Public Advocate Statement No. 1

BEFORE THE

PHILADELPHIA WATER, SEWER AND STORM WATER RATE BOARD

PHILADELPHIA WATER DEPARTMENT	**)** **)**	**FY17-2018 RATES**

DIRECT TESTIMONY

OF

LAFAYETTE K. MORGAN, JR.

ON BEHALF OF THE PUBLIC ADVOCATE

March 24, 2016

EXETER
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INTRODUCTION

Q. WOULD YOU PLEASE STATE YOUR NAME AND BUSINESS ADDRESS?

A. My name is Lafayette K. Morgan, Jr. My business address is 10480 Little Patuxent Parkway, Columbia, Maryland, 21044. I am a Public Utilities Consultant working with Exeter Associates, Inc. Exeter is a firm of consulting economists specializing in issues pertaining to public utilities.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND QUALIFICATIONS.

A. I received a Master of Business Administration degree from The George Washington University. The major area of concentration for this degree was Finance. I received a Bachelor of Business Administration degree with concentration in Accounting from North Carolina Central University. I was previously a CPA licensed in the state of North Carolina, but have elected to place my license in an inactive status as I pursued other business interest.

Q. WOULD YOU PLEASE DESCRIBE YOUR PROFESSIONAL EXPERIENCE?

A. From May 1984 until June 1990, I was employed by the North Carolina Utilities Commission - Public Staff in Raleigh, North Carolina. I was responsible for analyzing testimony, exhibits, and other data presented by parties before the North Carolina Utilities Commission. I had the additional responsibility of performing the examinations of books and records of utilities involved in rate proceedings and summarizing the results into testimony and exhibits for presentation before that Commission. I was also involved in numerous special projects, including participating in compliance and prudence audits of a major utility and conducting research on several issues affecting natural gas and electric utilities.

From June 1990 until July 1993, I was employed by Potomac Electric Power Company (Pepco) in Washington, D.C. At Pepco, I was involved in the preparation of the cost of service, rate base and ratemaking adjustments supporting the company's requests for revenue increases in the State of Maryland and the District of Columbia. I also conducted research on several issues affecting the electric utility industry for presentation to management.

From July 1993 through 2010, I was employed by Exeter Associates, Inc. as a Senior Regulatory Analyst. During that period I was involved in the analysis of the operations of public utilities, with particular emphasis on utility rate regulation. I reviewed and analyzed utility rate filings, focusing primarily on revenue requirements determination. This work involved natural gas, water, electric and telephone companies.

In 2010, I left Exeter to focus on start-up activities for other business interests. In late 2014, I returned to Exeter to continue to work in a similar capacity to my work prior to my hiatus.

Q. HAVE YOU PREVIOUSLY TESTIFIED IN REGULATORY PROCEEDINGS ON UTILITY RATES?

A. Yes. I have previously presented testimony and affidavits on numerous occasions before the North Carolina Utilities Commission, the Pennsylvania Public Utility Commission, the Virginia Corporation Commission, the Louisiana Public Service Commission, the Georgia Public Service Commission, the Maine Public Utilities

Commission, the Kentucky Public Service Commission, the Public Utilities Commission of Rhode Island, the Vermont Public Service Board, the Illinois Commerce Commission, the West Virginia Public Service Commission, the Maryland Public Service Commission, the Corporation Commission of Oklahoma and the Federal Energy Regulatory Commission (FERC).

Q. ON WHOSE BEHALF ARE YOU APPEARING?

A. I am presenting testimony on behalf of the Public Advocate.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. Exeter Associates has been retained by the Public Advocate to assist in the evaluation of the General Rate Filing submitted by Philadelphia Water Department ("PWD" or "the Department"). In this testimony, I present my findings on behalf of the Public Advocate regarding the overall revenue increase PWD is requesting for its water and wastewater operations for its Rate Period (Fiscal Years 2017 and 2018).[1] My colleague, Mr. Jerome D. Mierzwa, will present the Public Advocate's recommendations with regarding rate design and class cost of service issues. Also, Mr. Roger D. Colton addresses issues related to customer assistance programs on behalf of the Public Advocate.

Q. IN CONNECTION WITH THIS CASE, HAVE YOU PERFORMED AN EXAMINATION AND REVIEW OF THE COMPANY'S TESTIMONY AND EXHIBITS?

A. Yes. I have reviewed PWD's testimonies, exhibits and its rate filing, as well as its responses to the Public Advocate.

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[1] I note that my testimony does not specifically address revenue requirements associated with a new program to assist low-income customers.

Q. HAVE YOU PREPARED SCHEDULES TO ACCOMPANY YOUR TESTIMONY?

A. Yes. I have prepared Schedules LKM-1 through LKM-3. These schedules present a comparative summary of the Public Advocate's and PWD's positions on the requested increase in rates.

Q. PLEASE EXPLAIN HOW YOUR TESTIMONY IS ORGANIZED.

A. First, I offer a summary of the rate relief PWD requests and a brief statement of my conclusions. I then provide an overview of the test year data considerations relative to PWD's proposed rate increase. I then briefly describe PWD's accounting practices, and how they impact upon its rate request. My testimony then describes how PWD's rate model has historically understated revenues and overstated expenses and I provide conclusions based on that review. Finally, I undertake a more technical review of certain projections and assumptions included in PWD's filing, proposing specific changes where appropriate.

SUMMARY AND RECOMMENDATIONS

Q. PLEASE SUMMARIZE THE RATE RELIEF REQUESTED BY PWD IN ITS FILING.

In this proceeding, PWD is requesting increases in rates for Fiscal Years 2017 and 2018. As shown on EXHIBIT BV-E1, Table C-1, attached to the Testimony of Black & Veatch Corporation (Black & Veatch) which is labelled PWD St.9-A, the Department is seeking a $34.735 million, or 5.4 percent, rate increase in Fiscal Year 2017 (FY17) and a second increase in FY18 of $36.392 million or 5.42 percent. The combined effect of the Department's proposal is a total increase in rates of $105.6 million[2]. The Department proposes to put the increases in effect at the beginning of

[2] As noted below, PWD has agreed to a downward adjustment of $451,000 to the revenue requirement to resolve a discovery dispute that arose in this proceeding.

each fiscal year which begins on July 1st. According to Department witness Melissa LaBuda, the proposed rate increases are designed to meet a "projected revenue shortfall" of approximately $105 million during FY17 and 2018. Ms. LaBuda states in her testimony that the average customer uses 600 cubic feet of water monthly. Based upon PWD's proposed rate schedules for water and wastewater services, granting PWD's request would increase the average customer's monthly bill from $67.43 to $71.59, or an increase of $4.16 for FY17. For FY18, the average customer's monthly bill would be increased by an additional $3.91 to $75.51. PWD St.-2 at 2.

Q. PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS.

A. Based on my analysis of the financial performance of PWD since the last rate increase in 2013, and the current economic condition of PWD, I submit that PWD has failed to demonstrate the necessity of a rate increase in FY17. This holds true under the assumptions PWD employs in its rate model, for two reasons: (1) historically, PWD's financial forecast has consistently overstated PWD's actual revenue requirements, and (2) under its own projections, PWD demonstrates no necessity of a rate increase in FY17. Because, as filed, PWD's requested rate increase for FY18 is almost entirely dependent upon the assumptions employed in projecting revenue requirements for FY17, for which I propose no increase, I submit that PWD should not receive any rate increase for FY18 at this time. FY18's operating conditions are so far out into the future that an estimate of what potential rate increase could be appropriate in FY18 is purely speculative, and violates well settled principles of rate making, including that rates and charges must be based on known and measurable revenue and expenses.

If the Board concludes that an increase in rates is appropriate notwithstanding my conclusions that it would be inadequately supported, it should substantially reduce the amount of that rate increase based on my adjustments. As shown on Schedule LKM-1, PWD is able to meet its legally required debt service coverages in both FY17 and 2018 without increasing its current rates.

OVERVIEW OF TEST YEAR DATA CONSIDERATIONS

Q. HOW HAVE YOU APPROACHED REVIEWING PWD'S PROJECTED REVENUE REQUIREMENTS IN THIS PROCEEDING?

A. In order to assess the reasonableness of PWD's proposed increase in rates in an accelerated review process, I have found it necessary to rely upon information supplied by the Department in a way that I would not typically do in a rate proceeding that provided more time for review. The Department's projected revenue requirement for both water and wastewater services is presented in the testimony provided by Black & Veatch. Consistent with PWD's filing, I have used the same test period as the basis for determining PWD's rate year revenue requirements and the revenue necessary to recover those requirements. In Black & Veatch's testimony on behalf of the Department, the witnesses state that the term "Test Year" refers to the fully forecasted fiscal years FY17 and 2018. PWD St. 9A at 10-11.

I have also relied upon the use of Black & Veatch's proprietary computer financial model developed and used for determining the Department's revenue requirement. I have attempted to make the necessary changes to Black & Veatch's assumptions based upon the Public Advocate's recommended adjustments.

My normal approach, when presenting my recommendations in a rate proceeding, is to separately show the value of each proposed adjustment. However, the Black & Veatch model is developed with various inter-connections. Due to time constraints, I believed it would be better to modify the Department's model rather than develop my own. I have informally discussed with PWD and Black & Veatch that my recommendations are proposed by modifying certain assumptions in PWD's rate model. I have confirmed that by doing so, the model should calculate the amount of the applicable adjustments to the projected financial results. Recognizing that Black & Veatch has significant expertise in using the model, I also provided my modified version of the model to Black & Veatch to review my adjustments to the assumptions and to make further changes based upon recommendations I make in this testimony. It is my understanding that, from the perspective of changing the model's assumptions, the modifications I made were properly done. However, the Public Advocate reserves the right to revise its recommendations in the event a discrepancy is discovered by Black & Veatch or PWD.

Q. WHAT IS THE PURPOSE OF A TEST YEAR IN A RATEMAKING PROCEEDING?

A. A test year or test period consists of 12 consecutive months and is assumed to be representative of normal operations. Under standard ratemaking practice, the revenues and expenses that are projected to occur during that twelve-month period are used as the basis for determining whether there is a need for incremental revenues. Hence, test period revenues and costs are adjusted to normalize non-recurring items, to annualize new costs and/or revenues, and to amortize (normalize) costs or revenues that may occur infrequently (i.e., every 2 years, every 5 years, etc.).

It should be noted that the rates that are derived from the test year remain in effect, not just for the test year, but for all subsequent years until new rates from a future rate case become effective. This is an important distinction between ratemaking and budget setting. Since rates could be in effect for an indefinite period of time, it is extremely important that the test year financial data is representative of the utility's normal operating conditions. It is also important that both adjusted and unadjusted test year data meet the widely-accepted regulatory principle of being "known and measurable". To be considered as "known and measurable", the probability that the revenue or cost will change must be certain and the amount of the change must be known with certainty.

ACCOUNTING PRACTICES OVERVIEW

Q. PLEASE SUMMARIZE HOW THE DEPARTMENT'S ACCOUNTING BOOKS ARE MAINTAINED.

A. Similar to all departments of the City of Philadelphia, PWD keeps its books on what is termed a "legally enacted" or "modified accrual" basis. In general, a legally enacted basis is equivalent to a cash basis. Under this basis, revenues are recorded when they are received, rather than when then the customer is billed or service is rendered. On the other hand, expenses are recorded when the obligation to incur the expenditure is made or when payment is made on an obligation.

Q. WHAT IS THE SIGNIFICANCE OF THE DEPARTMENT'S BASIS OF ACCOUNTING?

A. From a ratemaking perspective, there are two considerations that come to mind. First, since revenues are recorded when they are received, there is no provision on the Department's books for bad debts or uncollectible accounts from service revenues.[3] Therefore, as will be discussed below, in forecasting future revenues for ratemaking purposes for the PWD, a major consideration is the portion of billed revenues that will actually be collected. Second, it is normal ratemaking practice for utilities to

[3] The attachment to SI-31 Official Statement date April 1, 2015 at page 38 suggests that a reserve is established for receivables from governmental accounts.

amortize or normalize non-recurring or extraordinary expenditures both on their books and for ratemaking purposes. The rationale is to spread cost over the periods that benefit from the expenditure or to prevent over collection of costs. For example, the expenses incurred for presenting a rate case (legal, consultants, etc.) are usually amortized (or normalized) over the historical filing period between rate cases.

Q. ARE THERE ANY GENERAL CONCERNS YOU HAVE REGARDING THE DATA ON WHICH THE REVENUE REQUIREMENT IS BASED?

A. Yes. Since the revenue requirement is based on fully forecasted test years, the budget provides certain data on which the cost of service is based. It is important to understand that there is a difference of perspective between ratemaking purposes and budget purposes, particularly for budgeting in governmental accounting. For governmental accounting, the budgets are recorded. In other words, a journal entry is made in the accounting books and records to adopt the annual budget at the beginning of the Fiscal Year. Hence, the recorded budget acts as a control on revenues and expenditures. As a result, in the governmental accounting setting, one would expect that budget projections are conservative. In other words, within a relevant range, conservative budgets are likely to project expenses that are on the high side and revenues on the low side.

The effect of this budgeting methodology on ratemaking is two-fold. First, there is a tendency for revenues to be understated and expenses overstated. The primary concern when adopting a budget in each year is to ensure that revenues are not under collected and expenditures do not exceed the level in the recorded budget. Therefore, the focus of budgeting techniques is to ensure the financial operating results for each specific fiscal year will meet a specific objective. In general, a primary financial objective for PWD is to meet debt service coverage ratios stated in bond indentures. As a result, the booked expense that would normally be amortized for ratemaking purposes is overstated in the year that the expense is incurred. Since expenses are overstated, net income (revenues minus expenses) is understated and the income available to meet bond-related debt service coverage ratios is similarly understated. As stated above, this type of accounting has the effect of overstating the revenue requirement for the test year and beyond if such expenditures are not adjusted for ratemaking purposes.

Second, because the focus of budgeting is one fiscal year at a time, there is no attempt to normalize one-time, non-recurring costs which are often included in the budget. As a result, expenses can be over-stated for ratemaking. Normal ratemaking practice seeks to determine costs on a normal ongoing level, rather than to recover costs in a specific year. Since rates are not collected subject to refund, costs should be established at a level that is more representative of normal operations.

Q. EARLIER YOU INDICATED THAT MS. LABUDA STATED THAT THE PROPOSED INCREASE IS NECESSARY TO PREVENT A $105 MILLION SHORTFALL. IN YOUR OPINION, IS THE DEPARTMENT AT IMMINENT RISK OF BEING UNABLE TO MEET ITS OBLIGATIONS?

A. No. Upon reading the claim of a shortfall being avoided, my initial perception was that the Department might be at risk of not being able to meet its bills and/or coverage requirements and a catastrophic event was about to occur if the proposed rate increase is not granted. In fact, I discovered that the $105 million "shortfall" is the quantification of the Department's total requested rate increase over FY17 and 2018. It does not represent an amount necessary to pay expenses and maintain required coverage. Hence, I recommend that the Water Rate Board be mindful of the fact that the Department is currently not at the brink of financial distress and evaluate the $105 million claim from the standpoint of whether it is justified after reviewing the evidence presented in this proceeding.

There are also two things that should be considered with respect to the claimed $105 million shortfall. First, as confirmed by PWD's FY15 audited financial statements, electronically supplied by PWD's counsel on February 26, 2016, there is $206.5 million in the Rate Stabilization Fund as of the end of FY15, June 30, 2015. The Rate Stabilization Fund is supposed to be used to accumulate funds which can be used at any point in time when revenues are insufficient to meet current costs. Hence, using the Rate Stabilization fund to meet current obligations is not a negative event. Instead, it is the product of adequate planning.

Second, the money that has accumulated in the Rate Stabilization Fund is the result of revenues being higher than originally projected, expenses (costs) being lower than projected or a combination of both. Using PWD's projections from the last case, the Rate Stabilization Fund was supposed to have accumulated $74.5 million at the end of FY15. See ML-6, Attachment B, Table 11. Instead, PWD has accumulated $206.5 million in the Rate Stabilization Fund, or an additional $131.964 million above its projection.

HISTORICAL INACCURACY OF PWD RATE MODEL

Q. PLEASE EXPLAIN YOUR OBSERVATIONS ABOUT THE ACCURACY OF THE DEPARTMENT'S PAST PROJECTIONS.

A. According to the Department, the model used to project its cost of service for this proceeding is no different than it was in the past rate proceeding. February 22, 2016 Hearing Transcript, at 191. Accordingly, part of my analysis in this proceeding was to examine the extent to which the model may have inaccurately projected PWD's actual needs. To do so, I asked PWD to provide a schedule that updated Exhibit ML-

6, Attachment B, Table 11 with actual data. See PA-EXE-103. Exhibit ML-6, Attachment B, Table 11 shows the projected revenue and revenue requirements calculated in August 2012, when the parties to the last rate proceeding entered into a settlement of Phase 1 of that proceeding (Phase 2 was limited to stormwater issues which did not affect overall revenue requirements reflected in the Phase 1 settlement). Black & Veatch, on behalf of PWD, provided a response to PA-EXE-103. In pertinent part, the response to PA-EXE-103 shows that PWD's rate model significantly and consistently overstated PWD's actual revenue requirements during the four fiscal years, 2012, 2013, 2014, and 2015.[4]

I produced the following schedule based on PWD's response to PA-EXE-103, showing that over these four fiscal years, PWD's model projected revenue requirements in excess of what it needed:

	Actual Results			
	2012	2013	2014	2015
Water & Wastewater Service Revenue	$ 568,378	$ 580,180	$ 617,225	$ 646,702
Other Income	23,303	26,550	25,794	30,144
Total Revenues	**$ 591,681**	**$ 606,730**	**$ 643,019**	**$ 676,846**
Total Operating Expense	**$ 375,085**	**$ 399,316**	**$ 410,797**	**$ 426,767**

	2013 Rate Case Estimates			
	2012	2013	2014	2015
Water & Wastewater Service Revenue	$ 565,396	$ 576,239	$ 615,631	$ 639,682
Other Income	18,924	22,293	22,143	22,457
Total Revenues	$ 584,320	$ 598,532	$ 637,774	$ 662,139
Total Operating Expense	**$ 390,033**	**$ 417,619**	**$ 427,730**	**$ 429,937**

	2012	2013	2014	2015
	Actual-2013 Rate Case			
Water & Wastewater Service Revenue	$ 2,982	$ 3,941	$ 1,594	$ 7,020
Other Income	4,379	4,257	3,651	7,687
Actual Revenues Over/(Under) Budget	**$ 7,361**	**$ 8,198**	**$ 5,245**	**$ 14,707**
Operating Expense Over/(Under) Budget	**$ (14,948)**	**$ (18,303)**	**$ (16,933)**	**$ (3,170)**

Q. DID YOU CONSIDER WHETHER THE REVENUES IN EXCESS OF PWD'S FORECAST WERE NECESSARY TO PAY FOR ADDITIONAL EXPENSES?

A. Yes, and I concluded that there were no additional expenses. To the contrary, as part of PA-EXE-103, PWD also provided data regarding actual operating expenses compared to projected expenses. Again, the data shows that PWD's model has consistently under projected actual expenses. PWD's 2012 forecast of annual operating expenses for FY 2012, 2013, 2014, and 2015 was, on average, $13.338 million overstated.

Q. ARE YOU ABLE TO DETERMINE WHY PWD'S FORECAST CONSISTENTLY UNDERSTATES REVENUES AND OVERSTATES EXPENSES?

A. No. It is not possible for me to accurately determine which specific assumptions utilized in the last rate proceeding account for actual revenues in excess of projections and actual expenses being less than projected. This is true for two reasons. First, the assumptions may overlap and separately account for these trends over a period of time. For example, a higher number of customers during a portion of the rate period may account for increased revenues during that time period, while a higher than expected amount of consumption during a portion of the rate period may also account for increase revenues during that time period. Second, however, and more importantly, the settlement in the last rate proceeding was a "black box" settlement, meaning no particular adjustments to the assumptions utilized in the rate model were tested by or agreed to among the parties. Rather, the parties agreed upon an increase to the projected revenue requirements which PWD then reflected in rates. There was not, to my knowledge, any proceeding in which specific adjustments to assumptions were vetted to produce the agreed upon revenues. As I discuss in the section of my testimony that follows, I have identified several assumptions in this case that should be adjusted but I have only had a few short weeks to explore Black & Veatch's extremely complex electronic rate model, and there may be assumptions embedded therein that would continue, even with these adjustments, to inaccurately forecast PWD's revenue requirements. These adjustments increase net operating income by $47.9 million and $53.4 million in FY17 and 2018, respectively.

Q. WHAT DO YOU CONCLUDE ON THE BASIS OF THIS ANALYSIS?

I conclude that the forecast produced by this model for FY17 does not support the need for a rate increase at this time. Given my understanding that the forecasting methods and the computer model is basically unchanged since FY 2012, based on the historical results, the continued use of the Department's approach will likely continue to produce revenues in excess of estimates and operating expenses that are less than projected. Given that FY 2016 has not yet concluded, and PWD's estimates for FY17 and FY18 rely upon FY 2016 budget, I expect that PWD's FY 2016 actual revenues will be in excess of the projected amounts and actual expenses will be less than the projected amounts as well.

The combination of under-projected revenues and over-projected expenses during the previous rate case has directly contributed to the accumulation of funds in PWD's Rate Stabilization Fund over the period FY 2012 – FY15. In fact, documentation produced in this proceeding demonstrates that PWD's expected Rate Stabilization Fund balances have been consistently projected at unrealistically low levels, suggesting the accuracy of PWD's rate model is a longstanding problem. A summary is presented below.

Philadelphia Water Department				
Rate Stabilization Fund				
Exhibit ML-6 Attachment B-summary of the 2012 rate proceeding Financial Plan				
	FY12	**FY13**	**FY14**	**FY15**
Beginning of Year Balance	$156,563,000	$142,128,000	$98,513,000	$78,188,000
Deposit From (To) Revenue Fund	(14,435,000)	(43,615,000)	(20,325,000)	(3,675,000)
End of Year Balance	$142,128,000	$98,513,000	$78,188,000	$74,513,000
Actual	**FY12**	**FY13**	**FY14**	**FY15**
Balance at July 1	$157,050,373	$165,906,600	$161,463,768	$184,795,581
Deposit from Operating Fund	8,525,507	0	22,924,772	21,456,199
Interest Earnings	438,097	223,120	407,041	195,186
Deposit to Operating Fund		(4,665,952)		
Balance at June 30	$166,013,977	$161,463,768	$184,795,581	$206,446,966

When I combine these clearly documented projection trends and my findings in this case, I conclude that PWD has inadequately supported its request for a rate increase in FY17. Contrary to Ms. LaBuda's testimony, I find no "revenue shortfall" under PWD's projected revenues, even in the absence of a rate increase. As I show in the schedules attached to this testimony, even if PWD does not receive an additional $34.5 million in rates from customers, PWD should still be able to maintain a sufficient balance in its Rate Stabilization Fund to satisfy its target of $110 million. See PWD St.-2 at 6 (describing PWD's financial plan, and desire to maintain $110 million in the Rate Stabilization Fund).

SPECIFIC ADJUSTMENTS BASED ON MY ANALYSES

Q. PLEASE EXPLAIN THE SUBJECTS DISCUSSED IN THIS SECTION OF YOUR TESTIMONY.

A. In order to explain the basis for specific adjustments to PWD's forecast rate increase, it is important to understand the manner in which the Department projects revenues and operating expenses. In the sections that follow, I provide a brief explanation of PWD's development of projected revenues and O&M expenses. I then follow upon each of these explanations with my specific adjustments to both revenues and expenses.

Operating Revenues

Q. PLEASE EXPLAIN HOW THE DEPARTMENT DETERMINED REVENUES UNDER EXISTING RATES.

A. As shown on Exhibit BV-E1, Table C-1 revenues under existing rates are presented on lines 1-3 for the study period which ranges from FY15 through FY21. The operating revenue is calculated for each customer type by first determining the number of customers and the projected usage and then applying the FY 2016 schedules of usage rates (the current rates). The sales volume and number of customer accounts are projected based on historical trends determined from the data provided by the Department. PWD applies collection factors to determine the periods in which the revenues are collected.

Q. HOW WERE THE PROJECTED NUMBERS OF CUSTOMERS DETERMINED?

A. The projected numbers of customers were based upon the actual number of customers during FY15, and held constant during the projected period. This data is summarized on Workpaper Cust-1.

Q. HOW WAS PROJECTED USAGE PER CUSTOMER DETERMINED BY THE DEPARTMENT?

A. The Department projected usage per customer was determined based upon the actual historical average compound growth rate for the five years ended FY15. The table below summarizes the historical and projected sales to general service customers (including Senior Citizens).

	Historical						**Study Period**		
General Service	2010	2011	2012	2013	2014	2015	2016	2017	2018
5/8" Meter	7.89	7.85	7.32	7.54	7.26	7.31	7.19	7.09	6.98
> 5/8" Meter	207.21	207.4	137.33	138.55	122.35	118.75	119.83	119.83	119.83

Q. WHAT ADJUSTMENTS ARE YOU RECOMMENDING FOR OPERATING REVENUES?

A. I am recommending two adjustments that affect operating revenues. The first adjustment involves the determination of the growth rate for 5/8” meter customers. The second adjustment involves the billing adjustment factor that is included in the Department’s calculation of projected operating revenues.

Q. WOULD YOU PLEASE EXPLAIN YOUR ADJUSTMENT TO THE GROWTH RATE FOR THE 5/8” METER CUSTOMERS?

A. Yes. The Department projected its operating revenues based upon an overall water usage volume that reflects an annual decrease of approximately 0.6%. According to PWD the decrease in usage is primarily driven by its projection of an annual reduction of 1.5 percent annually in the usage per account associated with 5/8” meter General Service Customers (the largest customer class). The Department calculated the 1.5 percent decrease in usage per account associated with 5/8” meter General Service Customers based on a 5-year average compound growth. The 1.5 percent projected decrease in the sales to 5/8” meter General Service Customers is offset by the increase in sales to the greater than 5/8" meter customers, resulting in the overall 0.6 percent decrease in total sales volume. PWD Financial Plan: Revenue & Revenue Requirement Assumptions BV-S1, Page 1.

The adjustment I am proposing to operating revenues is to use the most recent 3-year average compound growth rate to project the operating revenues related to 5/8" meter customer General Service Customers instead of the Department's 1.5 percent decrease. The use of the 3-year compound growth rates results in a 0.5 percent decrease in sales to 5/8" meter customers instead of PWD's projected 1.5 percent decrease in sales to these customers.

Q. WHY HAVE YOU USED THE 3-YEAR AVERAGE TO PROJECT REVENUES INSTEAD OF THE DEPARTMENT'S 5-YEAR AVERAGE?

A. The Department's use of the 5-year average is not consistent with the period it has used to determine the revenue collection factors or the period used to determine the spend factors for the majority of the expenses in the cost of service. For the most part, the Department has relied upon the use of the most recent 3-year average to determine the actual-to-budget ratios used for expenses. According to the Department, the actual-to-budget ratios are used to reflect what the expenses are likely to be. As a matter of consistency, the same 3-year period should be used to project revenues.

There is another aspect to the use of the 3-year average. In forecasting revenues and costs, typically the further out in time from the target year, the less reliable the amounts become. Hence, absent an extraordinary or one-time event, I believe the 3-year data to be more reliable than the 5-year data.

In other water cases that I have participated in, water companies explained that the driver of the decrease in consumption can be linked to greater conservation efforts on the part of consumers. For instance, appliances and fixtures are now designed to use less water than decades ago. Consumers are replacing these appliances and fixtures with more efficient units. This is the general explanation provided by the Department in this proceeding. See February 22, 2016 Transcript at 78. However, at some point, the rate at which these efficient appliances are added slows down as the majority of the old designed appliances and fixtures have been replaced. Hence, as can be seen with limiting the growth analysis to the most recent 3-year period, there appears to be a slowdown in the rate of decrease which must be recognized for rate making purposes. Given this more recent trend, it would be unreasonable to project revenues, for ratemaking purposes, using the higher negative growth rate.

Q. WOULD YOU PLEASE EXPLAIN YOUR ADJUSTMENT TO THE BILLING ADJUSTMENT FACTOR?

A. Yes. Another aspect of the Department's revenue projection is that it has reduced the water customer revenues by 0.50 percent (Assumptions-6) and sewer customer revenues by 0.79 percent (Assumptions-8) according to what it labels as a "calculated billing adjustment factor". According to the Department's response to PA-EXE-137, this billing adjustment factor was included to "provide an allowance for risks associated with the assumptions used in the development of billing as projections". In the response to a follow up data request, PA-EXE-194, the Department admitted there were no workpapers supporting the billing adjustment factors. As a result, there is no way to determine whether or not the adjustment is reasonable.

This adjustment is troubling for a couple of reasons. First, it appears that the Department's assumption is that if there is a risk that there is an error in its projections, then the appropriate step is to make adjustments unfavorable to customers. This assumption is unfair to customers because it is without support. Moreover, consistent with my conclusions earlier, this type of assumption would contribute to a pattern of forecasting revenues that are lower than should be expected. Second, this adjustment is an example of an adjustment that is not known and measurable. Therefore, I am recommending the removal of the billing adjustment factor from the development of the revenue requirements.

O&M Expenses

Q. BEFORE DESCRIBING THE FORECAST METHODOLOGY FOR EXPENSES, PLEASE DESCRIBE HOW THE WATER DEPARTMENT'S EXPENSES ARE CATEGORIZED.

A. The Water Department's expenses are categorized into the following expense classes (see, generally, PWD St.-2 at 12-13):

- Class 100 - Personal Services -This category represents expenses related to employee compensation and fringe benefits (i.e., health insurance, pension benefits, etc.).
- Class 200 - Purchase of Services - This category includes the cost of outside services supplied on behalf of the Water Fund. It includes costs such as for electricity, telephone, bio-solids transportation, professional services (i.e., legal, engineering services, etc.) and leases.
- Class 300 - Material and Supplies[6] - This category includes the cost of chemicals, pump parts, supplies, fuel, vehicle parts and lubricants, etc.
- Class 400 - Equipment - This category includes the cost of heavy equipment, office equipment, furniture and fixtures, etc.
- Class 500 – Contributions, Indemnities, Taxes and Awards - This category includes payments made by the Law Department on behalf of the Department for liabilities, claims and property damage, as well as certain taxes and employee awards.

[6] PWD St.-2 at 12 appears to erroneously describe Class 300 as "Equipment," inconsistent with PWD's Financial Plan, which lists Class 300 as "Materials and Supplies." See BV-S1 at 5.

- Class 700 - Debt Service - This includes the cost of principal and interest payments due on revenue bonds and other debts of the Department.
- Class 800 – Interfunds - This category includes payments made to other City departments for services rendered to the PWD.
- Class 900 – Advances and other miscellaneous payments.

Q. PLEASE EXPLAIN HOW THE DEPARTMENT DETERMINED THE OPERATING EXPENSES USED IN THE COST OF SERVICE IN THIS PROCEEDING.

A. PWD used its Fiscal Year 2016 operating budget as the starting basis for the development of its FY17 and FY18 Operation and Maintenance (O&M) expense projections. The first step in the process was to calculate what the Department termed to be the "expected expenditure level". The expected expenditure level is derived by multiplying the FY 2016 budgeted expenditures by historical "actual-to-budget factors". These "actual-to-budget factors" are also referred to as "budget factors" or "spend factors". The actual–to-budget factors are calculated by dividing the actual level of expenditures by the budgeted level of expenditure for each category of expenses. Although the workpapers showed 1-year, 3-year and 5-year historical average spend factors, the Department used the 3-year average spend factor for the majority of the categories. In general, the spend factors are less than 100 percent for various categories of expenses because the Department does not spend the full budgeted amount for many budget categories. After the FY 2016 expected expenditure level was determined, the projected levels of expenses for FY17 and 2018 were determined by applying inflation escalation factors to FY 2016 amounts adjusted to reflect the expected expenditure levels and then adding specific adjustments.

Actual to Budget Factors

Q. DO YOU AGREE WITH THE ACTUAL-TO-BUDGET FACTORS USED BY THE DEPARTMENT TO DETERMINE THE EXPECTED EXPENDITURE LEVEL?

A. The average actual-to-budget factors by cost classification were determined based on the spending levels of the recent three years of FY 2013 through FY15. However, there were certain exceptions to the application of the 3-year average spend factors. The spend factors applied to Class 100 Salaries and Wages, Pension, Pension Obligations and Contributions were not based upon the 3-year average. Instead, PWD applied a 100 percent spend factor to those expenses. After evaluating the cost of service, I disagree with the use of the 100 percent spend factor for these costs. Therefore, I am recommending the expenses be adjusted to reflect the use of the 3-year average spend factor for each of the categories.

Q. WHY ARE YOU RECOMMENDING THE USE OF THE 3-YEAR AVERAGE SPEND FACTORS FOR SALARIES AND WAGES EXPENSES?

A. The Department determined the salaries and wages included in the cost of service study for the test period by escalating its FY 2016 budgeted salaries and wages expenses to reflect labor rate increases and increases in the number of employees. The FY 2016 budget included 1,959 employees which was increased to reflect 1977 employees, or an increase of 18 additional employees during FY 17 and FY 18. It should be noted that this level of employees is 219 employees higher than the actual number of employees for FY15, 216 employees higher than the actual level of employees in FY14, and 265 employees higher than FY 2013. In addition to the increase in the number of employees, the department has escalated the salaries and wages expenses by 3 percent to reflect wage rate increases in FY 17 and FY 18. Finally, to derive the test year level of expense, a 100 percent spend factor (the actual to budget factor) was applied to the projected salary and wages expenses. I disagree with the use of the 100 percent spend factor in the determination of the salaries, wages and expenses because it leads to a result that is not reasonable.

Data from PWD shows that from FY 2013 through FY 2016, the Department has never been able to fill 100 percent of its budgeted positions in any one of those years. In fact, in the response to PA-EXE-66, PWD stated: “PWD would like to have very few vacancies on any given month. Due to the extremely long time period required to fill a vacancy in the Civil Service system (up to 6 months), reaching a vacancy number below 100 is unlikely now or in the immediate future.” Clearly, the Department admits that the assumption that all positions will be filled is unrealistic. In addition to filling the empty positions, the Department’s 3-year average spend factors do not support the use of the 100 percent spend factor. Therefore, consistent with the other expenses presented by PWD, I have used the 3-year average spend factor to determine the level of salaries and wages to be included in rates.

Q. WHY ARE YOU RECOMMENDING THE USE OF THE 3-YEAR AVERAGE SPEND FACTORS FOR PENSION AND PENSION OBLIGATIONS?

A. PWD has developed test year pension and pension obligation costs based upon the costs presented in the City’s Five-Year Financial Plan. PWD submits that the City faces significant challenges in meeting its pension obligation, resulting in rising pension costs. In fact, the FY16 budgeted pension expense reflects an approximate 14 percent increase in costs from FY 15. Similar to salaries and wages, PWD has applied a 100 percent spend factor to derive the test year pension expense and pension obligation. PWD cites the City's rising pension costs as the reason for using the 100 percent and claims the 3-year average spend factor would result in an understatement of these costs.

I disagree with PWD's claim that the use of the 3-year average spend factor would result in an understatement of pension expense and pension obligations. As I understand it, the Department's employees are covered under the City's pension plan. Hence, for budgeting purposes, PWD has always used the City's pension projections as the source of PWD's pension budget amount. As the PWD's data show, historically its spend factor has not been 100 percent. So the use of the 100 percent spend factor in this instance is not justified. Moreover, as I have indicated above, the City's budget already reflects an increase in costs to recognize the rise in pension cost. Given that the rise in costs has already been reflected in the budget projections, it would be inappropriate to increase the spend factor to recognize the rise in costs again. Therefore, I recommend that the most recent 3-year average spend factor be used to determine pension expense and pension obligation.

Q. WHY ARE YOU RECOMMENDING THE USE OF THE 3-YEAR AVERAGE SPEND FACTORS FOR CONTRIBUTIONS?

A. The cost listed as Contributions is the short form name for Class 500 costs which, under the Department's system of accounting, encompasses contributions, indemnities and taxes. For the test year, PWD has increased the projected cost by $1.1 million or approximately 28 percent over the FY 15 level of costs. In addition to this increase PWD applied a 100 percent spend factor in determining the amount included in the cost of service. When asked to explain the reason for the use of the 100 percent spend factor, PWD's response referenced Ms. LaBuda's testimony where she stated:

> Costs for contributions, indemnities and taxes (Class 500) increased from $5,090,380 in FY 2013 to a budgeted amount of $6,605,000 in Fiscal Year 2016. Claims payable by the Department are expected to meet or exceed the budgeted amount during Fiscal Year 2016 due to an increase in exposure due to claims from recent water main breaks. The available balance in the indemnity account for claims payable by the Water Fund has declined from the initial appropriation of $6,605,000 on July 1, 2015, to approximately $2,509,025 on December 7, 2015. Based on the number of claims and the value of claim funds set aside to pay expenditures or claims during the first four months of Fiscal Year 2016, less than 50% of the total appropriated amount remains available to pay claims during the final seven months of Fiscal Year 2016. (PWD St.-2 at 17.)

My understanding of the Department's rationale for using the 100 percent spend factor is that because of the claims as of December 2015, the amount included in the cost of service should be increased.

I disagree with the basis for using the 100 percent spend factor as I will explain below. The increased exposure to claims has not been demonstrated. While the Department pace of expenditure during FY 16 may be higher than expected, the higher expenditures is not due to an increase in water main breaks as implied by PWD's claim of increased exposure. Instead, the increase in expenditure was the result of one major incident, as demonstrated in the response to PA-EXE-177. Moreover, because there was a major incident during FY 2016, it does not mean that there will be another major incident in FY17 or FY18. Given the budgeted amount for contributions/indemnities was increased by approximately 17.2 percent from $52.276 million to $61.266 million, additional funds have been made available to accommodate expected higher activity. The historical data indicates that the spend factor of this account is approximately 77 percent. Therefore, I believe an historical factor is more reasonable than to choose a factor based upon only one year's activity.

Expense Escalation

Q. HOW DID THE DEPARTMENT ESCALATE EXPENSES IN ITS COST OF SERVICE?

A. As I indicated earlier, after the expected level of expenses were determined by the application of actual-to-budget factors to budgeted FY 2016 expense, those budgeted expense categories or object classes were escalated by inflation factors, assumed by Black & Veatch to be appropriate, to project the budget expenses for FY17 and 2018.

The following chart summarizes the various cost escalations as presented in the Department's workpapers.

Philadelphia Water Department
O&M Escalation Factors

Description	2017	2018
Labor	3.00%	3.00%
Other Benefits	4.45%	4.59%
Pension	2.42%	1.66%
Pension Obligations	0.00%	0.00%
General	3.00%	3.00%
Property Leases	-0.93%	4.76%
Other 200 (Purchases & Services)	3.50%	3.50%
Other 300 (Materials & Supplies)	2.00%	2.00%
Other 400 (Equipment)	2.25%	2.25%
Energy	0.00%	2.50%
Chemicals	3.30%	3.30%
Other	3.00%	3.00%

A document titled "The Philadelphia Water Department Financial Plan: Revenue & Revenue Requirement Assumptions," was included as part of Black & Veatch's supplemental testimony in this proceeding. PWD St.-9B at BV-S1. Figure 5 from that document is reproduced below and purports to show the escalation factors that were used in the derivation of the FY 17 and FY 18 expenses. In general, the two tables are consistent except for the category of General and Other costs which I will explain in more detail later.

Class	Description	Annual Escalation	Basis
100	Labor Costs	FY17 - 3.0% FY18 - 2021 - 3.0%	Based on: • Labor Agreement for FY17; and • Projection beyond the Labor Agreement (FY18 - 2021) based on the last year of the Labor Agreement.
200	Electric Costs	FY17 - 0.0% FY18 - 2021 - 5.0%	Based on Water Department's discussions with the City's Energy Procurement Office: • FY17 energy costs are expected to be stable; • FY18 - 2021 escalation factors are based upon PWD's long-term historical experience and industry indices for power costs
200	Other Costs	3.50%	Based on FY15 Water Fund increase in Class 200-Other costs.
300	Chemical Costs	FY17 - 2021 - 3.3%	Based on discussions with the Water Department: •FY17 - 2021 escalation factors are based on three year historical average increase in Water Fund Chemical Costs
300	Other Costs (Excluding Chemicals)	2.00%	Based on three-year historical aaverage increase in PPI Construction Materials for construction.
400	Equipment	2.25%	Based on three-year historical average increase in PPI Construction Machinery & Equipment
500 & 800	Indemnities and Transfers	3.00%	Based on long-term historical average increase in PPI Construction Machinery & Equipment

Q. ARE YOU RECOMMENDING ANY CHANGES TO THE DEPARTMENT’S ESCALATION FACTORS?

A. Yes, I am. I am recommending changes to escalation factors applied to Energy, General Expenses, Other Expenses and Other Class 200 costs.

Q. WHAT CHANGES ARE YOU PROPOSING TO THE DEPARTMENT’S POWER COSTS ESCALATION FACTOR?

A. According to Black & Veatch's testimony, the Department indicated that the City has already completed a block purchase of three-fourths of its power at a cost that is on par with the FY 2016 power costs. Hence, the FY17 power costs were expected to remain at the FY 2016 levels. However, according to Black & Veatch's testimony, Black & Veatch has assumed an annual escalation rate of five percent (5%) for FY18. When asked to provide support for the 5 percent increase in power costs, PWD stated, in the response to PA- EXE-24, that:

> Based upon PWD's historical experience, the Electricity cost component of the Consumer Price Index, as well as discussions with PWD staff, it was decided that a 5% escalation factor would be used to escalate Electric Costs for FY18 – FY21. This is a reasonable escalation factor based upon both experience and judgment, taking into account the market uncertainty related to electricity and power costs.

On the contrary, the Consumer Price Index from PWD's own filing shows that electricity costs have been growing at a negative rate over the last three years. Also, PWD's data shows that its electricity costs decreased by 9.04, 1.87, 12.04 and 4.72 percent in 2012, 2013, 2014 and 2015, respectively. Therefore, there is no justification to reflect a 5 percent increase in power cost. With regard to PWD's claim of "taking into account the market uncertainty related to electricity and power costs", it should be noted that one of the standards of rate making is that costs included in rates should reflect costs that are known and measurable. Hence, the Department's adjustment is not proper.

Q. BEFORE DISCUSSING THE CHANGES THAT YOU ARE RECOMMENDING TO THE DEPARTMENT'S GENERAL AND OTHER

COSTS ESCALATION FACTOR, WOULD YOU PLEASE DISCUSS THE INCONSISTENCY THAT YOU HAVE OBSERVED?

A. Yes. On page 27 of Black & Veatch's Direct testimony, it is stated that: "For other expense categories, Black & Veatch has used an annual escalation factor of three percent (3%) based upon the recent three year average cost increases, as well as a review of various cost indices." Therefore, in PA-EXE-113, the Public Advocate requested the derivation of the 3 percent factor, and that PWD identify the various cost indices reviewed in its analyses. PWD responded stating:

> The statement "3.0 percent annual escalation factor used for other expense categories" in the interrogatory request is incorrect. PWD St.-9A - Direct Testimony and Exhibits of Black & Veatch Corporation presents the annual escalation for the other expense categories as three percent (3%). The 3 percent annual escalation factor referenced in the Direct Testimony is the general overall average used for projecting other operating expenses. As discussed and detailed in PWD Exhibit -5: Assumptions Provided to the Public Advocate on 12-8-2015, Financial Plan: Revenue & Revenue Requirement Assumptions Document # BVS-1, "Other Costs" for Class 200, 300 and 400 expenses were projected separately as 3.5%, 2.0%, and 2.25% respectively. These escalation factors are based upon the recent three year average cost increases of the Water Fund as well as a review of various cost indices as follows on …

Based on the response provided by PWD, its reference provided to the Assumptions Document and Figure 5 (which is reproduced above), one would assume that the Public Advocate's question was in error. However, the Table above entitled "Philadelphia Water Department O&M Escalation Factors" was taken directly from Assumption 15 of PWD's workpapers. As can be seen, there are two line items labelled "General" and "Other" with the 3 percent factor next to them. As such, these factors were clearly used in the financial model used to determine the revenue requirement.

Q. WHAT CHANGES ARE YOU RECOMMENDING TO THE DEPARTMENT'S GENERAL AND OTHER COSTS ESCALATION FACTOR?

A. The Department's 3 percent escalation of these costs is intended to reflect general inflation. Given recent inflation rates and forecasted inflation rates, the 3 percent escalation rate is too high. Instead I am recommending a 2 percent escalation rate be used to forecast these expenses. This 2 percent rate is based upon the *Blue Chip Economic Indicators* consensus forecast of the Gross Domestic Product Price Index (GDP-PI) for 2017.

Q. WHY ARE YOU RECOMMENDING THE GDP-PI INSTEAD OF THE CONSUMER PRICE INDEX (CPI)?

A. The GDP-PI is a broader measure of inflation in the overall economy than the inflation measures proposed by PWD. Since the costs we are escalating are non-specific and the intent is to reflect the general effect of price increases, a broad measure of inflation is more appropriate. The CPI, in contrast, is more focused on measuring inflation using the goods and services that are bought by consumers or households. It is measured by the change in the prices of a fixed basket of goods and services purchase by consumers and households. Clearly, these are not the types of goods and services that PWD acquires in its operations.

Q. WHAT CHANGES ARE YOU RECOMMENDING TO THE DEPARTMENT'S OTHER CLASS 200 COSTS ESCALATION FACTOR?

A. The Department escalated the other class 200 costs by 3.5 percent. The 3.5 percent escalation rate was determined based upon the FY 15 Water Fund increase in class 200 Other Cost. I disagree with this approach for escalating costs because it essentially combines any price increases with increases based upon changes in activity level or the timing of purchases.

The purpose of the cost escalation is to capture the changes in unit costs or prices for goods or services that are beyond the control of the Department. Therefore, the use of an inflation index would be more appropriate to project future costs. Therefore, I am recommending the use of the 2 percent GDP-PI escalation rate to project these costs.

Liquidated Encumbrances

Q. HOW DID THE DEPARTMENT ESCALATE EXPENSES IN ITS COST OF SERVICE?

A. Under governmental accounting systems an encumbrance is recorded to recognize a commitment of funds for a given expense that is anticipated to be incurred. As explained by Ms. LaBuda, liquidated encumbrances represent cancelled commitments, and are treated as contra-expense (expense reduction) by PWD. PWD St.-2, Page 16. A 12 percent liquidated encumbrance factor was used by PWD in determining the projected expenses. As indicated by PWD in response to PA-EXE-21, the 12 percent factor was based on discussions with the Water Department, and the belief was that the 12 percent factor “more closely aligns with recent experience in the targeted budgetary amounts”. However, as shown on Assumptions-33, only one year (FY 15) is shown with a 12 percent liquidated encumbrance factor. For a factor that fluctuates from year to year, it would be unreasonable to set rates based on only one year's activity. Hence, I have used the most recent 3-year average of 19.23 percent for the liquidated encumbrance factor.

Issuance Costs

Q. WHAT ADJUSTMENT HAVE YOU MADE TO DEBT ISSUANCE COSTS?

In projecting the test year cost of debt, the Department increased the debt issuance cost from 0.51 for FY15 percent to 1.5 percent for FY17 and FY18. The Department responded: "The FY 17 and FY 18 Issuance Costs percentage is an estimate based on historical Water Department experience and water and wastewater industry experience". PA-EXE-147. An additional inquiry was made for documentation to support the 1.5 percent, but none was provided. PA-EXE-150. Therefore, I have changed the debt issuance cost to reflect the actual 0.51 percent issuance cost because the 1.50 percent is not based upon the Department's historical cost, nor is it based on any actual known and measurable cost.

Debt Interest Rate

Q. WHAT ADJUSTMENT HAVE YOU MADE TO THE INTEREST RATE FOR FUTURE DEBT ISSUANCES?

A. The Department has used a 5.25 percent interest rate for debt issued during the projected period. In the response to PA-EXE-27, wherein the Public Advocate sought support for the 5.25 percent, the Department responded that "[t]he City used a 5.25% interest rate assumption for its FY16 debt service budget". Subsequent attempts to obtain additional support for the 5.25 percent rate did not yield any additional documentation.

As I have indicated elsewhere in this testimony, one of the principles of ratemaking is the known and measurable standard. The Department has not met that standard in supporting its interest rate assumption. In the response to PA-EXE-28, the Public Advocate was referred to the City's Investor Website at http://www.phila.gov/investor for additional interest rate data. After reviewing recent City debt issuance documents, I observed that the interest rate on the City's bonds is currently 5 percent. Therefore, I have used 5 percent as the interest rate for the projected debt issuance.

<u>Capital Improvement Program Inflation Factor</u>

Q. HOW HAS THE DEPARTMENT PROJECTED ITS CAPITAL IMPROVEMENT PROGRAM COSTS FOR THE TEST YEARS?

A. The Capital Improvement Program (CIP) budget included for the projected period (FY17 and FY18) is based on the Department's projected capital program for FY17 to FY 2022. The FY18 to FY 2021 capital program costs are inflated at 4% and purportedly reflect the anticipated capital program expenditures for the projection period. The projected capital expenditures are allocated to the water and wastewater utilities based on the distribution of the projected capital budget.

Q. DO YOU AGREE WITH PWD'S CIP INFLATION ESCALATION RATE?

A. No. According to the Water Department, it used three construction cost indices, Handy Whitman, ENR, and R.S. Means based on the 7-year period 2001 through 2007. The average annual inflation rate derived from those 3 indices for that period was 4.02 percent. While, conceptually, I accept the use of an inflation factor to escalate the CIP cost, the data used for the CIP cost escalation is outdated. Therefore, I disagree with 4 percent used to project CIP costs. The application of an inflation escalation to the CIP costs was intended to recognize the effect of inflation on CIP costs. Given that I disagree with the use of the outdated data by the Department, I am recommending a 2 percent escalation rate be used to forecast these expenses. This 2 percent rate is based upon the *Blue Chip Economic Indicators* consensus forecast of the Gross Domestic Product Price Index (GDP-PI) for 2017.

Additional Adjustments Proposed by PWD

Q. PLEASE EXPLAIN WHAT ADDITIONAL ADJUSTMENT PWD HAS PROPOSED IN ITS FILING.

A. As stated above, the Department is proposing additional adjustments above the amounts that have been escalated and used in the FY17 and 2018 test years. Below is a table summarizing the proposed adjustments:

Philadelphia Water Department
Additional Adjustments

Finance	100	2017 to 2021	$56,000 to $64,000	Inclusion of an additional accountant position
	200	2017 to 2021	$3.55 Million	Additional Stormwater Management Incentive Program (SMIP) and Green Area Retrofit Program (GARP) costs
	200	2016 to 2017 2018 to 2021	4.0 Million 1.27 Million	City Grants (contra revenue credits) based on historical experience. FY18 to FY 2021 projection reduced to reflect the elimination of the existing City Grant program upon the implementation of the Affordability Program
	200	2017 2018 to 2021	1.2 Million 0.6 to 0.7 Million	Additional Basis2 support for the implementation and annual maintenance associated with the Affordability Program
	800	2017 2018	1.8 Million 3.5 Million	Reimbursement to the General Fund for an upfront payment to construct a combined sewer outfall.
Human Resources & Admin	100	2017 to 2021	0.4 Million	Additional staffing positions (Construction Projects Technician, Executive Assistant, Head of Security, and three security staff).
	200	2017 to 2021	1.0 Million to 1.1 Million	Facilities administration costs, which had been inadvertently dropped from the FY 2016 budget and need to be replaced.
Operations	100	2019 to 2021	0.8 Million	Additional staffing required after completion of plant expansion

Philadelphia Water Department
Additional Adjustments

	200	2017 2018 2019	1.3 Million 1.2 Million 0. 1 Million	Additional costs for one-time maintenance requirements.
	200	2017 and 2021	0.5 Million to 0.6 Million	Additional costs for additional abatements.
	300	2017 and 2021	0.5 Million to 0.6 Million	Costs for phosphoric acid and parts for equipment repair.
	400	2017 and 2021	0.1 Million	Additional equipment costs
	100,200 & 300	2018	0.4 Million	One-time costs associated with the implementation of the Advanced Metering infrastructure (AMI)
	100 &200	2019 to 2021	(0.2) Million (1.9) Million	Projected cost savings as a result of the anticipated implementation of AMI
	300	2019 to 2021	0.2 Million to 0.3 Million	Projected costs increases as a result of the anticipated implementation of AMI
Planning & Environmental Services	100	2017 to 2021	0.8 Million to 1.4 Million	Additional staffing costs for the Office of Watersheds.
	200	2017 to 2021	0.6 Million to 1.0 Million	Additional stormwater facilities maintenance.
Planning & Engineering	100	2017 to 2021	0.5 Million to 0.6 Million	Additional staffing costs for the sewer lateral inspection program.
	200	2017 to 2021	0.6 Million to 0.7 Million	Costs for mark-out of water & sewer infrastructure prior to excavation.
Public Affairs	100	2017 to 2021	0.1 Million	Additional staffing costs for Creative Affairs Director.
Fleet Management	300	2018 to 2019	14,000 to 6,000	Projected cost increases as a result of the anticipated implementation of AMI
	300	2020 to 2021	(23,000) to (66,000)	Projected cost decreases as a result of the anticipated implementation of AMI.
City Finance	100	2017 to 2021	2.3 Million to 3.6 Million	Additional costs for pension, pension obligation, and benefits as a result of staffing additions.
Water Revenue Bureau	100	2017 to 2021	0.9 to 1.3 Million	Additional staffing to support the Affordability Program
	200	2017 to 2021	0.1	Additional space requirements to support the Affordability Program

Q. DO YOU AGREE THAT THESE ADJUSTMENTS SHOULD BE ALLOWED AS PART OF THIS PROCEEDING?

A. No, they should not be included as part of this proceeding. There are several reasons why these adjustments should not be included. During the discovery phase of this proceeding, repeated attempts were made to obtain the supporting documentation for these adjustments. Specifically, the Public Advocate sought data that would show how the adjustments were calculated and the assumptions used for the cost components. Essentially, these are *pro forma* adjustments which means that the costs have not been incurred to date. As a result, these adjustments are the best estimates made by PWD's staff. In every rate proceeding in which I have been involved, *pro forma* adjustments are subject to discovery and review. However, in this proceeding the Public Advocate was not allowed to review the documentation supporting these adjustments despite several attempts. Eventually, during a telephone call between PWD and the Public Advocate, PWD informed the Public Advocate that examining the supporting documentation would not be permitted because these adjustments were proposed in the City's FY17 budget which has not yet been approved.

Q. WHAT ARE THE REASONS WHY THESE ADJUSTMENTS SHOULD NOT BE ALLOWED?

A. The first reason why these adjustments should not be allowed is that they are unsupported. While the Department may claim that documentation exists, the lack of provision of the documentation for review and investigation by the parties is equivalent to the adjustments being unsupported. This is an important point because as I have discussed in this testimony, there have been instances where adjustments that are unfavorable to customers have been included without support and adjustments have included components that are not known and measurable. Hence, it would be unreasonable to include adjustments in rates without knowing what is included in the costs.

Second, given that these costs are part of the budget that has not been approved, it is impossible to know whether the City will even adopt these costs or the underlying initiatives in its budget. Moreover, even if the City adopted the initiatives, it is not possible to know now what funding level is approved nor whether the funding level represents a reasonable estimate. As a result, these adjustments do not meet the known and measurable standard of ratemaking, and should not be allowed.

Finally, including these costs could potentially overstate the costs which make up the cost of service. As I have described earlier in this testimony, the Department has used inflation escalations to project the FY17 and 2018 costs. The use of the inflation escalation is a proxy for determining the increases in cost categories without investigating which specific cost elements are likely to increase and which are likely to decrease. It is permissible to use a reasonable inflation factor to project certain increases in costs. It is should be noted when the inflation rate is measured, it includes not only increases, but decreases as well. This is similar to how operational costs change. The potential to overstate is realized when one uses both the inflation rate to increase costs while, at the same time, making specific adjustments to increase those same cost categories. A specific example of this is present in PWD's filing. PWD has adjusted chemical expense by 3.3 percent. Included in the chemical expenses which were inflated by 3.3 percent is phosphoric acid. However, in the additional adjustments, PWD has included between $500,000 to $600,000 for phosphoric acid. Clearly, phosphoric acid has been increased twice by PWD. Again, this demonstrates why the additional adjustments should not be allowed.

Automated Meter Infrastructure

Q. DO YOU HAVE AN ADDITIONAL COMMENT REGARDING THE ADJUSTMENTS PROPOSED BY THE DEPARTMENT?

A. The Automated Meter Infrastructure (AMI) costs are included in the additional adjustments. During this proceeding the Public Advocate and the Department reached an agreement whereby the Department has agreed to remove the AMI costs from this proceeding. Therefore, even if the Board does not accept my recommendation to disallow the recovery of the additional costs, the AMI costs should be removed pursuant to the agreement.

Rate Case Expenses

Q. WHAT CHANGES ARE YOU RECOMMENDING TO BUDGETED RATE CASE EXPENSE?

A. PWD has estimated the total cost of this proceeding to be $1,644,000 which is included in the FY 2016 budget. I am recommending that rate case expenses be normalized over 2 years. Rate case expenses are incurred as a result of the Department filing to increase rates. Since these costs are not incurred every year, they should be normalized over the benefit period. This approach is consistent with the two-year increase proposed by the Department which, if authorized by the Board, would set rates that increase twice through 2018. Therefore, the 2-year period is appropriate.

Development of Revenue Requirement

Q. PLEASE PROVIDE YOUR UNDERSTANDING OF HOW THE DEPARTMENT'S PROPOSED REVENUE REQUIREMENT WAS DEVELOPED.

A. Although the revenue requirement model that is used to determine the proposed revenue requirement is primarily driven by the revenues and expenses as I have discussed earlier, three additional factors must be considered according to Black and Veatch testimony, beginning on page 32.

First, the 1989 General Ordinance Requirement must be met. In addition to meeting the operation and maintenance expenses and annual capital costs, the 1989 General Ordinance stipulates that, during any given fiscal year, the Water Department's combined revenues for water and wastewater services must be sufficient to satisfy the following debt service coverage obligations:

1. The net revenues for any fiscal year shall be equal to at least 1.20[7] times the debt service requirements for such fiscal year (excluding the principal and interest payments in respect of Subordinated Bonds).

2. In each fiscal year, water and wastewater rents, rates, fees, and charges shall yield net revenues which shall be at least equal to 1.00 times the sum of the following:

    a. The debt service requirements for such fiscal year (including debt service requirements in respect of Subordinated Bonds);

    b. Amounts required to be deposited into the Debt Reserve Account during such fiscal year;

    c. The principal or redemption price of and interest on General Obligation Bonds payable during such fiscal year;

    d. Debt service requirements on interim debt payable during such fiscal year; and

    e. The Capital Account Deposit to the Construction Fund for such fiscal year (less any amounts transferred from the Residual Fund to the Capital Account during such fiscal year).

[7] To clarify, throughout the discussion of the Debt Service Coverage, the coverage is expressed either as 1.xx times or 1xx percent (e.g., 1.20 or 120%). The arithmetic result is the same. Hence, these factors are used interchangeably.

Second, the AGM Insurance Requirement must be met. That is, in addition to the rate covenant of the 1989 General Ordinance described above, the City has agreed with Assured Guaranty Municipal Corporation (AGM) that for as long as the Series 2005A Bonds, the Series 2005B Bonds, and the portion of the Series 2010A Bonds insured by AGM are outstanding, the established rates and charges for use by the Water and Wastewater systems shall be sufficient to yield Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of, such fiscal year) at least equal to 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year. Furthermore, any calculation by a consulting engineer of projected rate covenant compliance in connection with the proposed issuance of additional Bonds for each fiscal year ending on or after June 30, 2000, must state that Net Revenues (excluding amounts transferred from the Rate Stabilization Fund into the Revenue Fund during, or as of the end of, such fiscal year) in each fiscal year included in the projection period are projected to be at least 90 percent of the Debt Service Requirements (excluding debt service due on any Subordinated Bonds) in such fiscal year.

Third, the Water Rate Board Ordinance Requirement: Section 13-101(4)(a) of the City Code sets the floor for the amounts that rates and charges must generate to support the System. The rates and charges must yield to the City at least an amount equal to the sum of:

1. Operating expenses of the City in respect of the water, sewer, storm water systems;[8]
2. Debt service on all obligations of the City in respect of the water, sewer, stormwater systems;

[8] I do not believe this language prohibits the normalization of nonrecurring costs.

3. In respect of water, sewer and storm water revenue obligations of the City, such additional amounts as will be required to comply with any rate covenant and sinking fund reserve requirements approved by ordinance of Council in connection with the authorization or issuance of water, sewer and storm water revenue bonds; and

4. Proportionate charges for all services performed for the Water Department by all officers, departments, boards or commissions of the City.

In addition, Section 13-101(4)(b) of the City Code states that the rates and charges must not exceed the total appropriations from the Water Fund.

Q. HOW IS THE SENIOR DEBT COVERAGE DETERMINED?

A. As shown on Table C-1 of Black & Veatch's Exhibit BV-E1, Total Senior Debt Service Coverage (line 26) equals Net Revenues After Operations (line 21) divided by Total Senior Debt Service (line 25).

Q. IN PREVIOUS PWD RATE PROCEEDINGS, HAS THE REVENUE REQUIREMENT BEEN BASED UPON ATTAINING A 1.20X COVERAGE?

A. Yes, my understanding is that this has been the case in past PWD rate proceedings.

Q. IS PWD REQUESTING A CHANGE IN THE COVERAGE RATIO FOR THIS PROCEEDING?

A. Yes. PWD witness Katherine L. Clupper presents the Department's proposed change in financial policies beginning on page 8 of her testimony. For Debt Service Coverage she states on behalf of PWD:

> PWD will set rates and develop operating and capital budgets that ensure minimum senior debt service coverage of 124 percent in FY16, 125 percent in FY17, 126 percent in FY18, and 135 percent by FY19, maintaining this level of coverage thereafter.
>
> - This coverage level exceeds PWD's bond indenture requirement of 120 percent senior debt service coverage

- Excess operating revenue above stated projections will be used to increase debt service coverage resulting in additional pay-as you go capital funding

With regard to Cash Reserves, she states on page 9 of her testimony:

> PWD must maintain at least $110 million in the Rate Stabilization Fund (RSF) and $15 million in Residual Fund, adjusted for inflation.
>
> - The PWD will target 120 days cash on hand when accounting for the Rate Stabilization Fund and Residual Fund

Finally, for Pay-Go financing of capital expenditures she states:

> PWD will target to fund at least 20% of the capital program with cash, thereby reducing a portion of long-term borrowing requirements or needs.

Q. DO YOU AGREE WITH THE DEPARTMENT'S PROPOSED CHANGE IN DEBT SERVICE COVERAGE?

A. No. The Department's proposal to increase its Debt Service Coverage from 1.20 times to 1.35 times is supposedly supported by a comparison to sector summaries produced by rating agencies. These summaries are essentially general medians of the various factors. They do not provide any details of the entities that are included in deriving the medians. Therefore, it would be inappropriate to establish policy based on summary data. For instance, page 4 of Ms. Clupper's testimony shows that according to Moody's the median total annual debt service coverage of an "A" rated water and sewer utility is 1.81. However, it is possible that, for whatever reason, most of the utilities that make up that median have bond covenants that require those utilities to maintain higher debt service coverages. The point I am making is that critical information is unknown with regard to the published summary and it would be inappropriate to authorize policies based upon such lack of information.

Q. BASED UPON THE DISCUSSION ABOVE, WHAT DO YOU RECOMMEND?

A. I recommend that the coverage utilized for this proceeding should remain at 1.20x for each year of the rate period.

Residual Fund

Q. WHAT IS THE STATED PURPOSE OF THE RESIDUAL FUND, AS SHOWN ON LINES 31 THROUGH 38 EXHIBIT BV-E1, TABLE C-1?

A. As explained on page 6 of Ms. LaBuda's testimony, the Residual Fund is explained as follows:

> Established to maintain the remaining revenues after payment of all operating expenses, all debt service obligations (including those under a Swap agreement), scheduled transfers to the RSF and required deposits to the Capital Account of the Construction Fund.
>
> Residual Fund may be used to fund the following and among other things: operating expenses, transfers to any other Water Fund accounts (other than the Revenue Fund or the RSF), and transfers to the City's General Fund in an amount not to exceed the lower of (a) net revenue earnings (as defined in the Ordinance) and (b) $4.994 million.

The Residual Fund is incorporated in PWD's proposed cash reserve policy and is summarized on Exhibit BV-E1, Table C-1. As shown on line 38 of that exhibit, PWD's proposed policy goal of having an approximate $15 million year-end balance has been reflected in PWD's proposed rate increase.

Q. WHAT IS THE BASIS OF THE PROPOSED INCREASE OF THE END OF YEAR RESIDUAL FUND BALANCE?

A. Similar to PWD's proposal to provide debt service coverage ratios which are higher than legally required, this new goal is largely supported by a comparison to sector summaries produced by rating agencies. As I have indicated, these summaries are essentially general medians of the various factors. They do not provide any details of the entities that are included in deriving the medians. Therefore, it would be inappropriate to establish policy based on summary data.

Q. DO YOU BELIEVE THAT EXHIBIT BV-E1, TABLE C-1 PROVIDES A FORECAST WHICH IS REASONABLY ACCURATE FOR RATEMAKING PURPOSES WITH RESPECT TO YEAR-END BALANCES WHICH WOULD OCCUR IF THE DEPARTMENT'S RATE PROPOSAL WAS ACCEPTED?

A. No. On the basis of past history, I believe that the Department's estimates of revenues on which the model is based result in an overstatement of its forecast revenue requirements. This indicates a strong likelihood that either Residual Fund or Rate Stabilization Fund balances will again exceed what PWD forecasts.

Q. DO YOU HAVE DATA SUPPORTING YOUR POSITION?

A. Yes. Utilizing the Black & Veatch model, and having confirmed with Black & Veatch that I was properly entering adjustments properly into the model, I was able to show the accumulation of substantial reserves in the Residual Fund based on my conclusions about appropriate forecasted expenses and revenues.[9]

Rate Stabilization Fund

Q. WHAT IS THE STATED PURPOSE OF THE RATE STABILIZATION FUND (RSF), AS SHOWN ON LINES 39 THROUGH 41 OF EXHIBIT BV-E1, TABLE C-1?

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[9] Logically, if operating expenses are reduced and revenues are increased, fund balances will increase if revenues are not utilized for other purposes, e.g., capital expenditures.

A. According to page 4 of Ms. LaBuda's testimony, the purpose of the RSF is as follows:

> The Rate Stabilization Fund (RSF) was established in conjunction with the Series 1993 Revenue Bonds to provide funds to cover annual expenditures when the revenues are less than projected and to prevent the need for large swings in the water rates year to year.

Q. FOR COVERAGE PURPOSES, IS THERE A LIMITATION ON THE USE OF THE RATE STABILIZATION FUND IN ANY ONE YEAR?

A. Yes. The requirement states that net revenues must account for at least 90% of debt service excluding amounts transferred from the Rate Stabilization Fund to the Revenue Fund.

Q. FOR THE TEST YEARS, DID PWD REFLECT ANY AMOUNTS TO BE WITHDRAWN (OR ADDED) TO THE RSF ON EXHIBIT BV-E1, TABLE C-1?

A. Yes. During FY 2016 through FY18, PWD shows transfers from the RSF of $36.9 million, $19.3 million and $39.0 million, respectively. This is consistent with the claim made by Ms. LaBuda on page 2 of her testimony.

Q. WOULD THE REQUIRED AMOUNT NEEDED TO BE WITHDRAWN FROM THE RSF HAVE DIFFERED IF THE REQUIRED COVERAGE WAS 1.20 TIMES AS YOU RECOMMEND, RATHER THAN THE INCREASED COVERAGE PROPOSED BY THE DEPARTMENT?

A. Yes. Assuming no other adjustments, and just utilizing the legally-required coverage levels, the amounts would be lower by $3.7 million, $3.5 million and $4.8 million for FY 2016, 2017 and 2018, respectively. This example illustrates how the required coverage factor is an important variable in the determination of the revenue requirement.

Q. IS IT APPROPRIATE TO USE FUNDS FROM THE RATE STABILIZATION FUND TO ACHIEVE DEBT SERVICE COVERAGES WHICH ARE HIGHER THAN WHAT IS LEGALLY REQUIRED?

A. No. I do not believe it is reasonable to use the rate stabilization funds to achieve a target that is not legally required of the Department. On the other hand, the Department's historical use of Rate Stabilization Funds to meet its legally required debt service ratios was reasonable.

Q. DO YOU HAVE OTHER CONCERNS REGARDING THE RATE STABILIZATION FUND?

A. Yes. In past rate cases, the PWD has projected that by the end of the multi-year Rate Period, the Rate Stabilization Fund balances would be reduced to a much lower level than at the beginning of the Rate Period, thereby, fulfilling its purpose of mitigating rate increases. In fact, however, these projected reductions in RSF balances have not occurred.

Adequate Reserves

Q. PLEASE COMMENT ON THE ADEQUACY OF PWD'S RESERVES.

A. As has been shown, the Department has accumulated significant reserves in its Rate Stabilization Fund. In addition, on the basis of Generally Accepted Accounting Principles that are used in the Department's Annual Financial Reports, the Department reports having over $80 million in current assets designated as "Equity in Treasurer's Account" on June 30, 2015. PWD acknowledges that Equity in Treasurer's Account is included in calculating the Department's days cash on hand. PA-EXE-130 (showing PWD maintained between 260 and 353 days cash on hand from FY 2012-FY15). Days cash on hand is an important measure of the adequacy of a utility's reserves. Given the increase in the Rate Stabilization Fund and Equity in Treasurer's Account in FY15, I find no basis to conclude that the Department needs to increase its reserves.

Cash Funded Capital

Q. DO YOU AGREE WITH THE DEPARTMENT'S PROPOSED CHANGE TO FUND AT LEAST 20% OF THE CAPITAL PROGRAM WITH CASH IN DEBT SERVICE COVERAGE?

A. No. As stated above, the Department's proposal to fund at least 20% of the capital program with cash is similar to its Debt Service Coverage proposal, where the proposal is supported by a comparison to sector summaries produced by rating agencies. As I have said these summaries are essentially general medians of the various factors. They do not provide any details of the entities that are included in deriving the medians. Therefore, it would be inappropriate to establish policy based on summary data.

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes, it does.

BEFORE THE

PHILADELPHIA WATER, SEWER AND STORM WATER RATE BOARD

PHILADELPHIA WATER DEPARTMENT	**))**	**FY17-2018 RATES**

SCHEDULES TO THE

DIRECT TESTIMONY

OF

LAFAYETTE K. MORGAN, JR.

ON BEHALF OF THE PUBLIC ADVOCATE

March 24, 2016

EXETER

ASSOCIATES, INC.
10480 Little Patuxent Parkway
Suite 300
Columbia, Maryland 21044

PHILADELPHIA WATER DEPARTMENT
COMBINED OPERATIONS
Comparative Summary of Operating Results
Based on PWD and Public Advocate Positions
Rate Years Ending June 30, 2017 and 2018

Line No.	Description	FY 2017 Amount Per PWD	FY 2017 Amount Per Public Advocate	Difference	FY 2018 Amount Per PWD	FY 2018 Amount Per Public Advocate	Difference
1	**OPERATING REVENUE**						
2	Water Service - Existing Rates	$ 254,550	$ 258,979	$ 4,429	$ 252,888	$ 258,992	$ 6,104
3	Wastewater Service - Existing Rates	386,091	390,070	3,978	383,669	388,913	5,244
4	Total Service Revenue - Existing Rates	640,641	649,049	8,408	636,557	647,905	11,348
5							
6	PWD Proposed Rate Increases						
9	FY 2017	34,735	-	(34,735)	34,514	-	(34,514)
10	FY 2018				36,392	-	(36,392)
12	Total Water & Wastewater Service Revenue	675,376	649,049	(26,327)	707,463	647,905	(59,558)
13							
14	Other Operating Revenue	22,293	22,425	132	6,133	6,308	175
18	Operating Fund Interest Income	310	397	87	286	385	100
19	Rate Stabilization Interest Income	575	575	-	470	470	-
20	Total Revenues	$ 698,553	$ 672,446	$ (26,108)	$ 714,352	$ 655,069	$ (59,283)
21	**OPERATING EXPENSES**						
22	Water & Wastewater Operations	$ (285,741)	$ (250,740)	$ 35,000	$ (293,383)	$ (257,141)	$ 36,242
23	Direct Interdepartmental Charges	(172,430)	(168,178)	4,252	(178,074)	(172,541)	5,533
24	Total Operating Expenses	(458,171)	(418,918)	39,252	(471,457)	(429,682)	41,775
25	Transfer From/(To) Rate Stabilization Fund	19,300	19,300	0	39,000	39,000	0
26	Net Revenues After Operations	$ 259,683	$ 272,827	$ 13,145	$ 281,895	$ 264,387	$ (17,508)
27	**DEBT SERVICE**						
28	Outstanding Bonds	$ (181,580)	$ (181,580)	$ -	$ (182,769)	$ (182,769)	$ -
29	Pennvest Parity Bonds	(12,343)	(12,343)	-	(12,927)	(12,927)	-
30	Projected Future Bonds	(13,791)	(13,791)	-	(27,966)	(27,291)	675
31	Total Senior Debt Service	(207,715)	(207,715)	-	(223,661)	(222,986)	675
32	Total Senior Debt Service Coverage (L26/L31)	1.25 x	1.31 x		1.26 x	**1.18 x**	
33	Total Debt Service on Bonds	(207,715)	(207,715)	-	(223,661)	(222,986)	675
34	Capital Account Deposit	(21,745)	(21,745)	-	(22,289)	(22,289)	-
35	Total Coverage (L26/(L33+L34))	1.13 x	1.18 x		1.14 x	1.07 x	
36	**RESIDUAL FUND**						
37	Beginning of Year Balance	$ 15,255	$ 42,004	$ 26,749	$ 15,132	$ 90,393	$ 75,260
38	Interest Income	55	238	183	55	425	371
39	Plus:						
40	End of Year Revenue Fund Balance	30,223	78,551	48,328	35,945	91,258	55,314
41	Deposit for Transfer to City General Fund	794	793	(1)	799	797	(2)
42	Less:						
43	Transfer to Construction Fund	(30,400)	(30,400)	-	(35,900)	(35,900)	-
44	Transfer to City General Fund	(794)	(793)	1	(799)	(797)	2
45	Transfer to Debt Service Reserve Fund	-	-	-	-	-	-
46	End of Year Balance	$ 15,132	$ 90,393	$ 75,260	$ 15,232	$ 146,176	$ 130,944
47	**RATE STABILIZATION FUND**						
48	Beginning of Year Balance	$ 169,306	$ 169,306	$ -	$ 150,006	$ 150,006	$ -
49	Deposit From/(To) Revenue Fund	(19,300)	(19,300)	-	(39,000)	(39,000)	-
50	End of Year Balance	$ 150,006	$ 150,006	$ -	$ 111,006	$ 111,006	$ -

PHILADELPHIA WATER DEPARTMENT
WATER OPERATIONS
Comparative Summary of Operating Results
Based on PWD and Public Advocate Positions
Rate Years Ending June 30, 2017 and 2018

Line No.	Description	FY 2017 Amount Per PWD	FY 2017 Amount Per Public Advocate	Difference	FY 2018 Amount Per PWD	FY 2018 Amount Per Public Advocate	Difference
1	**OPERATING REVENUE**						
2	Water Service - Existing Rates	$ 254,550	$ 258,979	$ 4,429	$ 252,888	$ 258,992	$ 6,104
3							
4	PWD Proposed Rate Increases						
5	FY 2017	$ 12,727	$ 12,949	$ 221	$ 12,644	$ -	$ (12,644)
6	FY 2018				$ 13,277	$ -	$ (13,277)
7							
8	Other Operating Revenue	11,834	11,904	70	4,726	4,820	95
9		$ 279,112	$ 283,832	$ 4,721	$ 283,535	$ 263,812	$ (19,723)
10							
11	Operating Fund Interest Income	135	167	32	122	158	36
12	Rate Stabilization Interest Income	193	193	-	182	182	-
13	Total Revenues	$ 279,440	$ 284,193	$ 4,752	$ 283,839	$ 264,152	$ (19,686)
14	**OPERATING EXPENSES**						
15	Water Operations	$ (108,477)	$ (97,082)	$ 11,395	$ (110,702)	$ (99,753)	$ 10,949
16	Direct Interdepartmental Charges	(70,610)	(69,097)	1,513	(72,880)	(70,886)	1,994
17	Water Treatment Plant Sludge	(10,952)	(10,952)	-	(11,678)	(11,678)	-
18	Total Operating Expenses	$ (190,039)	$ (177,130)	$ 12,909	$ (195,259)	$ (182,317)	$ 12,942
19	Transfer From/(To) Rate Stabilization Fund	(1,900)	(1,900)	-	8,100	8,100	-
20							
21	Net Revenues After Operations	$ 87,502	$ 105,163	$ 17,661	$ 96,679	$ 89,935	$ (6,744)
22	**DEBT SERVICE**						
23	Outstanding Bonds	$ (58,467)	$ (58,467)	$ -	$ (58,726)	$ (58,726)	$ -
24	Pennvest Parity Bonds	(5,722)	(5,722)	-	(6,065)	(6,065)	-
25	Projected Future Bonds	(5,792)	(5,792)	-	(11,887)	(11,597)	290
26	Total Senior Debt Service	$ (69,981)	$ (69,981)	$ -	$ (76,679)	$ (76,389)	$ 290
27							
28	Total Senior Debt Service Coverage (L21/L26)	1.25	1.50		1.26	1.18	
29							
30	Total Debt Service on Bonds	$ (69,983)	$ (69,983)	$ (0)	$ (76,680)	$ (76,390)	$ 290
31	Capital Account Deposit	(8,929)	(8,929)	-	(9,152)	(9,152)	-
32	Total Coverage (L21/(L30+L30))	1.11	1.33		1.13	1.05	
33							
34	**RESIDUAL FUND**						
35	Beginning of Year Balance	$ 6,139	$ 17,650	$ 11,511	$ 6,053	$ 35,298	$ 29,245
36	Interest Income	22	95	73	22	163	141
37	Plus:						
38	End of Year Revenue Fund Balance	8,592	26,253	17,661	10,849	30,942	20,093
39	Deposit for Transfer to City General Fund	316	315	(1)	318	317	(1)
40	Less:						
41	Transfer to Construction Fund	(8,700)	(8,700)	-	(10,800)	(10,800)	-
42	Transfer to City General Fund	(316)	(315)	1	(318)	(317)	1
43	Transfer to Debt Service Reserve Fund	-	-	-	-	-	-
44	End of Year Balance	$ 6,053	$ 35,298	$ 29,245	$ 6,124	$ 55,603	$ 49,479
45	**RATE STABILIZATION FUND**						
46	Beginning of Year Water Utility Balance	$ 52,708	$ 52,708	$ -	$ 54,608	$ 54,608	$ -
47	Deposit From/(To) Revenue Fund	1,900	1,900	-	(8,100)	(8,100)	-
48	End of Year Water Utility Balance	$ 54,608	$ 54,608	$ -	$ 46,508	$ 46,508	$ -

PHILADELPHIA WATER DEPARTMENT
WASTEWATER OPERATIONS
Comparative Summary of Operating Results
Based on PWD and Public Advocate Positions
Rate Years Ending June 30, 2017 and 2018

Line No.	Description	FY 2017 Amount Per PWD	FY 2017 Amount Per Public Advocate	Difference	FY 2018 Amount Per PWD	FY 2018 Amount Per Public Advocate	Difference
	OPERATING REVENUE						
1	Water Service - Existing Rates	$ 386,091	$ 390,070	$ 3,978	$ 383,669	$ 388,913	$ 5,244
2	PWD Proposed Rate Increases						
3	FY 2017	22,007	22,234	227	21,869		(21,869)
4	FY 2018				23,116		(23,116)
5							
6	Total Wastewater Service Revenue	408,098	412,304	4,205	428,654	388,913	(39,741)
7							
8	Other Operating Revenue	10,459	10,521	62	1,407	1,488	81
9			-	-	-	-	-
10	Operating Fund Interest Income	174	230	55	164	227	63
11	Rate Stabilization Interest Income	382	382	-	288	288	-
12	Total Revenues	$ 419,113	$ 423,436	$ 4,323	$ 430,513	$ 390,917	$ (39,596)
13	**OPERATING EXPENSES**						
14	Wastewater Operations	$ (177,263)	$ (153,658)	$ 23,605	$ (182,681)	$ (157,388)	$ 25,293
15	Direct Interdepartmental Charges	(101,820)	(99,081)	2,739	(105,194)	(101,655)	3,539
16	Water Treatment Plant Sludge	10,952	10,952	-	11,678	11,678	-
17	Total Operating Expenses	(268,132)	(241,788)	26,344	(276,197)	(247,365)	28,833
18	Transfer From/(To) Rate Stabilization Fund	21,200	21,200	-	30,900	30,900	-
19	Net Revenues After Operations	$ 172,181	$ 202,848	$ 30,667	$ 185,216	$ 174,452	$ (10,764)
20	**DEBT SERVICE**						
21	Outstanding Bonds	$ (123,113)	$ (123,113)	$ -	$ (124,043)	$ (124,043)	$ -
22	Pennvest Parity Bonds	(6,621)	(6,621)	-	(6,862)	(6,862)	-
23	Projected Future Bonds	(7,999)	(7,999)	-	(16,079)	(15,694)	385
24	Total Senior Debt Service	$ (137,733)	$ (137,733)	$ -	$ (146,983)	$ (146,598)	$ 385
25	Total Senior Debt Service Coverage (L19/L24)	1.25 x	1.47 x		1.26 x	**1.19 x**	
29	Subordinate Debt Service	0	0	0	0	0	0
30	Total Debt Service on Bonds	$ (137,733)	$ (137,733)	$ -	$ (146,983)	$ (146,598)	$ 385
31	Capital Account Deposit	(12,817)	(12,817)	-	(13,137)	(13,137)	-
32	Total Coverage (L19/(L30+L31))	1.14 x	1.34 x		1.15 x	1.09 x	
33	**RESIDUAL FUND**						
34	Beginning of Year Balance	$ 9,116	$ 24,354	$ 15,239	$ 9,079	$ 55,095	$ 46,016
35	Interest Income	33	143	110	33	262	229
36	Plus:						
37	End of Year Revenue Fund Balance	21,631	52,298	30,667	25,096	60,316	35,221
38	Deposit for Transfer to City General Fund	478	478	(1)	482	480	(1)
39	Less:						
40	Transfer to Construction Fund	(21,700)	(21,700)	-	(25,100)	(25,100)	-
41	Transfer to City General Fund	(478)	(478)	1	(482)	(480)	1
42	Transfer to Debt Service Reserve Fund	-	-	-	-	-	-
43	End of Year Balance	$ 9,079	$ 55,095	$ 46,016	$ 9,108	$ 90,573	$ 81,465
44	**RATE STABILIZATION FUND**						
45	Beginning of Year Balance for Sewer Utility	$ 116,598	$ 116,598	$ -	$ 95,398	$ 95,398	$ -
46	Deposit From/(To) Revenue Fund	(21,200)	(21,200)	-	(30,900)	(30,900)	-
47	End of Year Sewer Utility Balance	$ 95,398	$ 95,398	$ -	$ 64,498	$ 64,498	$ -