY'19 B&V Projected	FY'20 B&V Projected	FY'21 B&V Projected	FY'22 B&V Projected	FY'23 B&V Projected
Payment to Other Funds - Net of Payment to Rate Stabilization Fund									
Capital Account Deposit	21,496,800.00	22,302,330	*22,289,000*	23,061,000	35,767,000	36,983,000	38,241,000	39,541,000	40,885,000
Residual Fund Transfer to Capital	31,136,257.36	31,300,606	*35,944,000*	38,421,000	20,188,000	25,625,000	24,466,000	28,115,000	33,810,000
Transfer to GF for Services	8,100,186.00	12,097,064	*10,444,000*	6,431,000	6,592,000	6,756,000	6,925,000	7,098,000	7,276,000
Total	60,733,243	65,700,000	*68,677,000*	67,913,000	62,547,000	69,364,000	69,632,000	74,754,000	81,971,000

Schedule ML-6

Memorandum from Financial Advisory

Memorandum

February 9, 2018

TO: City of Philadelphia Water Department
FROM: Katherine Clupper, Managing Director, Public Financial Management
RE: Discussion of Water Department Financial Policies and Metrics

Purpose & Outline of Testimony

The purpose of this testimony is to provide expert testimony related to the financial policies of the Philadelphia Water Department ("PWD" or "Department") with regards to maintaining certain financial metrics identified by the Department and how those policies should be strongly considered in the current rate hearing. These metrics are, in my opinion, critical to a strong credit profile and the sustainability of the system by insuring robust liquidity levels which will provide protection from unforeseen financial events. These financial metrics also insure the Department maintains the necessary credit rating to successfully enter the bond market and achieve a cost of capital that benefits rate payers. In reviewing and discussing these policies, I am relying on my experience, PFM's national water & sewer experience, credit agency views, and industry best practices.[1] In preparing this memorandum, I have also reviewed and examined materials provided by the Department, reports and publications from the rating agencies, and comparative information on peer water and sewer systems.

The projected revenue and revenue requirements presented by the City's Consulting Engineer, Black & Veatch, assume, among other factors, rate increases that will allow the City to comply with the certain PWD financial policies discussed below. These policies were developed to position the PWD with adequate debt service coverage and cash reserves required to address capital needs aimed at maintaining assets and insuring regulatory

[1] PFM is a registered municipal advisor with the MSRB and the SEC. PFM is the largest municipal advisor to public utilities in the country, including water, sewer, gas and power entities located nation-wide. PFM provides services related to entering into the capital markets, developing and implementing rating agency strategies, developing credit profiles for investor outreach, debt structuring and managing, and transaction management. PFM has served as financial advisor to the Water Department and numerous other water and sewer clients over the years, including City of Baltimore Water & Sewer Enterprise, North Penn Water Authority, Pittsburgh Water & Sewer Authority, the City of Wilmington Sewer Enterprise, New Jersey Trust, and DC WASA.

compliance. Additionally, PWD has implemented several stormwater credit and affordability programs to better manage ongoing rate impacts. Continued resources will be required to fund these programs which will be increasingly critical as rates increase over time in response to growing capital needs. Affordability is becoming an increased focal point in the credit profile of utilities across the sector.

Importance of Financial Metrics

The critical financial metrics discussed include targeted debt service coverage, system liquidity levels measured by days cash on hand, targeted pay-go financing of capital (i.e. funding of capital from current revenues) and levels of system leverage, including measuring life of the assets to debt. I will discuss the importance of the metrics, the Department's financial trends and the resulting impact on the credit profile, and insights from the rating agencies, which include median comparisons and a review of peer systems and financial comparisons. Finally, it is my 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 their financial metrics. These are within industry norms and would be considered best practices.

Publically owned utilities have two sources of funds to address capital needs; revenues generated from rates and fees and proceeds from debt issuance. This is different from investor owned utilities, who can also rely on investor equity to fund projects in return for some level of financial return.

In each year, the PWD incur both operating and capital costs to run Water and Wastewater Systems. Utilities, like PWD, incur Capital Costs to make long-term infrastructure improvements (e.g. water main replacements, sewer replacements, pumping stations, Water & Wastewater Plant Improvements) that maintain and improve the level of service provided to customer and insure 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 to provide some contribution from rates to capital costs and avoid relying exclusively on debt financing. PFM is not aware of any major Water & Wastewater System that has relied exclusively on debt as the sole source of funding for its capital improvements over time. The excess above current costs is typically 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 in the system for the benefit of customers over time.

The PWD's bond investors also derive benefit from coverage as one of the financial ratios that indicate credit strength and provide greater assurance that there is a safety margin above minimum amount of revenues to meet ongoing principal and interest payments. Investors do not receive any of this annual coverage, only principal and interest. Coverage accrues only to the benefit of rate payers when it is used to fund a portion of the PWD's capital investments, reduce the need for future increased debt, and provide liquidity protection from unforeseen financial stresses. In other words, coverage reduces the need for financial leverage and reduces credit risk for bond investors and lenders. The reduced credit risk enables utilities, like the PWD, to sell bonds at lower interest rates and obtain credit at lower costs. The accumulation of coverage above the PWD's stated minimums requires modestly higher rates today, but leads to lower future debt payments and rates.

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 resources to continue to fund a portion of a systems capital needs with ongoing resources. Adequate coverage also insures that reserves are maintained at levels which can mitigate unforeseen expenses and capital needs or dips in expected revenue. The 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.

PWD has legal requirements of debt service coverage, which is 1.2 times coverage of senior debt, including contributions from the Rate Stabilization Fund. The Department has targeted debt service coverage to trend to 1.3 times, which is included in its Financial Plan. It should be noted that sector wide coverage is closer to 2 times (2016 Moody's medians for combined systems). Peer and rating comparisons are discussed further in the testimony, but 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 trend upward, this will provide no real ability to grow financial resources to fund the targeting pay go levels and will significantly increase debt burden. Additionally, continuing to rely on the Rate Stabilization Fund to meet debt service coverage depletes financial resources which can be critical in addressing potential economic or operational challenges.

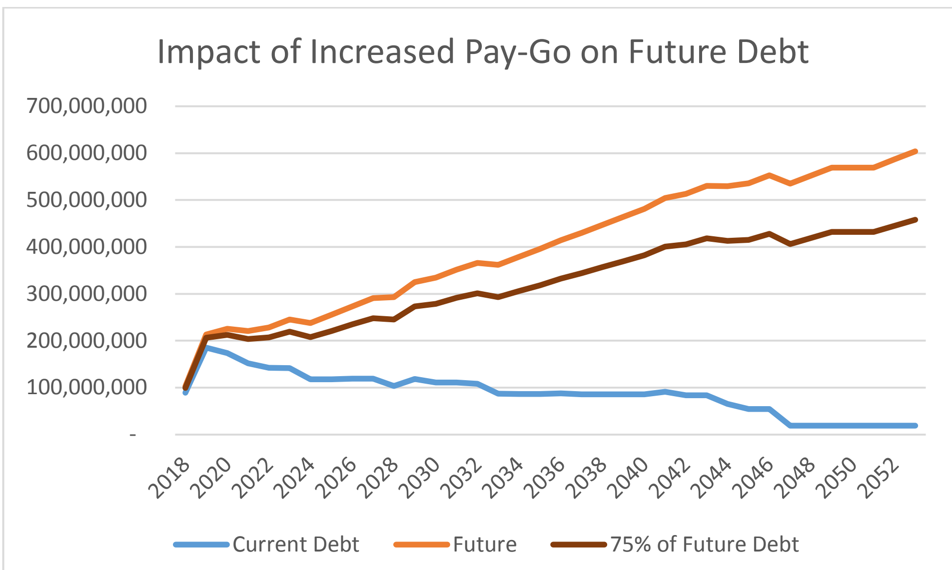
Additional Metrics for Consideration

The Department has developed key financial policies which impact rate increase requests. It is important to mention that the Rate Board must "recognize the importance of financial stability to customers and fully consider the Water Department's Financial Stability Plan" (Code 13-101 (4)(b)(i)) in addition to considering "peer utility practices, best management practices and projected impacts on customer rates" (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.

Cash Reserves – Liquidity measures are a critical indicator of the financial stability of utility system. Adequate cash reserves allow systems to contribute to increasing capital projects, mitigate system disruptions, and fund unexpected operating expenses. The Department has maintained liquidity by targeting a $150 million balance in the Rate Stabilization Fund and $15 million in the Residual Fund. The credit agencies give credit to the Department for balances in both funds in calculating liquidity levels. A 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 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 the balance in their liquidity consideration. It is critical that the Department be allowed to maintain these targeted levels.

Capital Funding from Current Revenues (Pay-Go Financing) – Pay-Go financing is simply funding capital needs with current revenues, many times with identified user charges or growth related fees. Systems that have been able to fund significant portions of their Capital Improvement Plan ("CIP") with annual revenues are able to manage their debt without significantly burdening future rate payers. PWD is targeting 20% of their CIP being funded with pay-go revenues (or 80% debt funding). As a point of reference, Fitch views 65% pay-go funding as strong, 55% as a midrange and 45% pay go funding as on the weaker side in assessing operating risks. The PWD goal is on the weaker side and should be achieved, and even strengthened, in the future. Systems that are able to sustain higher levels of Pay-Go financing also enjoy healthy debt service coverage and liquidity which are needed to generate the financing resources.

For illustrative purposes only, the graph below shows the potential impact of funding a larger percentage of capital needs with pay-go as opposed to debt financing. Comparing annual borrowings of $250 million (5.5%-30 year's amortization) to annual borrowings of $187.5 million (a 25% reduction) over a period of several years makes clear the long term impact on rate payers. In addition to the increased debt service ($17 million versus $12.9 million), implementing rate increases to comply with the higher debt service coverage requirements in the future creates significant financial stress which only increases over time. While this is for illustrative purposes, this type of long range planning in assessing future debt burden is critical for systems such as PWD.



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. 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 thoughtful long range planning.

PWD has, over the past several years, increased the average life of its debt portfolio to begin achieving this goal. Below are some indications that the PWD has worked on increasing the average life of the debt outstanding and slightly increasing debt service coverage over the past several years, which is in line with the Departments financial policies.

Year	2013	2014	2015	2016	2017
Debt Service Coverage	1.21	1.22	1.23	1.24	1.31
Weighted Average life of outstanding debt	10.81	10.84	12.59	12.87	14.54

Bond Credit Agencies

While Moody's, Standard & Poor's and Fitch analyze credits with slightly different measurements and criteria, the PWD's ratings of A1/A+/A+ show a consistency of rating views by all three rating agencies. This provides a helpful picture to investors, who tend to price to the lower rating if there are significant discrepancies. PWD accessed the capital markets twice in 2017 with extremely positive results. Both issues were significantly oversubscribed and the final order book and allocations resulted in increasing PWD's investor base. This is critical for future pricings and market access. Issuers with a robust and diverse buyer base are better received in the market, which can be critical in times of market stress. 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 the trends will continue.

All three rating agencies have also been reviewing and updating methodology with a view towards transparency with a more quantitative approach. 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 or above and below the line notching. Fitch's criteria identifies attributes and identifies stronger (AAA), midrange (AA) and weaker (A) guidelines. There are general observations, however, that exist in all of the rating analysis and comments.

Moody's – Moody's identifies broad factors for consideration and further provides sub factors in the 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). PWD's rating reflects the size of the system, strong liquidity (including the balances in the rate stabilization fund and the residual fund), regulatory and compliance realities which will require a large CIP, and the "relatively untested rate board".

Moody's has assigned the water and sewer industry nationally a stable outlook for 2018, noting strong liquidity and management. These characteristics mirror the strengths of PWD. However, the weakness of debt service coverage (in comparison to other A rated systems) and the expected increases in debt burden resulting from the future CIP present concerns noted in the most recent Moody's report. 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 cash flow available to fund an increasing amount of projects on a pay-go basis will help to mitigate this concern.

Key Indicator	PWD (2016)	A1 Rated Medians	AA3 Rated Medians
Asset Condition	21.9	25.2	26.6
Debt to operating Revenues	2.6	2.15	2.19
Debt service coverage	1.42	1.8	2.1
Days cash on hand	300*	303	435

*Includes the Rate Stabilization and Residual Fund

Standard & Poor's – S&P also has developed a credit calculator to provide a qualitative analysis of a systems 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, which is needed to support the robust capital plan and high debt to capitalization ratio. This recent rate increase was important because as discussed previously, it aligned the Departments credit profile and provided a strong message to the investor public.

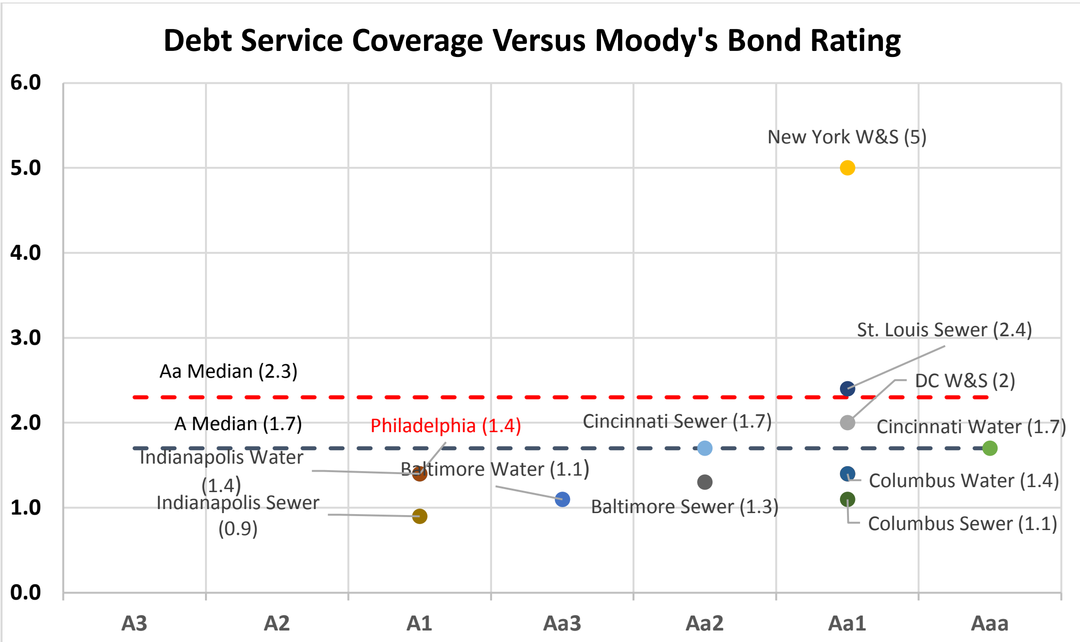
Fitch – As mentioned previously, Fitch has not developed a scorecard but has developed ranges based on certain considerations. The assessment includes a review of revenue defensibility (the ability to generate cash flow given legal framework and fundamental economics), operating risks (revenue/expense 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. 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.

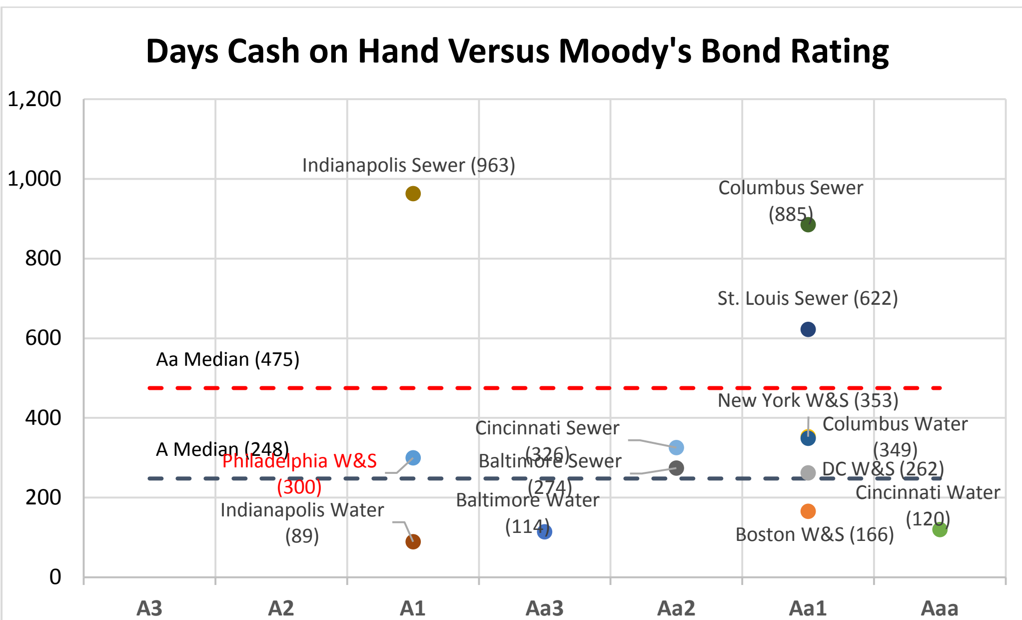
General observations –All three of the rating agencies have mentioned the PWD's increased debt service coverage of 1.3 times as a credit positive. This increased coverage has resulted in stronger liquidity and will ultimately allow for increased pay go funding. This is critical given the reality of PWD's increased required capital needs. As with older urban systems, ongoing maintenance of assets is critical. PWD has historically had low 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

PWD has selected certain peer systems to provide important benchmarking critical to organizational best practices. While systems 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 Board must consider in the rate making decision.

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.



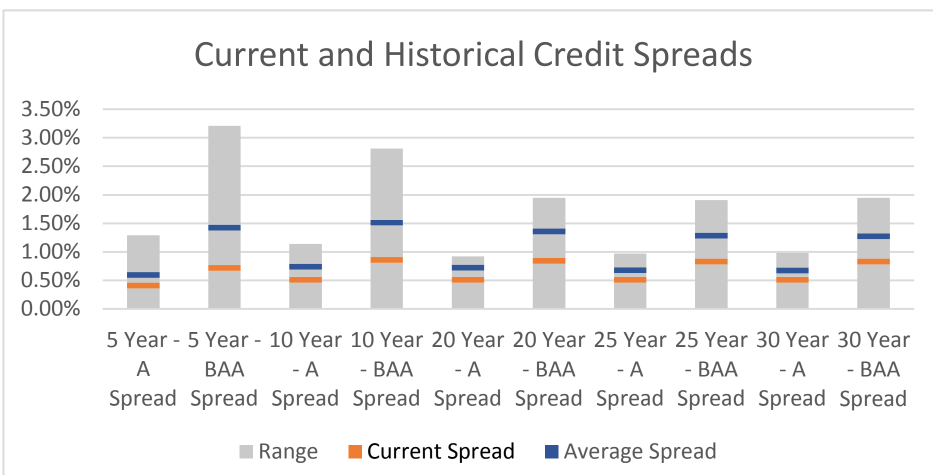


American Water Works Association – In addition to the rating agencies, many systems use industry specific organizations to provide benchmarking analysis. The AWWA collects data from utility systems across the country and provides survey data for a range of operational and financial factors. Included below are selected performance indicators for business operations in comparison to PWD. These show similar results in the rating agency analysis and the peer comparisons.

	Top Quartile	Median	Bottom Quartile	Sample Size	PWD (2016)
Debt Ratio	21%	35%	54%	86	79.6%
Return on Assets	3.6%	1.9%	0.6%	82	3.3%
Days Cash on Hand	542	288	114	80	300
Debt Service Coverage	3.34	1.55	0.74	86	1.42
Operating Ratio	44%	59%	76%	83	72%
Bond Rating	19 (AAA)	54 (AA)	10 (A)	1 (BBB)	A Category

Cost of Capital

In addition to insuring that rate increases provide the necessary cash flow for liquidity and pay go, the Departments rating has a direct impact on the cost of capital. This 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 increasing 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.



Source: Municipal Market Data (MMD) Curve

Over the next five years, the Department expects to issues $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 $6 million in annual debt service on the total debt amount. This increase adds up and can place additional stress on debt service coverage requirements. Below is a historical representation of the range in interest rates for various credits.

Statistic	5 Year - A Spread	5 Year - BAA Spread	10 Year - A Spread	10 Year - BAA Spread	20 Year - A Spread	20 Year - BAA Spread	25 Year - A Spread	25 Year - BAA Spread	30 Year - A Spread	30 Year - BAA Spread
1/12/2018	0.41%	0.72%	0.51%	0.86%	0.51%	0.84%	0.51%	0.83%	0.51%	0.83%
Average	0.59%	1.43%	0.74%	1.51%	0.73%	1.36%	0.68%	1.28%	0.68%	1.27%
Spread to Avg.	-0.18%	-0.71%	-0.23%	-0.65%	-0.22%	-0.52%	-0.17%	-0.45%	-0.17%	-0.44%
Minimum	0.31%	0.59%	0.46%	0.73%	0.35%	0.75%	0.28%	0.69%	0.28%	0.65%
Spread to Min.	0.10%	0.13%	0.05%	0.13%	0.16%	0.09%	0.23%	0.14%	0.23%	0.18%
Maximum	1.60%	3.80%	1.60%	3.54%	1.27%	2.70%	1.25%	2.60%	1.26%	2.60%
Spread to Max.	-1.19%	-3.08%	-1.09%	-2.68%	-0.76%	-1.86%	-0.74%	-1.77%	-0.75%	-1.77%

PFM Firm Overview

PFM's original financial advisory practice was founded in 1975 on the principle of providing sound, independent and fiduciary financial advice to public entities. We are the nation's leading provider of financial advisory services to water and sewer issuers, local municipalities, states, healthcare and higher education institutions and non-profit organizations by number and dollar value of transactions, according to Thomson Reuters as of December 31, 2017. The yearly volume of transactions for which we consistently serve as advisor provides us with comprehensive experience in the capital markets. We typically serve as advisor on more transactions than many of the largest investment banks, which gives us comparable market knowledge and technical capabilities while being an independent firm that only serves issuers.

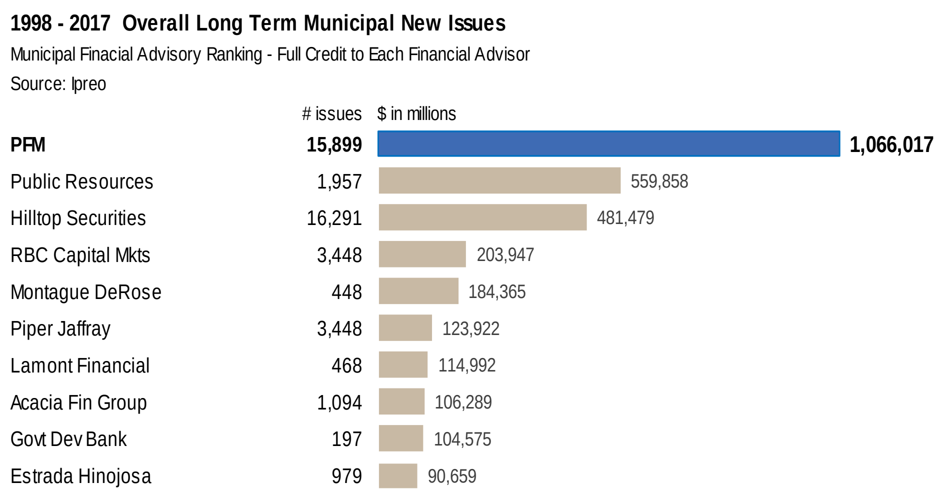
PFM's financial advisory business has grown from five professionals in one office in 1975 to more than 620 professionals in more than 30 locations across the country as of September 30, 2017.

PFM Office Locations

Ann Arbor, MI	Los Angeles, CA
Arlington, VA	Malvern, PA
Atlanta, GA	Memphis, TN
Austin, TX	Miami, FL
Boston, MA	Milwaukee, WI
Charlotte, NC	Minneapolis, MN
Chattanooga, TN	New Orleans, LA
Chicago, IL	New York, NY
Cleveland, OH	Orlando, FL
Columbus, OH	Philadelphia, PA
Dallas, TX	Portland, OR
Des Moines, IA	Princeton, NJ
Fargo, ND	Providence, RI
Harrisburg, PA	Richmond, VA
Huntsville, AL	San Francisco, CA
Largo, FL	Seattle, WA

Nationwide Experience

Our primary focus is providing financial advisory services to the public sector and we have a successful track record to prove it. As seen in the chart below, the yearly volume of transactions for which the firm consistently serves as advisor provides us with comprehensive experience in the capital markets (as of December 31, 2017). We serve as advisor on more transactions than many of the largest investment banks, which provides us with comparable market knowledge and technical capabilities. As a firm that only serves issuers, we maintain our independence and align our goals solely with our clients.



Wastewater and Utility Experience

Thomson Reuters has ranked PFM's financial advisory business among the leading financial advisory firms for water, sewer and gas issues, in terms of overall issues and/or principal amount, every year since 2000. In 2017 alone, we advised on 128 transactions totaling nearly $11 billion. Our financial advisory team has served as financial advisor to water, wastewater and infrastructure revolving funds in 21 states and territories. We believe this experience and leadership provides us unique insight into this rapidly evolving sector. Communities across the country face ever-increasing pressure to meet new and existing environmental quality standards, improve customer service and become more efficient, all while maintaining competitive rates. Our financial advisory professionals provide utilities with a diverse array of services to help them meet these challenges.

In addition to the bond transactions on which we have advised clients, we regularly assist water and wastewater clients with non-bond financial advisory projects. We routinely advise on strategic matters such as resource acquisitions, rate structures that allow for system growth without penalizing the existing customer base, financial reserve policies and credit matters. Our current advisory relationships with water and wastewater utilities across the country provide us with a comprehensive understanding of the unique financial and environmental considerations facing the region, while the breadth and depth of our national water and wastewater practice give us the national experience to apply it. The following list is not comprehensive, but highlights the variety of large, sophisticated utilities that we serve.[1]

Alexandria Renew Enterprises (VA)
Arlington County (VA)
Austin Water and Wastewater Utility (TX)
Baltimore Water and Wastewater (MD)
Central Marin Sanitation Agency (CA)
Clark County (Las Vegas Metropolitan Area)
Contra Costa Water District (CA)
Des Moines Metropolitan Wastewater Reclamation Authority (IA)
DC Water and Sewer Authority (DC)
Erie County Water Authority (NY)
Fairfax County Integrated Sewer System (VA)
Fairfax County Water Authority (VA)
Great Lakes Water Authority (MI)
Hampton Roads Sanitation District (VA)
Henrico County (VA)
Kansas City Water Department (MO)
Las Vegas Valley Water District (NV)
Los Angeles Department of Water & Power (CA)
Louisville Water Company (KY)
Maryland Water Quality Administration (MD)
Massachusetts Water Resources Authority (MA)
Metropolitan Sewer District of Greater Cincinnati (OH)
Metropolitan St. Louis Sewer District (MO)
Miami-Dade Water and Sewer Department (FL)
Minnesota Public Facilities Authority (MN)
Nassau Sewer and Storm Water Finance Authority (NY)
New Haven Water Pollution Control Authority (CT)
New Jersey Environmental Facilities Trust (NJ)
New Jersey Water Supply Authority (NJ)
New Orleans, City of - Water & Sewerage Board (LA)
Newport News (VA)
NY State Environmental Facilities Corporation
Norfolk (VA)
Oklahoma City Water Utility Trust (OK)
Passaic Valley Sewerage Commission (NJ)
Pennsylvania Public Utility Commission (PA)
Pennsylvania Infrastructure Investment Authority (PA)
Philadelphia Water Department (PA)
Pittsburgh Water and Sewer Authority (PA)
Portland, Bureau Environment Services (OR)
Rhode Island Clean Water Finance Agency Rockville, City of (MD)
San Antonio Water System (TX)
San Diego County Water Authority (CA)
San Francisco Clean Water Enterprise (CA)
Sheffield Lake, Stormwater Utility (OH)
South Essex Sewerage District (MA)
South Placer Wastewater Authority (CA)
Southern Nevada Water Authority (NV)
Toledo, City of Department of Public Utilities (OH)
Virginia Resources Authority (VA)
Water Reclamation District (NV)

[1] *Client list is as of September 30, 2017 and is for informational purposes only. The list does not represent an endorsement or testimonial of PFM financial advisory services by clients. PFM's financial advisory business consists of Public Financial Management Inc. and PFM Financial Advisors LLC. As PFM Financial Advisors LLC commenced operations on June 1, 2016 all transactions prior to such date were effected by Public Financial Management Inc.*

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Katherine works with a range 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, for 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 has also worked for the Pennsylvania State Legislature. As an investment banker and a financial advisor for other firms, her responsibilities included business development in Pennsylvania, New Jersey, Delaware and Maryland, and working with a range of issuers providing financial advice in the area of debt management and capital financing. Katherine joined PFM in 2003.

She currently works with several large state and regional issuers such as the Pennsylvania Industrial Development Authority, City of Philadelphia, Pittsburgh Water and Sewer Authority, Commonwealth Financing Authority and the Pennsylvania Industrial Development Authority. Additionally, she provides financial advisory services to a varity of non-profit and higher education organization such as Temple University, Drexel University and several smaller non-profits and 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 assest/liability strategies. She has provided her clients with advice addressing transaction management, financial strategic planning, credit analysis and implementation of best practices.

Ms. Clupper has an MBA in finance from Temple University and 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.