PUBLIC ADVOCATE STATEMENT 2

BEFORE THE

PHILADELPHIA WATER, SEWER AND STORM WATER
RATE BOARD

IN RE: APPLICATION OF THE	)	
PHILADELPHIA WATER DEPARTMENT	)	FISCAL YEARS 2017-2018 RATES
FOR INCREASED RATES AND CHARGES	)	

DIRECT TESTIMONY

OF

JEROME D. MIERZWA

ON BEHALF OF THE PUBLIC ADVOCATE

March 24, 2016

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

BEFORE THE

PHILADELPHIA WATER, SEWER AND STORM WATER RATE BOARD

IN RE: APPLICATION OF THE PHILADELPHIA WATER DEPARTMENT FOR INCREASED RATES AND	)))	FISCAL YEARS 2017-2018 RATES

Direct Testimony of Jerome D. Mierzwa

I. INTRODUCTION

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

A. My name is Jerome D. Mierzwa. I am a principal and Vice President of Exeter Associates, Inc. ("Exeter"). My business address is 10480 Little Patuxent Parkway, Suite 300, Columbia, Maryland 21044. Exeter specializes in providing public utility-related consulting services.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I graduated from Canisius College in Buffalo, New York, in 1981 with a Bachelor of Science Degree in Marketing. In 1985, I received a Master's Degree in Business Administration with a concentration in finance, also from Canisius College. In July 1986, I joined National Fuel Gas Distribution Corporation ("NFG Distribution") as a Management Trainee in the Research and Statistical Services Department ("RSS"). I was promoted to Supervisor RSS in January 1987. While employed with NFG Distribution, I conducted various financial and statistical analyses related to the Company's market research activity and state regulatory affairs. In April 1987, as part of a corporate reorganization, I was transferred to National Fuel Gas Supply

Corporation's ("NFG Supply") rate department where my responsibilities included utility cost of service and rate design analysis, expense and revenue requirement forecasting and activities related to federal regulation. I was also responsible for preparing NFG Supply's Purchase Gas Adjustment ("PGA") filings and developing interstate pipeline and spot market supply gas price projections. These forecasts were utilized for internal planning purposes as well as in NFG Distribution's purchased gas cost regulatory proceedings.

In April 1990, I accepted a position as a Utility Analyst with Exeter Associates, Inc. ("Exeter"). In December 1992, I was promoted to Senior Regulatory Analyst. Effective April 1, 1996, I became a principal of Exeter. Since joining Exeter, my assignments have included water and gas utility class cost of service and rate design analysis, evaluating the gas purchasing practices and policies of natural gas utilities, sales and rate forecasting, performance-based incentive regulation, revenue requirement analysis, the unbundling of utility services, and the evaluation of customer choice natural gas transportation programs.

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

A. Yes. I have provided testimony on more than 200 occasions in proceedings before the Federal Energy Regulatory Commission ("FERC"), utility regulatory commissions in Delaware, Georgia, Illinois, Indiana, Louisiana, Maine, Montana, Nevada, New Jersey, Ohio, Pennsylvania, Rhode Island, Texas, Utah, and Virginia, as well as before the Philadelphia Water Department.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. Exeter Associates, Inc. was retained by Community Legal Services serving as the Public Advocate to assist it in the evaluation of the General Rate Filing submitted by

the Philadelphia Water Department ("PWD"). In this testimony, I present my findings and recommendations on behalf of the Public Advocate regarding the class cost of service ("CCOS") studies and rate design recommendations presented by PWD for water, wastewater, and stormwater service. My colleague, Mr. Lafayette K. Morgan, Jr., presents the Public Advocate's findings regarding the overall revenue increase to which PWD is entitled for its water and wastewater operations for its Rate Period (Fiscal Years ("FYs") 2017 and 2018).

Q. HAVE YOU PREVIOUSLY PRESENTED TESTIMONY IN PWD PROCEEDINGS?

A. Yes. I previously submitted testimony on behalf of the Public Advocate in the 2008 proceeding in which PWD's rates for FY 2009-2012 were set.

Q. PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS CONCERNING PWD'S CCOS STUDIES AND RATE DESIGN PROPOSALS IN THIS PROCEEDING.

A. My findings and recommendations concerning PWD's CCOS studies and rate design proposals in this proceeding are as follows:

- While the PWD's water CCOS study is generally reasonable, modifications to the maximum day and maximum hour extra capacity factors for the City Leased Properties and City Government customer classifications are appropriate because they are significantly understated. To account for these understated extra capacity factors, I recommend that if an increase is authorized by the Philadelphia Water, Sewer and Storm Water Rate Board ("Board") in this proceeding, rates for the two City customer classes be increased by 8.5 percent regardless of the increase actually authorized by the Board. For all other classes, I recommend that the rates initially proposed by PWD be proportionately scaled back to achieve the revenue increase authorized in this proceeding after accounting for the increases to the City customer classes. If an increase is not authorized by the Board in this proceeding, I recommend that PWD's existing water service rates remain unchanged.

- The PWD's wastewater and stormwater CCOS studies appear reasonable. I am proposing no changes to PWD's wastewater or stormwater CCOS studies. If an increase in rates is authorized by the Board in this proceeding, I recommend the rates initially proposed by PWD be proportionately scaled back to achieve the revenue increase authorized in this proceeding. If no increase is authorized by the Board, PWD's existing wastewater and stormwater service rates should remain unchanged.

Q. HAVE YOU PREPARED SCHEDULES TO ACCOMPANY YOUR TESTIMONY?

A. Yes. I have prepared Schedule JDM-1 which is attached to my testimony.

Q. WHAT MATERIAL DID YOU REVIEW IN PREPARATION OF YOUR TESTIMONY?

A. I have reviewed the CCOS studies and the supporting Direct and Supplemental Testimony of the Black and Veatch Corporation ("B&V") witnesses submitted on behalf of the PWD as part of its January 2016 filing. I have also reviewed PWD's responses to the Standard Interrogatories related to water, wastewater, and stormwater cost allocation and rate design as well as PWD's responses to the discovery requests submitted by the Public Advocate on my behalf as well as other related discovery responses. I observed the presentation made to the Board by the PWD on February 22, 2016. Finally, I participated in an informal discovery conference that was conducted on March 14, 2016.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. Following this introductory section, my testimony is divided into two additional sections. The first section addresses PWD's water CCOS study and rate design proposals. In the next section, I address PWD's wastewater and storm water CCOS studies and rate design proposals.

II. PWD'S WATER CLASS COST OF SERVICE STUDY

Q. WHAT IS THE OBJECTIVE OF A CLASS COST OF SERVICE STUDY?

A. A CCOS study is conducted to assist a utility or commission in determining the level of costs properly recoverable from each of the various classes to which the utility provides service. Allocation of recoverable costs to each class of service is generally based on cost causation principles.

Q. WHAT ARE THE PRIMARY CCOS STUDY METHODOLOGIES UTILIZED FOR WATER UTILITIES?

A. The two most commonly used and widely recognized methods of allocating costs to customer classes for water utilities are the base-extra capacity method and the commodity-demand method. Both of these methods are set forth in the American Water Works Association's ("AWWA") *Principles of Water Rates, Fees and Charges, Manual of Water Supply Practices* ("AWWA M1 Manual").

Q. PLEASE SUMMARIZE EACH OF THESE METHODS.

A. Under the base-extra capacity method, investment and costs are first classified into four primary functional cost categories: base or average capacity, extra capacity, customer, and direct fire protection. Customer costs are commonly further divided between meter- and service-related, and account- or bill-related costs. Extra capacity costs may also be divided between maximum day and maximum hour costs. Once investment and costs are classified to these functional categories, they are then allocated to customer classes. Base costs are allocated according to average water use, and extra capacity costs are allocated on the basis of the excess of peak demands over average demands. Meter- and service-related customer costs are allocated on the basis of relative meter and service investment or a proxy thereof. Account-related customer costs are allocated in proportion to the number of customers or the number

of bills. The water CCOS presented by the PWD in this proceeding utilizes the base extra-capacity methodology.

The commodity-demand method follows the same general procedures. However, usage-related costs are classified as commodity- and demand-related rather than as base- and extra-capacity related. Commodity-related costs are allocated to customer classes on the basis of total water use (which is equivalent to average demand), and demand-related costs are allocated on the basis of each class' contribution to peak demand rather than on the basis of class demands in excess of average use.

Q. PLEASE DESCRIBE IN GREATER DETAIL THE FOUR PRIMARY FUNCTIONAL COST CATEGORIES AND HOW THEY ARE ALLOCATED TO THE VARIOUS CUSTOMER CLASSES UNDER THE BASE-EXTRA CAPACITY METHOD.

A. **Base Costs** are costs that tend to vary with the quantity of water used, plus costs associated with supplying, treating, pumping and distributing water to customers under average load conditions. Base costs were allocated to customer classes on the basis of average daily usage in PWD's study.

Extra Capacity Costs are costs associated with meeting usage requirements in excess of average usage. This includes operating and capital costs for additional plant and system capacity beyond that required for average usage. Extra capacity costs in PWD's study have been subdivided into costs necessary to meet maximum day extra demand and maximum hour extra demand. These extra capacity costs were allocated to customer classes on the basis of each class' maximum day and maximum hour usage in excess of average day and average hour usage, respectively.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the operating costs related to meters and services, meter reading costs, and billing and collecting costs. Customer costs were allocated on the basis of capital cost of meters and services and the number of customer bills.

Fire Protection Costs are costs associated with providing the facilities to meet the potential peak demand of fire protection service. In PWD's study, fire protection costs have been subdivided into the costs associated with meeting Public Fire Protection and Private Fire Protection demands. The extra capacity costs assigned to fire protection were allocated to Public and Private Fire Protection on the basis of the total relative demands of hydrants and fire service lines.

Q. PLEASE IDENTIFY THE CUSTOMER CLASSES PWD HAS INCLUDED IN ITS WATER CCOS STUDY?

A. PWD has separately included the cost of serving fourteen primary retail customer classes: Residential, Senior Citizens, Commercial, Industrial, Public Utilities, Housing Authority, Charities/Schools, Hospital/University, Hand Billed, Flat Rate, City Leased Properties, City Government, Private, Fire Protection, and Public Fire Protection. The cost of serving PWD's wholesale customer, Aqua Pennsylvania, has also been separately identified.

Q. WHAT IS YOUR GENERAL ASSESSMENT OF THE WATER CCOS SPONSORED BY PWD?

A. I generally agree with PWD's use of the base-extra capacity methodology. However, I believe that modifications to the maximum day and maximum hour extra capacity factors relied upon by PWD to allocate functionalized costs to the City Leased Properties and City Government customer classifications are appropriate.

Q. PLEASE DESCRIBE IN GREATER DETAIL THE ALLOCATION OF MAXIMUM DAY AND MAXIMUM HOUR EXTRA CAPACITY COSTS UNDER THE BASE-EXTRA CAPACITY METHOD AS SET FORTH IN THE AWWA M1 MANUAL.

A. Under the base-extra capacity method, maximum day and maximum hour extra capacity costs are allocated to customer class based on the excess of each class' non-coincident maximum day and maximum hour demands over average day and average hour demands, respectively. As an example, as shown on Exhibit BV-E1, Table W-11, the average day water usage of Residential customers was determined to be 8,680 Mcf, and the maximum day usage of Residential customers was determined to be 200 percent of average day usage, or 17,360 Mcf. Thus, the maximum day extra capacity usage of Residential customers is 8,680 Mcf (17,360 Mcf maximum day usage less 8,680 Mcf average day usage). Maximum day extra capacity costs are allocated to the Residential class based on the Residential class' proportionate share of total system maximum day extra capacity usage.

With respect to the allocation of maximum hour extra capacity costs, as also shown on Exhibit BV-E1, Table W-11, PWD determined that the maximum hour usage (on a 24-hour basis) of the Residential class is 360 percent of average day usage, or 31,250 Mcf. Thus, the maximum hour extra capacity usage of residential customers is 13,890 Mcf above maximum day usage (31,250 Mcf maximum hour usage less 17,360 Mcf maximum day usage). Maximum hour capacity costs are allocated to the Residential class based on the Residential class' proportionate share of total system maximum hour extra capacity usage.

Q. THE BASE-EXTRA CAPACITY UTILIZES NON-COINCIDENT PEAK DEMANDS TO ALLOCATE EXTRA CAPACITY COSTS TO THE

VARIOUS CUSTOMER CLASS. IS THIS SIMPLY THE DEMANDS OF EACH CUSTOMER CLASSIFICATION AT THE TIME OF SYSTEM PEAK DAY AND PEAK HOUR DEMANDS?

A. No. Non-coincident peak demands represent the maximum demands of the individual customer classifications regardless of when those demands occur. Thus, the sum of each customer class' non-coincident demands will exceed the system coincident peak demand. The ratio obtained by dividing non-coincident demands by coincident demands is referred to as the system diversity ratio in the AWWA M1 Manual.

Q. WHY ARE NON-COINCIDENT DEMANDS UTILIZED UNDER THE BASE-EXTRA CAPACITY METHOD?

A. The basis for using non-coincident maximum day and minimum hour demands is set forth in the AWWA M1 Manual:

> It is important that the reader understand the rationale of using the non-coincident demands in distributing the functionally allocated costs to each class. The rationale for supporting the use of non-coincident peaking factors is that the benefits of diversity in customer class consumption patterns should accrue to all classes in proportion to their use of the system, and not be allocated primarily to a particular class that happens to peak at a time different from other users of the system. The concept is illustrated through the following example: Assume that a utility was going to build a *separate system* (source of supply, treatment, pumping, transmission and distribution, etc.) for *each of the customer classes* served by the utility. These separate water systems would need to be sized to meet the base, maximum-day extra capacity, and maximum-hour extra capacity demands related to each class. The sum of those systems would compose the overall water system, and the costs associated with each of the individual systems would be allocable to each class (based on their respective non-coincidental demands that were the basis for sizing the individual components of the system).

> Assume that a concept is developed that efficiencies, economies of scale, and reduction in the overall size of the "system" could be achieved if the system is an integrated, diversified system. With this concept in mind, recognizing the diversities of demands of the various classes and using the coincidental demands of all classes to size the plant, a smaller system could be built. Total fixed capital costs and most operation and maintenance expenses, except perhaps for power and chemical costs, would be reduced in sizing the overall system facilities on the basis of the coincidental demands of all the classes of customers.
>
> The question at hand is, considering that there is a smaller, more efficient, and less costly system, how should the cost savings of that system be allocated among the individual customer classes? One appropriate manner to allocate these costs, and have each customer class share equitably in the overall cost savings, is to allocate the total new, smaller system costs on the basis of the non-coincidental demands of each customer class. In this manner, all classes share proportionately in the economies of scale and cost savings of this smaller, integrated, and diverse system.
>
> [AWWA M1 Manual, Appendix A, pages 314 - 316, 6th Edition (2012).]

Q. HOW DID THE COMPANY DEVELOP THE MAXIMUM DAY AND MAXIMUM HOUR DEMANDS OF THE VARIOUS CUSTOMER CLASS REFLECTED IN ITS WATER CCOS STUDY?

A. The maximum day and maximum hour extra capacity factors utilized in PWD's water CCOS study in this proceeding are generally, with limited exceptions, those factors utilized in PWD's last proceeding (Response to PA-EXE-76).

Q. WHAT IS YOUR CONCERN WITH THE EXTRA CAPACITY FACTORS UTILIZED IN PWD'S WATER CCOS STUDY?

A. The extra capacity factors utilized in PWD's CCOS study for several customer classes do not appear to be reflective of the extra capacity demands of these customer classes.

Q. WHAT DO YOU RECOMMEND WITH RESPECT TO THE EXTRA CAPACITY FACTORS USED IN PWD'S WATER CCOS STUDY?

A. The most reliable approach to determining extra capacity factors would be to conduct a formal study that samples the actual daily and hourly demands of the various customer classes. However, such studies are generally expensive and time consuming. The PWD has not conducted a formal study of actual customer class demands. In lieu of such a study, Appendix A of the AWWA M1 Manual presents a procedure that can be used to develop customer extra capacity factors from system demand data and billing records (AWWA Method). I recommend that this procedure be used to evaluate the reasonableness of the extra capacity factors reflected in PWD's CCOS study.

Q. HAVE YOU DEVELOPED CUSTOMER CLASS EXTRA CAPACITY FACTORS BASED ON THE PROCEDURES DESCRIBED IN THE AWWA M1 MANUAL?

A. Yes. I developed extra capacity factors for each customer class included in PWD's CCOS study using the procedures described in the AWWA M1 Manual. This analysis is presented on Schedule JDM-1. To develop these factors, I used system demand and customer billing records from FY 2012 (July 2011 – June 2012). I used data from FY12 because the AWWA M1 Manual prescribes that the year with the highest ratio of system maximum day to system average day demand for a representative number of recent years should be used in the analysis. I would note that; however, the resulting customer extra capacity factors would not vary significantly if data from any of the past three years had been utilized.

Q. WHAT DO THE RESULTS OF YOUR ANALYSIS OF EXTRA CAPACITY FACTORS INDICATE?

A. The results of my analysis indicate that for most of the customer classes included in PWD's CCOS study, the extra capacity factors did not differ significantly from those used by PWD in its CCOS study. However, it appears that based on the approach described in AWWA M1 Manual, the extra capacity factors for the City Leased Properties and City Government customer classes are significantly understated. I recommend that the extra capacity factors developed based on the approach described in AWWA M1 Manual be used in PWD's CCOS study for these two customer classes.

Q. HOW DO THE CUSTOMER EXTRA CAPACITY FACTORS WHICH YOU DEVELOPED BASED ON THE PROCEDURES RECOMMENDED IN THE AWWA M1 MANUAL COMPARE TO THOSE USED BY PWD?

A. A comparison of the customer extra capacity demand factors which I develop and those used by PWD is presented in Table 1.

Table 1.
Comparison of Customer Extra Capacity Demand Factors

	Maximum Day		Maximum Hour	
Class	**AWWA**	**PWD**	**AWWA**	**PWD**
City Leased Properties	350	180	580	235
City Government	340	180	560	235

Q. DO YOU HAVE ANY OTHER OBSERVATIONS CONCERNING THE EXTRA CAPACITY DEMAND FACTORS USED BY PWD IN ITS CCOS STUDY FOR THESE TWO CUSTOMER CLASSES?

A. Yes. As described in greater detail in the AWWA M1 Manual, developing extra capacity factors from system demand data and billing records is a multi-step process. The first step in this process is to calculate the ratio of the average day consumption for the month of maximum usage to the annual average day consumption for each

customer class ("maximum month ratio"). The maximum month ratio is the absolute minimum maximum hour extra capacity factor for each customer class because it assumes that customers usage in each class is identical on each day during the month of maximum usage. That is, it ignores daily fluctuations in usage. Under the AWWA Method, additional adjustments to the maximum month ratio are applied to account for daily fluctuations in usage to determine maximum day extra capacity factors for each class. In my analysis of extra capacity factors, I have used the adjustments identified in the AWWA M1 Manual to account for daily fluctuations in usage because PWD specific data was not available (Response to PA-EXE-88). As shown in Schedule JDM-1, for the City Leased Properties and City Government customer classes, the maximum day extra capacity factors used in PWD's CCOS study is less than the minimum month ratio. This clearly indicates that the extra capacity factors used in PWD's CCOS study for these two classes are understated and unreasonable.

Q. WHAT IS THE IMPACT OF USING THE AWWA MANUAL M1 EXTRA CAPACITY FACTORS ON THE INDICATED COST OF SERVICE FOR THE CITY LEASED PROPERTIES AND CITY GOVERNMENT CUSTOMER CLASSES?

A. A comparison of revenues at present rates, the indicated cost of service identified in the CCOS study filed by PWD, and the indicated cost of service using the revised extra capacity factors just discussed is presented in Table 2.

Table 2.
Comparison of Present Rates and Class Cost of Service Study Results
($000)

Class	Present Rates	Class Cost of Service		Increase Over Present Rates	
		PWD	Public Advocate	PWD	Public Advocate
City Leased Properties	$264	$313	$421	18.6%	59.5%
City Government	$7,528	$8,140	$11,496	8.1%	52.7%

As subsequently explained, I incorporate these revisions to PWD's CCOS study in the distribution of the rate increase PWD is requesting in this proceeding.

Q. HOW DID PWD PROPOSE TO DISTRIBUTE THE PROPOSED INCREASE IT IS REQUESTING IN THIS PROCEEDING TO THE VARIOUS CUSTOMER CLASSES?

A. PWD claims that it is proposing rates that generally recover the indicated cost of service from each customer class. The indicated cost of service for each customer class and the percentage increase in existing rates necessary to increase rates to the indicated cost of service for each customer class is presented in Exhibit BV-E1, Table W-18.

Q. HOW DOES THE INDICATED COST OF SERVICE FOR EACH RETAIL CUSTOMER CLASS COMPARE TO THE REVENUES AT PROPOSED RATES?

A. A comparison of the indicated cost of service and revenues at proposed rates for each customer class is presented in Table 3.

Table 3. Comparison of Cost of Service and Revenues at Proposed Rates			
	Cost of Service[(1)]	**Proposed Rates**	**Difference**
General Service			
Senior Citizens	$4,331,000	$4,419,000	$88,000
Residential	151,364,000	153,883,000	2,519,000
Commercial	47,049,000	47,893,000	844,000
Industrial	3,013,000	3,087,000	74,000
Public Utilities	345,000	375,000	30,000
Subtotal	**$206,102,000**	**$209,657,000**	**$3,555,000**
Other Retail Service			
Housing Authority	$6,349,000	$6,087,000	($262,000)
Charities & Schools	5,643,000	5,724,000	81,000
Hospitals & University	7,377,000	7,058,000	(319,000)
Hand Billed	19,386,000	16,583,000	(2,803,000)
City Leased Properties	313,000	294,000	(19,000)
Scheduled (Flat Rate)	0	0	0
City Government	8,140,000	7,538,000	(602,000)
Fire Protection			
Private	3,277,000	3,678,000	401,000
Public	7,621,000	7,621,000	0
Subtotal	**$58,106,000**	**$54,583,000**	**($3,523,000)**
Total Retail	**$264,208,000**	**$264,240,000**	**$32,000**

[(1)] Adjusted cost of service reflecting the recovery of discounts.

Q. IF PWD IS GENERALLY SETTING RATES TO RECOVER THE INDICATED COST OF SERVICE FOR EACH CLASS, WHY DOES TABLE 3 SHOW DIFFERENCES BETWEEN THE INDICATED COST OF SERVICE AND THE PROPOSED RATES?

A. The usage charges currently assessed by PWD and those proposed by PWD in this proceeding vary based on monthly consumption. The usage rates proposed to be effective July 1, 2016 are as follows:

Usage Block	Charge Per MCF
0 to 2 Mcf	$41.65
2 to 100 Mcf	$36.36
100 to 2,000 Mcf	$28.29
Over 2,000 Mcf	$27.47

These rates are applicable to all metered usage for all customer classes. As such, a change in one usage block rate will generally affect the revenues recovered from all customer classes. Because of this, it is nearly impossible to set rates to recover the indicated cost of service for each customer class.

Q. WHAT IS YOUR PROPOSAL WITH RESPECT TO THE DISTRIBUTION OF THE REVENUE INCREASE AWARDED IN THIS PROCEEDING?

A. I generally agree with PWD that it is reasonable to set rates based on the indicated cost of providing service, but the indicated cost of service for the City Leased Properties and City Government customer classes is understated. However, adjusting the distribution of the proposed increase PWD is requesting in this proceeding to recover the indicated cost of service for the City Leased Properties and City Government customer classes would result in significant increases for these customer classes and would violate the principle of gradualism. Combined, the increase to the two City customer classes indicated by the PWD's CCOS study is 8.5 percent. I recommend that if an increase is authorized by the Board in this proceeding, the two City customer classes should be assigned a revenue increase of 8.5 percent regardless of the increase authorized by the Board in this proceeding. For all other customer classes, I recommend that the increase in rates initially proposed by PWD be proportionately scaled back to achieve the revenue increase authorized in this proceeding after accounting for the increases to the City customer classes. To implement my recommendation, separate usage rates for the two City customer

classes should be established. If an increase is not authorized by the Board in this proceeding, I recommend that PWD's existing rates remain unchanged.

III. WASTEWATER COST OF SERVICE AND RATE DESIGN

Q. PLEASE SUMMARIZE THE WASTEWATER CCOS STUDY FILED BY PWD IN THIS PROCEEDING.

A. Much like for water service, PWD has prepared a class cost of service study for wastewater service using FY17 costs as the starting point. In its study, PWD determines the average unit cost of providing each of the functional components of service. These functions include: annual volumes; capacity costs separated into those related to collection system demands, pumping demands, and treatment demands; suspended solids and BOD loadings; and customer costs separated into meter related and bill related. Next, costs are distributed to customer classes in proportion to each class' ratio of its units of service by function to the sum of the units of service by function for all customer classes. Initially, costs are apportioned between PWD's ten wholesale contract customers and its retail customers. The costs allocated to retail customers are then apportioned between sanitary wastewater service and stormwater service as discussed in more detail subsequently. Finally, rates are designed to recover the allocated costs.

Q. PLEASE SUMMARIZE THE RATES DESIGN FOR SANITARY WASTEWATER SERVICE.

A. PWD's proposed sanitary wastewater rate design consists of a series of flat monthly charges that increase as a function of meter size, and a uniform, non-varying quantity charge. Surcharges apply for high strength wastewater that requires additional treatment costs to be incurred. The proposed rates for wastewater service reflect the CCOS study results after accounting for the fact that senior citizens, charities and

schools receive a 25 percent discount and the Philadelphia Housing Authority receives a 5 percent discount.

Q. YOU NOTED EARLIER THAT RETAIL COSTS MUST BE APPORTIONED BETWEEN SANITARY WASTEWATER SERVICE AND STORMWATER SERVICE. PLEASE EXPLAIN.

A. Because the wastewater system is comprised of both separate sanitary and storm sewers as well as combined sanitary and storm sewers, wastewater system costs are separated between sanitary sewer and stormwater costs based on the volumes, demands, loadings and revenues associated with each type of service. This is done to allow stormwater costs to be recovered separately from sanitary sewer service costs using parcel-based charges.

Q. HAS THE PWD PROPOSED ANY SIGNIFICANT CHANGES AS TO HOW COSTS ARE APPORTIONED BETWEEN SANITARY WASTEWATER SERVICE AND STORMWATER SERVICE IN THIS PROCEEDING?

A. No.

Q. PLEASE EXPLAIN HOW STORMWATER COSTS ARE RECOVERED FROM THE VARIOUS RETAIL CUSTOMER CLASSES.

A. In this proceeding, PWD is proposing to retain its parcel based stormwater cost allocation methodology under which stormwater costs other than billing and collection costs are allocated and recovered based on a combination of gross and impervious area (GA and IA). In particular, 80 percent of total stormwater related costs (excluding fixed costs such as customer billing) are allocated between Residential and non-Residential customers based on impervious property area and 20 percent are allocated based on total gross property area. The amounts allocated to

Residential customers are recovered based through a uniform monthly charge that is the same for all Residential customers. Billing and collection costs are collected through a uniform charge per Residential account.

The GA and IA costs allocated to non-Residential customers are being recovered through monthly GA and IA charges that are individually calculated for each parcel based on the applicable (non-Residential) GA and IA rate and the parcel's specific billable GA and IA square footage. Non-Residential customers are also assessed a monthly billing and collection charge.

Q. ARE YOU PROPOSING ANY CHANGES TO PWD'S WASTEWATER OR STORMWATER CCOS STUDIES OR THE DISTRIBUTION OF THE REVENUE INCREASE AUTHORIZED BY THE BOARD IN THIS PROCEEDING, IF AN INCREASE IS AUTHORIZED BY THE BOARD?

A. I am proposing no changes to PWD's wastewater or stormwater CCOS studies. If an increase in rates is authorized by the Board in this proceeding, I recommend that the increase in rates initially proposed by PWD be proportionately scaled back to achieve the revenue increase authorized in this proceeding. If no increase is authorized by the Board, PWD's existing wastewater and stormwater service rates should remain unchanged.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes. It does.

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BEFORE THE

PHILADELPHIA WATER, SEWER AND STORM WATER
RATE BOARD

IN RE: APPLICATION OF THE	)	
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SCHEDULE ACCOMPANYING THE
DIRECT TESTIMONY

OF

JEROME D. MIERZWA

ON BEHALF OF THE PUBLIC ADVOCATE

March 24, 2016

EXETER
ASSOCIATES, INC.
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Columbia, Maryland 21044

PHILADELPHIA WATER DEPARTMENT

Calculation of Extra Capacity Demand Factors

Based on Fiscal Year 2012 Operating and Billing Records

Customer Class	CONSUMPTION (CCF) Total Annual	Average Daily	Maximum Monthly	Maximum Monthly/Day	Ave Day in Max Month/ Annual Ave Day Ratio	System Max Day/Max Month Ave Day Ratio	Weekly Usage Adjustment	MAXIMUM DAY FACTOR Calculated	PWD	Change
	(1)	(2)=(1)/365	(3)	(4)=(3)/30.4	(5)=(4)/(2)	(6)	(7)	(8)=(5x6x7)	(9)	(10)=(9-8)
01-Residential	34,215,879	93,742	3,123,235	102,738	1.0960	1.4	1.35	2.07	200	(7.14)
02-Commercial	11,942,488	32,719	1,135,135	37,340	1.1412	1.4	1.17	1.87	180	(6.93)
03-Industrial	1,066,762	2,923	122,257	4,022	1.3760	1.4	1.17	2.25	160	(65.39)
04-Public Utilities	68,496	188	7,164	236	1.2558	1.4	1.17	2.06	160	(45.69)
05-Public Housing	1,768,515	4,845	183,273	6,029	1.2443	1.4	1.26	2.19	190	(29.49)
06-Charity	1,610,043	4,411	159,081	5,233	1.1863	1.4	1.17	1.94	180	(14.32)
07-Public Schools	548,555	1,503	54,666	1,798	1.1965	1.4	1.17	1.96	180	(15.99)
08-Senior Citizens	1,063,531	2,914	95,001	3,125	1.0725	1.4	1.35	2.03	200	(2.70)
09-Hand Bill	5,712,260	15,650	558,542	18,373	1.1740	1.4	1.17	1.92	180	(12.30)
10-City Leased	80,035	219	14,177	466	2.1268	1.4	1.17	3.48	180	(168.37)
11-Hospital/University	2,709,139	7,422	302,701	9,957	1.3415	1.4	1.17	2.20	180	(39.74)
12-Scheduled	115	0	14	0	1.4617	1.4	1.17	2.39	200	(39.42)
13-Fire Service	162,083	444	17,588	579	1.3029	1.4	1.17	2.13		
14-City Government	2,549,443	6,985	436,889	14,371	2.0575	1.4	1.17	3.37	180	(157.02)
Total	**63,497,344**	**173,965**	**6,209,723**	**204,267**						

Customer Class	CONSUMPTION (CCF) Total Annual	Average Daily	Maximum Monthly	Maximum Monthly/Day	Max Hour/ Max Day Ratio	MAXIMUM HOUR FACTOR Calculated	PWD	Change
	(1)	(2)=(1)/365	(3)	(4)=(3)/30.4	(7)	(8)=(5x6x7)	(9)	(10)=(9-8)
01-Residential	34,215,879	93,742	3,123,235	102,738	1.66	3.44	360	16.15
02-Commercial	11,942,488	32,719	1,135,135	37,340	1.66	3.10	270	(40.31)
03-Industrial	1,066,762	2,923	122,257	4,022	1.33	3.00	200	(99.77)
04-Public Utilities	68,496	188	7,164	236	1.66	3.41	200	(141.45)
05-Public Housing	1,768,515	4,845	183,273	6,029	1.66	3.64	315	(49.35)
06-Charity	1,610,043	4,411	159,081	5,233	1.66	3.23	270	(52.57)
07-Public Schools	548,555	1,503	54,666	1,798	1.66	3.25	270	(55.34)
08-Senior Citizens	1,063,531	2,914	95,001	3,125	1.66	3.36	360	23.51
09-Hand Bill	5,712,260	15,650	558,542	18,373	1.66	3.19	235	(84.22)
10-City Leased	80,035	219	14,177	466	1.66	5.78	235	(343.29)
11-Hospital/University	2,709,139	7,422	302,701	9,957	1.66	3.65	235	(129.77)
12-Scheduled	115	0	14	0	1.66	3.97	360	(37.44)
13-Fire Service	162,083	444	17,588	579		-		-
14-City Government	2,549,443	6,985	436,889	14,371	1.66	5.59	235	(324.46)
Total	**63,497,344**	**173,965**	**6,003,907**	**197,497**				