

PHILADELPHIA WATER DEPARTMENT  
REBUTTAL STATEMENT NO. 3

BEFORE THE  
PHILADELPHIA WATER, SEWER AND STORM WATER RATE BOARD

In the Matter of the Philadelphia Water Department's Proposed Change in Water, Wastewater and Stormwater Rates and Related Charges	Fiscal Years 2019-2021
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**Rebuttal Testimony**

of

**Black & Veatch Management Consulting, LLC**

on behalf of

**The Philadelphia Water Department**

Topics Addressed:

Cost of Service

Capacity Factors

Dated: May 4, 2018

1                   **REBUTTAL TESTIMONY OF BLACK & VEATCH MANAGEMENT**  
2   **CONSULTING, LLC**

3  
4   **I.       INTRODUCTION**

5   **Q1.   PLEASE STATE YOUR NAMES AND BUSINESS AFFILIATION.**

6   A1.   Our names are Brian Merritt, Dave Jagt, Prabha Kumar, and Ann Bui. We are  
7       employed by the firm of Black & Veatch Management Consulting LLC (Black  
8       & Veatch), 8400 Ward Parkway, Kansas City, Missouri. On behalf of the City  
9       of Philadelphia Water Department (Water Department), we proffer our  
10      collective rebuttal for Mr. Jerome D. Mierzwa’s testimony.

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12   **Q2.   HAVE YOU PREVIOUSLY SUBMITTED TESTIMONY IN THIS**  
13      **PROCEEDING?**

14   A2.   Yes. We provided testimony in PWD Statements No. 9A and 9B.

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16   **Q3.   WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?**

17   A3.   In this rebuttal, we provide our response to some of the concerns and criticisms  
18       that Mr. Jerome D. Mierzwa has expressed in his direct testimony on behalf of  
19       the Public Advocate (PA Statement 2). We specifically address the following  
20       areas of Mr. Mierzwa’s testimony:

- 21           • Cost of Service
- 22           • Capacity Factors

1 **II. COST OF SERVICE**

2 **Q4. DO YOU AGREE WITH MR. MIERZWA'S STATEMENT THAT PWD'S**  
3 **CLASS COST OF SERVICE (CCOS) STUDY SHOULD REFLECT A**  
4 **SYSTEM-WIDE MAXIMUM DAY EXTRA-CAPACITY FACTOR THAT**  
5 **IS CONSISTENT WITH RECENT EXPERIENCE? IF SO, ARE ANY**  
6 **REVISIONS TO PWD'S CCOS STUDY REQUIRED?**

7 A4. Yes, to a certain degree. We agree with Mr. Mierzwa's statement that PWD's  
8 CCOS Study should reflect a system-wide maximum day extra-capacity factor  
9 that is consistent with relatively recent experience. Black & Veatch's derived  
10 allocation factors between the functional cost components of Base, Maximum  
11 Day Extra Capacity, and Maximum Hour Extra Capacity are consistent with  
12 industry rate-making practices outlined in the American Water Works  
13 Association (AWWA) manual of practice. The approach reflects the fact that the  
14 water source of supply, treatment, pumping and transmission and distribution  
15 facilities are sized and designed to handle the annual usage and potential  
16 maximum day and maximum hour demands of the PWD's water customer base.  
17 Accordingly, in sizing the PWD water system the design criteria needs to  
18 recognize the "anticipated" annual usage and maximum demands to be placed  
19 on the water system.

20  
21 The table listed below shows the average day and maximum day demands on the  
22 raw water pumping system since 2012. The highest ratio of maximum day  
23 demand to average day demand during this relatively short historical record is  
24 1.41. It is very likely that the record highest ratio exceeded this ratio, and,  
25 accordingly, it is also likely that the actual "design" parameters in the sizing of

1 the existing facilities were greater than the 1.41 factor recently experienced.  
2 Customer demands, both on an annual average day basis and peaking conditions  
3 do, however, vary and change over time. Accordingly, there is good reason to  
4 recognize these changes and use any trends to modify the original design  
5 characteristics in the allocation of costs in a CCOS study.  
6

7 No revisions are required to PWD's CCOS Study, because recent data, as  
8 presented in the table below, indicates that a maximum day to average day ratio  
9 of at least 1.41 has historically occurred and could certainly occur again.  
10 Accordingly, PWD's current CCOS Study reflects a system-wide maximum day  
11 extra-capacity factor of 1.40 which is consistent with recent experience as  
12 documented in the responses to interrogatories PA-II-8 and PA-VII-11 and  
13 presented in the following table.  
14

<b>Fiscal Year</b>	<b>Average Day</b>	<b>Maximum Day</b>	<b>Maximum Day to Average Day Ratio</b>
2012	257.9 mgd	362.7 mgd	1.41
2013	259.8 mgd	338.6 mgd	1.30
2014	260.1 mgd	343.5 mgd	1.32
2015	250.9 mgd	305.3 mgd	1.22
2016	243.2 mgd	276.8 mgd	1.14
2017	242.4 mgd	315.1 mgd	1.30
Peak Flow			1.41
USE			1.40

1 The above table is consistent with the current calculations in the PWD CCOS  
2 Study as presented in PWD Exhibit 6 Supplemental Financial, Engineering and  
3 Other Data Black & Veatch Workpapers WCOS17\_19.xls Wpltallo-3 (page  
4 750).

5  
6 The system-wide maximum day extra capacity factor presented on page 59 of  
7 PWD Statement 9A includes a typo which will be addressed via the submission  
8 of an errata to PWD Statement 9A, as follows:

9 Based on the historical demands experienced, the maximum day demand  
10 is approximately ~~130~~140 percent of average day demand. Consequently,  
11 ~~77~~71 percent (100/~~140~~130) of the capacity of these maximum day  
12 facilities is required for base use, and the remaining ~~23~~29 percent is  
13 required for maximum day extra capacity demands.

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15 **Q5. DO YOU AGREE WITH MR. MIERZWA'S STATEMENT THAT PWD'S**  
16 **CCOS STUDY SHOULD REFLECT A SYSTEM-WIDE MAXIMUM**  
17 **HOUR EXTRA-CAPACITY FACTOR CONSISTENT WITH RECENT**  
18 **EXPERIENCE? IF SO, ARE ANY REVISIONS TO PWD'S CCOS**  
19 **STUDY REQUIRED?**

20 A5. Yes. We agree with Mr. Mierzwa's statement that PWD's CCOS Study should  
21 reflect a system-wide maximum hour extra-capacity factor that is consistent with  
22 recent experience. No revisions are required to PWD's CCOS Study. PWD's  
23 current CCOS Study reflects a system-wide maximum hour extra-capacity factor  
24 of 1.90 which is consistent with recent experience as documented in the  
25

1 responses to interrogatories PA-II-8 and PA-VII-11 and presented in the  
 2 following table.

Fiscal Year	Average Day	Maximum Day	Maximum Hour	Maximum Day to Average Day Ratio	Maximum Hour to Average Day Ratio
2012	245.8 mgd	292.0 mgd	370.4 mgd	1.19	1.51
2013	244.5 mgd	286.2 mgd	365.0 mgd	1.17	1.49
2014	250.0 mgd	313.6 mgd	433.8 mgd	1.25	1.74
2015	230.8 mgd	291.8 mgd	365.5 mgd	1.26	1.58
2016	223.8 mgd	258.2 mgd	430.8 mgd	1.15	1.92
2017	223.0 mgd	263.8 mgd	402.5 mgd	1.18	1.80
Peak Flow				1.26	1.92
USE				1.25	1.90

15  
 16 The above table is consistent with the current calculations in the PWD CCOS  
 17 Study as presented in PWD Exhibit 6 Supplemental Financial, Engineering and  
 18 Other Data Black & Veatch Workpapers WCOS17\_19.xls Wpltallo-4 (page  
 19 751).

20 The system-wide maximum hour extra capacity factor presented on pages 59 to  
 21 60 of PWD Statement 9A includes a typo which will be addressed via the  
 22 submission of an errata to PWD Statement 9A, as follows:

23 Similarly, peak demand for maximum hour facilities is approximately  
 24 ~~174-190~~ percent of average day demands. Of the facilities designed to  
 25 meet maximum hour demands, ~~57-53~~ percent (100/~~190~~~~174~~) of the

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capacity is required for base use, ~~17-13~~ percent [(125-100)/~~190~~174] is required to meet maximum day extra capacity requirements, and the remaining ~~26-34~~ percent is needed to meet maximum hour requirements.

**Q6. DO YOU AGREE WITH MR. MIERZWA’S STATEMENT THAT PWD’S CCOS STUDY DOES NOT REFLECT THE APPROPRIATE SYSTEM-WIDE EXTRA CAPACITY FACTORS?**

A6. No, we do not agree with Mr. Mierzwa’s statement that PWD’s CCOS Study does not reflect the appropriate system-wide extra capacity factors. As presented in the responses to questions 3 and 4 above, the PWD CCOS Study reflects system-wide extra capacity factors consistent with recent historical experience and is consistent with industry practices.

**Q7. DO YOU AGREE WITH MR. MIERZWA’S STATEMENT THAT PWD’S CCOS STUDY DOES NOT REFLECT THE APPROPRIATE CUSTOMER CLASS SPECIFIC EXTRA CAPACITY FACTORS?**

A7. No, we do not agree with Mr. Mierzwa’s statement that PWD’s CCOS Study does not reflect appropriate customer class specific extra capacity factors. As stated in the attachment provided in response to interrogatory PA-VII-7, there are variations between the customer class specific extra capacity factors reflected in the PWD CCOS Study and those Black & Veatch calculated based on the methodology outlined in Appendix A (Appendix A Methodology) of the AWWA Manual M-1, Principles of Water Rates, Fees and Charges. These variations are due to the use of typical weekly and hourly usage factor adjustments as presented in the example calculations included AWWA M-1

1 Appendix A. These weekly and hourly assumptions do not address unique  
 2 circumstances of each system. For example, PWD does not experience seasonal  
 3 peaking to the extent of some utility systems since the urban customer base does  
 4 not have summer usage peaks for irrigation usage. Since the system experiences  
 5 a lower maximum day peaking factor, the system experiences more diversity in  
 6 the hourly usage adjustments than those reflected in the AWWA M-1. As stated  
 7 in AWWA M-1 *“Care must be taken to recognize the usage characteristics of*  
 8 *each utility’s customers; the assumptions in this appendix are for illustrative*  
 9 *purposes only.”*

11 In addition, Black & Veatch does not believe that the PWD CCOS Study should  
 12 be revised to reflect the customer class specific extra capacity factors  
 13 recommended by Mr. Mierzwa as provided in Schedule JDM-1. As presented in  
 14 the following table, the calculations presented in Schedule JDM-1 are not  
 15 consistent with the AWWA Methodology.

<u>Calculation Component</u>	<u>AWWA Appendix A</u>	<u>Schedule JDM-1</u>
Customer Class Maximum Monthly Demand	Maximum monthly demand during the year of system historical peak day demand.  PWD’s system historical peak day demand occurred in FY 2012	Average monthly demand based on FY 2014 to FY 2016
Maximum Day Factor	Maximum Day to Maximum Month	Maximum Day to Annual Average Day
Weekly Usage and Hourly Usage Adjustments	“Care must be taken to recognize the usage characteristics of each utility’s customers; the assumptions in this appendix are for illustrative purposes only.”	Utilized factors presented in AWWA’s Appendix A illustrative calculations



1 **Q8. DO YOU AGREE WITH MR. MIERZWA'S STATEMENT THAT PWD'S**  
2 **CCOS STUDY SHOULD NOT BE RELIED UPON TO DETERMINE**  
3 **THE DISTRIBUTION OF THE REVENUE INCREASES AWARDED IN**  
4 **THIS PROCEEDING?**

5 A8. No, we do not agree. As supported in the responses to questions 4, 5 and 7, we  
6 believe that PWD's CCOS Study uses appropriate system extra capacity factors  
7 consistent with historical experience and reasonable estimates of the customer  
8 class extra capacity factors. As such, the CCOS Study results provide a  
9 reasonable basis to determine the distribution of the revenue increases awarded  
10 in this rate proceeding.

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12 **Q9. DO YOU AGREE WITH MR. MIERZWA'S RECOMMENDATION TO**  
13 **ADOPT SEPARATE VOLUMETRIC USAGE RATES FOR EACH**  
14 **CUSTOMER CLASS?**

15 A9. No, we do not agree with the recommendation to adopt separate volumetric  
16 usage rates for each customer class. The current rate structure, which utilizes a  
17 single schedule of rates, provides reasonable cost recovery. Based on the  
18 projected billings under the calculated cost of service rates before adjusting for  
19 collections, presented in the PWD Exhibit 6 Supplemental Financial,  
20 Engineering and Other Data Black & Veatch Workpapers WCOS17\_19.xls  
21 Rates-3 (pages 791 to 795), 82% of retail billings are within 1.5% of the  
22 calculated cost of service.

23  
24 The declining block rate structure which PWD currently utilizes is a common  
25 and well-accepted rate form for utilities across the United States. Changes in the

1 rate structure should not be contemplated without thorough planning and  
2 interaction with customer groups before making such a major change. Revenue  
3 stability could be significantly impacted due to unforeseen changes to various  
4 customers and customer types; this could cause disruptions in revenue  
5 collections or materially impact revenues.

6  
7 We do recommend that PWD consider evaluating potential changes to the rate  
8 structure as part of a comprehensive rate structure evaluation. This evaluation  
9 would include a review of rate structure alternatives, the impact on the customer  
10 base and evaluation of the requirements to implement the revised rate structure  
11 within PWD's current billing system. Please note that the proposed three-year  
12 rate period would provide enough time between rate proceedings to perform a  
13 rate structure re-evaluation.

14  
15 **Q10. DO YOU AGREE WITH MR. MIERZWA'S RECOMMENDATION**  
16 **THAT THE CURRENT 0 TO 2 MCF USAGE BLOCK RATE BE**  
17 **MAINTAINED DURING THE FY 2019 – FY 2021 PERIOD?**

18 A10. No, we do not agree with the recommendation to maintain the current 0 to 2  
19 MCF usage block quantity charge. The proposed rate schedules are based on the  
20 PWD CCOS Study results. As supported in the responses to prior questions, we  
21 believe that PWD's CCOS Study is based on appropriate system extra capacity  
22 factors consistent with historical experience and reasonable estimates of the  
23 customer class extra capacity factors. As such, the CCOS Study results provide a  
24 reasonable basis to determine the proposed rate schedules.

25

1 **Q11. DOES THIS COMPLETE YOUR REBUTTAL TESTIMONY IN THIS**  
2 **MATTER?**

3 A11. Yes, it does. However, Black & Veatch notes that it has discovery requests  
4 outstanding and that it reserves the right to supplement its rebuttal testimony or  
5 otherwise respond (on the record) upon receipt of responses to the outstanding  
6 discovery requests.

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