

**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

VOLUME II

TESTIMONY

**PITTSBURGH WATER & SEWER AUTHORITY
INITIAL TARIFF FILINGS AND RATE REQUESTS**

DOCKET Nos. R-2018-3002645 and R-2018-3002647

JULY 2018

**Pittsburgh Water & Sewer Authority
Initial Tariff Filings and Rate Requests**

Docket Nos. R-2017-3002645 and R-2018-3002647

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DIRECT TESTIMONY**

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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

ROBERT A. WEIMAR

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos. R-2018-3002645 and R-2018-3002647

Pittsburgh Water and Sewer Authority
Initial Tariff Filings and Rate Requests

July 2, 2018

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1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND CURRENT POSITION WITH PWSA.**

3 A. My name is Robert “Bob” A. Weimar. My position with The Pittsburgh Water & Sewer
4 Authority (“PWSA” or “Authority”) is Executive Director.

5 **Q. HOW LONG HAVE YOU HELD THIS POSITION?**

6 A. I was appointed Interim Executive Director in April 2017. Prior to that appointment, I
7 worked for PWSA as a capital program manager and interim director of construction and
8 engineering.

9 **Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES?**

10 A. In my present position, my responsibilities include executing policy goals and objectives
11 established by the Board of Directors; Preparing an annual business plan and budget;
12 Developing, supervising and administering the PWSA’s staff and programs; directing the
13 operation of the water system; overseeing the operation of the sewer system and
14 stormwater system; developing and implementing a capital improvement and
15 maintenance plan; directing water marketing efforts; and interacting with customers,
16 elected officials, consumer groups, governmental entities and the media.

17 **Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.**

18 A. I worked in the water and wastewater industries as a professional engineer for 46 years. I
19 have a degree in civil engineering from the University of Massachusetts and completed
20 master’s-degree-level classes in water resources at Northeastern University. A more
21 complete description of my background and experience is set forth on Appendix A to this
22 testimony.

23 **Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?**

24 A. No.

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

2 A. I will provide the Commission with an overview of PWSA and PWSA's initial tariff and
3 rate request filing. I will discuss the water utility objectives that PWSA seeks to
4 accomplish in the coming years. I will discuss PWSA's present and future efforts to
5 renew itself into a "best in class" water/wastewater/stormwater utility and the successes it
6 has so far achieved, as well as some of the challenges that are ahead. I also describe the
7 various issues that PWSA will be addressing in its forthcoming "Compliance Filing," due
8 to be filed by September 28 (as well as in subsequent proceedings) so that the
9 Commission and parties can evaluate this tariff filing with a more complete picture of
10 PWSA's plans and intentions. Finally, I will introduce PWSA's other witnesses who
11 provide detailed testimony and supporting documentation for revenues, expenses and rate
12 base items included in the fully projected future test year used in this base rate filing, as
13 well as cost of service and rate structure.

14 **II. DESCRIPTION OF PWSA**

15 **Q. PLEASE PROVIDE A GENERAL OVERVIEW OF PWSA.**

16 A. PWSA is a municipal water authority serving more than 300,000 people in total
17 throughout the City of Pittsburgh ("City") and surrounding communities. PWSA is the
18 largest combined water and sewer authority in Pennsylvania, producing an average of 70
19 million gallons of water daily. PWSA's employees are primarily city residents and
20 PWSA customers with expertise in engineering, operations, maintenance, water quality,
21 customer service, safety, green infrastructure and a number of other disciplines. Under
22 leadership of the new PWSA Board of Directors, PWSA strives to constantly improve its

1 operations to enhance the way it does business in a safe, sustainable and customer-
2 friendly manner.

3 The PWSA sewer system is composed of 1,200 miles of sewer lines,
4 approximately 25,000 catch basins and four pump stations. The sewer collection system
5 is primarily a combined collection system that serves the entire City, which collects both
6 sewage and stormwater in a single piping network. Our combined sewer system also
7 conveys sewage for portions of 24 neighboring municipal communities. The wastewater
8 collected by the PWSA system is conveyed to the Allegheny County Sanitary Authority
9 (“ALCOSAN”) for treatment. PWSA customers are billed by ALCOSAN for waste
10 treatment service via a “pass-through” charge on PWSA’s bill.

11 PWSA treats, analyzes, stores and delivers over 70 million gallons of water per
12 day, maintains and operates over 930 miles of water lines and 1,200 miles of sewer lines,
13 24-hours a day, seven days a week.

14 PWSA has a state of the art stormwater and green infrastructure program
15 comprised of engineers, project managers, and consultants managing several active green
16 infrastructure projects throughout the city.

17 PWSA provides water service to approximately 80,000 residential, commercial,
18 and industrial customers located in the City. The remainder of the city’s residents are
19 serviced by three companies: West View Water Authority, which provides water service
20 to a small area in the Western part of the City; Wilksburg-Penn Joint Water Authority,
21 which provides water service in a small area in the Eastern part of the City; and, the
22 Pennsylvania American water system, which provides water service – in the more
23 Southern parts of the City -based upon an agreement with the City.

1 In terms of legal structure, the Authority is a body politic and corporate,
2 organized and existing under the Pennsylvania Municipality Authorities Act. The
3 Authority was established by the City in 1984 and it originally functioned as a financing
4 authority. Since 1995, PWSA has functioned as an operating authority. As an operating
5 authority, PWSA assumed responsibility from the City for management, operation,
6 maintenance, and improvement of virtually the entire City water supply, distribution, and
7 wastewater collection systems. In 2009, the Authority acquired the water system of the
8 Borough of Millvale. Although the City has a role in the creation (and continued
9 existence) of PWSA, including the appointment of the members of PWSA's Board,
10 PWSA is not a part of City itself. PWSA is a separate legal entity with power to incur
11 debt, own property and finance its activities. It is my understanding that PWSA is an
12 independent agency of the Commonwealth, and is not the agent or representative of the
13 City.

14 PWSA and the City provide various services to and undertake various
15 responsibilities for one another. These services are provided pursuant to a "Cooperation
16 Agreement, first executed in 1995, pursuant to which PWSA will pay the City \$7.15
17 million in 2019. Discussions are currently being conducted between the City and the
18 Authority to renegotiate the Agreement to insure equity and fairness for both parties.

19 The mission of PWSA is to provide the highest quality water, convey sewage and
20 manage stormwater at the best possible price for its customers. Customer satisfaction is
21 PWSA's highest priority, and it strives to work with customers to resolve any issues they
22 may encounter.

23 **Q. PLEASE DESCRIBE THE GOVERNING BODY FOR PWSA.**

1 A. PWSA is governed by a Board of Directors (Board) whose members are appointed by the
2 Mayor of the City. The current board members are Paul Leger, Chairperson; Margaret
3 Lanier, Vice Chairperson; Jim Turner, Secretary; Deb Gross, Assistant Secretary, and
4 Chatón Turner. Two board positions remain vacant at this time; PWSA expects a full
5 requisite board will be appointed upon completion of an ongoing cooperation agreement
6 negotiation and governance agreement approval with and by the City Council.

7 **Q. PLEASE DESCRIBE PWSA'S EXECUTIVE MANAGEMENT AND**
8 **ORGANIZATIONAL STRUCTURE**

9 A. PWSA is operated through three operating divisions under the Executive Director:
10 Administration, Engineering and Construction, and Operations.

11 The Administration Division is responsible for the administrative and support
12 functions of PWSA. This division's major responsibilities include administration,
13 communications, customer service, finance, procurement, human resources, and
14 management information systems.

15 Engineering and Construction Division works to safely and efficiently deliver an
16 effective capital improvement program and to support operations with the cost-effective
17 technical solutions to water line breaks, sewer stoppages and collapsed pipes, combined
18 sewer overflows ("CSOs") and stormwater flooding and basement backups. Also,
19 Engineering and Construction is responsible for addressing all regulatory consent orders
20 for water sewer and storm water issued by the Pennsylvania Department of
21 Environmental Protection and the United States Environmental Protection Agency. These
22 include the CSO, Sanitary Sewer Overflow ("SSO") and municipal separate stormwater
23 systems compliance requirements from State and Federal environmental authorities.

1 Engineering and Construction also prepares and assists in reviewing of water and sewer
2 tap-in applications, as well as proposed stormwater mitigation systems.

3 The Operations Division works to supply an adequate quantity of water to
4 PWSA's customers while maintaining good quality in accordance with state and federal
5 drinking water regulations. The operations division also ensures conveyance of sewage
6 and stormwater to the ALCOSAN regional wastewater system and is responsible for
7 maintaining all infrastructure below grade. The operations division works collaboratively
8 with the city of Pittsburgh Department of Public Works and Department of Mobility and
9 Infrastructure to ensure roads remain safe for public travel at all times.. It is Operations'
10 responsibility to be aware of customer needs and address their concerns (e.g., service line
11 leaks, catch basin cleaning, and sewer line maintenance and repair). PWSA maintains
12 sufficient inventory of materials and equipment to respond promptly to a request
13 regarding water and wastewater services. Additionally, Operations strives to maintain a
14 safe working environment while establishing an effective and efficient operations
15 division that will provide the highest quality service at the lowest possible cost.

16 **Q. HOW DOES PWSA STAFF ITS OPERATIONS?**

17 A. PWSA has 292 employees as of June 30, 2018, with 4 more scheduled to start during
18 July. The majority of Authority employees are represented by one of three labor unions.
19 The Pittsburgh Joint Collective Bargaining Committee (PJCBC) represents blue-collar
20 employees. The American Federation of State, County and Municipal Employees
21 (AFSCME) represents Local 2719 and Local 2037 employees. Management and
22 professional staff are contracted as "at will" employees. In addition, PWSA has engaged
23 the services of professional consultants for engineering and finance senior management
24 positions, as well as numerous other project management and senior experts. This

1 requirement has been the result of PWSA's rapid growth in all staff categories to meet
2 our regulatory compliance, facilities maintenance and restoration, permitting, and design
3 and construction of facilities upgrades and replacements. PWSA also supplements its
4 core staff with a program manager and a financial consulting services firm. Additional
5 experts in finance, legal and administration have been engaged as required to fulfill state
6 federal and local regulatory and administrative requirements.

8 **III. DESCRIPTION OF PWSA'S OPERATIONS**

9 **A. Drinking Water**

10 **Q. PLEASE DESCRIBE PWSA'S WATER SUPPLY AND DISTRIBUTION** 11 **SYSTEM.**

12 A. The water systems history dates back to the 1850s when steel manufacturing was
13 developing in the Pittsburgh area. The primary system was sized to meet the industrial
14 water demands as well as provide basic water service to the surrounding population.
15 Using the Allegheny River as its supply, several water companies independently served
16 the region. The first water treatment plant was built in Aspinwall as a slow sand filter
17 plant, which was located on the property now housing the Waterworks Mall. The water
18 supply and distribution system (the "Water System") now consists of a 117 million gallon
19 per day conventional flocculation, sedimentation and rapid sand process treatment plant
20 which was placed in service in 1969, 930 miles of water mains plus more than 81,000
21 service lines, more than 25,900 line valves, more than 7,300 fire hydrants, twelve
22 pumping stations, one membrane filtration retreatment plant, five reservoirs, and eleven
23 storage tanks. The total storage capacity of the reservoirs and tanks is approximately 455
24 million gallons. With consideration given to the pressure requirements of the distribution

1 system, and storage capacities in each of the 15 pressure zones, the Authority stores
2 enough finished water to provide a (with water use restrictions) 1 to 2 day uninterrupted
3 supply to all customers should it temporarily be unable to treat additional water from the
4 Allegheny River.

5 The sole source of water for the Water System is the Allegheny River for which
6 the Authority and its predecessors have held withdrawal permits since 1943. In March
7 1989, the then Pennsylvania Department of Environmental Resources (now the
8 “PADEP”) issued the Authority a Water Allocation Permit under the 1939 Water Rights
9 Act. This permit authorizes the withdrawal of up to 100 million gallons per day and the
10 PADEP determined that this would cause no major impact on navigation. PWSA’s
11 current average withdrawal of water from the Allegheny River is approximately 70
12 million gallons per day. The Authority’s Consulting Engineer is of the opinion that the
13 Allegheny River’s water is of good quality, and that there is ample quantity to meet
14 foreseeable demands given current allocation permit conditions and foreseeable river
15 flow conditions.

16 **Q. PLEASE DESCRIBE PWSA’S CONSENT ORDER AND AGREEMENT WITH**
17 **PADEP ON LEAD SERVICE LINES.**

18 A. Under a consent order with PADEP, PWSA will replace at least 2,100 more of its
19 publicly owned lead service connections through December 2018. When the connection
20 ties into a lead service pipe on the customer’s end, PWSA will delay any replacement
21 until the homeowner or building landlord accepts PWSA’s proposed private service line
22 replacement offer. PWSA offers to replace that second pipe segment – the customer side
23 – at no charge to the property owner for the calendar year 2018. This program was
24 intended to expedite the rate of lead service line replacements such that we could achieve

1 the requisite annual lead service line totals . The Authority has not made any decisions
2 regarding future financial support to homeowners for the private service line
3 replacement..

4 PWSA budgeted \$44 million to replace 2,100 lead waterlines in Pittsburgh in
5 2018 as part of an agreement with PADEP. The Authority will replace publicly owned
6 lead service lines to homes as well as the Private side lead service lines at no cost as long
7 as the property owner agrees. At this time, PWSA has replaced 1341 service lines as
8 required by the PADEP order, signed in November, 2017. An additional 885 lines will
9 be replaced by December 2018, as required by the PADEP Consent Order.

10 PWSA counts about 71,000 of residential connections system-wide, and PADEP
11 expects the authority to inventory them all – and identify all the lead ones – by Dec. 31,
12 2020. In 2016, the Authority reported to the PADEP that about 15,000 service lines
13 contained the hazardous metal.

14 To locate the lead lines, PWSA is relying largely on all available construction
15 records and a recently implemented curb-box inspections programs. The process sends a
16 camera down the bolted metal curb box which accesses the shutoff valve in the sidewalk
17 outside a customer's home. The service line material is checked using a digital camera
18 which allows visual inspection. PWSA's contractor, Michael Baker International, is due
19 to inspect about 15,000 connections through the process in 2018, and will continue under
20 contract until all residential lines are identified.

21 All the work falls under PWSA's \$44 million construction budget allocation for
22 its lead-line program in 2018. After lead levels in semi-annual compliance test homes
23 eclipsed a federal Lead Action Level, PADEP ordered PWSA in 2016 to replace at least 7

1 percent (1,341 service lines) of its lead service lines each year. Subsequent compliance
2 tests also failed to meet the Federal Action Level for another semi-annual compliance
3 test. Semi-annual tests of a minimum of 100 residential customers will be performed
4 until 2 consecutive tests show the 90th percentile value is less than USEPA action level of
5 15 parts per billion. PWSA is also finalizing the implementation of an orthophosphate
6 treatment to manage lead corrosion throughout the system, which has been approved by
7 the PADEP.

8 **Q. ARE THERE ANY OTHER ADMINISTRATIVE ORDERS FROM THE PADEP?**

9 A. In October, 2017, the PADEP issued an administrative Order directing the Authority to
10 implement several key water supply projects. These projects included: (1) installation of
11 a new cover and liner for the Lanpher (Finished Water) Reservoir; (2) upgrading the
12 standby power and pump systems at the Bruecken Pump Station; (3) installation of
13 treatment and security upgrades for the Authority's Microfiltration Plant and the
14 Highland No. 1 Reservoir (an uncovered distribution system reservoir); and (4)
15 installation of a distribution system wide pressure monitoring system to ensure that
16 adequate service line pressures are maintained at all times.

17 Additional administrative Orders are being proposed to address other key water
18 supply and transmission system improvements that are required to restore the Authority's
19 water system reliability, and resilience to natural disasters, infrastructure failures (e.g.
20 power loss, etc.) and other man-caused incidents. Formative plans to address these
21 infrastructure demands have been incorporated into the Authority's proposed Capital
22 Investment Program.

B. Wastewater Collection and Transmission

Q. PLEASE DESCRIBE PWSA'S COMBINED SANITARY/STORMWATER WASTEWATER FACILITIES.

A. PWSA's wastewater collection and conveyance system (the "Sewer System") is part of a regional system that provides service to about 550,000 people, of whom nearly 325,000 live within the City. The total drainage area served by the regional system is approximately 80 square miles, of which the City comprises about 55 square miles, or nearly 70 percent of the total. The outlying sewershed is comprised of 24 communities which utilize the Authority's trunk sewers to convey their wastewater to ALCOSAN Regional Sewage Treatment facilities.

PWSA's Sewer System is primarily comprised of combined sewers which are designed to carry both storm and sanitary flows, about 75% of the system is combined sewers and the remaining 25% are designed as separate sewage and stormwater piped systems. The Sewer System is comprised of a network of approximately 1,200 miles of sewer lines and four wastewater-pumping stations. The average age of the sewer lines is between 60 and 70 years old, with some portions reaching nearly 150 years in age. Before the ALCOSAN Regional Treatment Facilities were built starting in the 1950's, PWSA's combined sewers discharged directly into the local rivers through several hundred outfalls. While most sewage is now directed to ALCOSAN (see below), ALCOSAN diversion chambers direct overflows through these outfalls to alleviate the combined sewer system during storm events. Maintenance of the outfalls will depend upon PWSA's stormwater management programs and the ongoing ALCOSAN Regional Combined Sewer Overflow program, as mandated by a USEPA Consent Order.

1 The Sewer System conveys wastewater generated within the City boundaries to
2 ALCOSAN interceptors along the rivers of the City for conveyance to ALCOSAN's
3 wastewater treatment facility for processing prior to discharge into the Ohio River. The
4 Sewer System is designed so that during wet weather, a portion of the collected storm
5 water and diluted wastewater is discharged to natural water courses by diversion
6 chambers located throughout the Sewer System and at connections to the ALCOSAN
7 interceptors All sewage and portions of stormwater are conveyed to the ALCOSAN
8 treatment facility, which is not part of the PWSA system; ALCOSAN operates and
9 maintains this regional facility (serving 83 cities and towns in Allegheny County)
10 pursuant to its National Pollutant Discharge Elimination System ("NPDES") permit.

11 **Q. PLEASE DESCRIBE PWSA'S CONSENT ORDER AND AGREEMENT WITH**
12 **PADEP HAVING TO DO WITH THE SEWER SYSTEM.**

13 A. PADEP Order requires the Authority and the City to assess the Sewer System in order to
14 develop a plan with ALCOSAN to address wet weather overflows in the City.

15
16 **C. Stormwater Services**

17 **Q. WOULD YOU PLEASE DESCRIBE PWSA'S SEPARATE STORMWATER**
18 **FACILITIES?**

19 A. Overall, Pittsburgh has two stormwater systems: 75% of the City has combined sewers
20 which convey wastewater and stormwater, 25% has separated storm sewers. The City's
21 combined sewer systems contributes to the Allegheny Region's Combined Sewer
22 Overflow volume which must be addressed to comply with State and Federal Water
23 Quality Regulations. At present, ALCOSAN is the regional sewage treatment entity and
24 has been directed by USEPA to implement an abatement program. PWSA and the City

1 have similar requirements to address this issue to be the subject of a Consent Order, for
2 which PWSA and the USEPA are poised to start negotiating.

3 PWSA is taking a green first approach to managing stormwater wherever
4 appropriate. New development is required to consider separate storm sewers wherever
5 possible. Municipal Separate Storm Sewer Systems, known as MS4's, must comply with
6 other water quality and minimum controls which are designed to minimize water quality
7 impacts to the River (or any water body receiving any polluted stormwater discharges).
8 The Green First Program as proposed will utilize green infrastructure and "grey"
9 infrastructure such as storage tanks or pipes, to provide a short term detention in during
10 storms, but allow stormwater flows to be redirected to the combined sewers once the
11 offending rain storm abates.

12 As GI projects are known to detain stormwater and reduce outfall discharges
13 during storm events, PWSA encourages the installation of GI where feasible as it works
14 to reduce overloading of the Combined Sewers which contributes to regional CSOs. To
15 do this, PWSA completed an assessment (known as the "City-Wide Green First Plan"¹)
16 evaluating the benefits of incorporating GI projects throughout the City. PWSA also has
17 previously sponsored and funded a grant program designed to support local, grassroots
18 efforts that employ GI projects to manage stormwater in regional watersheds as well as
19 local neighborhoods. Strategic projects to remove existing streamflows from the
20 ALCOSAN regional conveyance system will provide the greatest immediate benefit to
21 reduce CSO, and have the highest abatement per dollar of investment. Local

¹ The City-Wide Green First Plan was released in December 2016. It is available at:
<http://pgh2o.com/City-Wide-Green-Plan>.

1 neighborhood projects are also being designed and built in those primary sewersheds that
2 contribute the greatest volume of CSO.

3 Currently, stormwater management and related GI projects are funded through
4 PWSA's existing meter-based rate structure, the costs of which being assigned to the
5 costs of sewer conveyance. Significant funding is also expected from the regional sewer
6 conveyance authority, ALCOSAN, to defray PWSA investments that have a direct
7 regional benefit. PWSA plans to file a separate stormwater tariff so that costs of
8 stormwater management will be able to be proportionally allocated to the customers and
9 areas that that generate the stormwater flows. The Stormwater Tariff will include a
10 proposed stormwater fee that will provide the funding mechanism to meet the goals and
11 objectives of the City-Wide Green First Plan.

12 **IV. OVERVIEW OF REASONS FOR RATE FILING**

13 **Q. PLEASE DISCUSS THE RATE RELIEF THAT PWSA IS REQUESTING.**

14 A. PWSA is requesting an increase in its annual user charges of \$27 million, or 17.1% on a
15 total revenue basis. Consistent with its budget process, the base rate increase requested in
16 this filing is based on a fully projected future test year starting on January 1, 2019
17 ("FPFTY").²

² The statutory definition of FPFTY, 66 Pa.C.S. § 315(e), would require that the FPFTY commence in April 2019 and continue for 12 months. So, simultaneously with the filing of general base case, PWSA has filed a Petition requesting that the Commission waive the application of the statutory definition of fully projected future test year ("FPFTY") so as to permit PWSA to use a FPFTY beginning on January 1, 2019 in this proceeding.

1 **Q. WHY HAS PWSA MADE THIS FILING?**

2 A. This filing is required under Chapter 32 of the Public Utility Code.³ In addition, PWSA
3 has made, and must continue to make, substantial investments in new and replacement
4 facilities in order to replace aging infrastructure, comply with mandates imposed by the
5 Safe Drinking Water Act, the Clean Water Act and the Clean Streams Law and their
6 associated regulations, and meet customers' demands for water and wastewater service.
7 It is crucial that these capital additions and programs be funded through adequate rate
8 levels charged to customers.

9 **Q. WHAT ARE KEY REASONS FOR THE NEED FOR ADDITIONAL REVENUES**
10 **NOW?**

11 A. As described in more detail in Ms. Lestitian's testimony (PWSA St. 2), the key factors
12 causing the need for additional revenues are:

- 13 • **Increased Costs:** Until 2016, PWSA's operational and capital investments were
14 artificially restrained to avoid any significant rate increases. From 2015 to 2018, the
15 Authority's management team has renewed compliance with standing regulatory
16 requirements, addressed key system deficiencies, improved its staff training, safety
17 and equipment to fully address the longstanding deficiencies, and restore the entire
18 Utility's functionality. Although the Authority vigilantly works to control
19 operating costs, the Authority's renewal efforts and other specific routine costs have
20 increased the annual operating budget. In 2019, the largest driver of increased costs
21 is increased debt service caused by the planned issuance of some \$150.2 million in
22 additional long-term debt. The Authority is also facing increased operating
23 expenses (about \$1.2 million) compared to 2018, to implement the essential

³ See 66 Pa.C.S. §§ 3204(a), (c).

1 programs and initiatives designed to improve the safety, efficiency and quality of
2 PWSA's water and sewer service. In addition, the Authority has the continuing
3 need to invest in its systems to replace lead service lines and other aging
4 infrastructure to ensure water quality, safety, reliability and customer-service levels.

- 5 • **Revised Sales Projections:** PWSA has revised its 2019 demand forecast to
6 eliminate the effect of past billing system issues and to better reflect 2017
7 experienced sales. PWSA's revised demand forecast shows a reduction in sales
8 compared to the 2018 forecast.
- 9 • **Maintain Credit Ratings:** The Authority must be able to raise future capital on
10 reasonable terms. Unless adjusted, the Authority's present rates will not ensure its
11 current credit rating and its ability to attract the future capital necessary to continue
12 to make investments in infrastructure to maintain and improve its safety, reliability
13 and customer-service levels.

14 PWSA understands the burden any rate increase imposes on our customers.
15 However, during the years prior to 2017, our rates have remained artificially low – far
16 below similar utilities – which prevented PWSA from proper operations and prudent
17 investments. As a result, we have not been able to make the essential investments in our
18 water, sewer, and stormwater systems that were needed to ensure the continued
19 compliance with all regulatory requirements and the provision of the highest quality
20 service to customers. Inadequate investment has resulted in equipment failures, water
21 quality issues, and a general public concern about its utility systems. PWSA has
22 undertaken a comprehensive Capital Improvement Plan (“CIP”) that is set to result in a

significant increase in spending from less than \$40 million a year (2017) to up to \$300 million/year in 2020. These monies will be used to rebuild reservoirs, pipes and pumps, replace lead service pipes, and, most importantly, to renew and replace much of the Aspinwall Water Treatment Plant. In addition, PWSA has committed to a number of initiatives to enhance the efficiency and effectiveness of our workforce, improve customers service and modernize customer communications. The costs of these initiatives, many of which were initiated this year, will continue in 2019 and beyond. The rate increase requested here is driven largely by the increased operating and construction expenditures needed to achieve these important goals. Simply put, this increase, and likely additional future increases, are absolutely crucial if PWSA is to achieve its goals of providing safe, reliable and efficient service of the highest quality, as well as fully comply with all federal and state regulations and mandates.

V. MANAGEMENT QUALITY, EFFICIENCY AND EFFECTIVENESS

Q. YOU HAVE DISCUSSED THE SIGNIFICANT CHALLENGES FACING PWSA NOW AND IN THE FUTURE; HAS PWSA STARTED MAKING IMPROVEMENTS IN ITS OPERATIONS OR ORGANIZATION TO BEGIN TO MEET THOSE CHALLENGES?

A. Yes. In the last 15 months PWSA has energized its organization and efforts to “Get Stuff Done” for the benefit of its customers and the City. Here is a high level list of some of PWSA’s most notable efforts:

- In the area of Protecting Public Health and the Environment:
 - Produced 100% compliant drinking water;
 - Finalized a water quality improvement plan for TTHM’s, Lead Corrosion Control,
 - 1341 lead service lines (PWSA side) replaced throughout the city, plus replacing more than 350 private side lead service lines. PWSA’s Lead

1 program will continue to replace more than 15 to 20 Lead Service Lines
2 Per Day until year end;

- 3 - Finalized the Green First Plan to abate Regional Combined sewer
4 overflows (CSOs), This City wide program uses a stormwater
5 management approach which also reduces basement backups and
6 neighborhood flooding. Several significant demonstration projects and
7 major stream removal projects are now under planning, design and
8 construction. These projects are being implemented in collaboration with
9 ALCOSAN, Pittsburgh Parks Conservancy and the City of Pittsburgh;
- 10 - Implementing Green Infrastructure projects.

11
12 – In the area of Ensuring Customer and Stakeholder Satisfaction:

- 13 - Repaired an average of 55 water breaks per month, particularly during the
14 winter months;
- 15 - Implemented Bill Discount and Subsidy Programs for Low Income
16 Residents;
- 17 - Decreased average answer time in the Call Center to 3.06 minutes;
- 18 - Assisting 1,100 walk-in customers per month;
- 19 - Received only 3 formal complaint since moving under PA PUC
20 jurisdiction on April 1, 2018.

21
22 – In the area of Improving Infrastructure Reliability:

- 23 - Increased capital delivery from \$40 million to \$50 million per year; 2018
24 is estimated to be \$70+ million;
- 25 - Completed Projects to provide backup up pump and power systems to the
26 primary pump stations;
- 27 - Completed Reconstruction of the 65 Million Gallon, East Cell of the
28 Lanpher Reservoir (July 25th);
- 29 - Completed Reconstruction of Water Treatment Plant Filter Gallery (2017).

30
31 – In the area of Maintaining a High-Performance Workforce:

- 32 - Hired New Senior Managers for Administration, Chief Counsel,
33 Operations Deputy Director, Operations Senior Managers, Professional
34 Engineers, Treasurer, SCADA Manager (new position) Customer Service
35 Director and Procurement Manager;
- 36 - Developed a revised organizational structure with new position
37 descriptions;

- Increased employees training time to over 2 hours a person per month, implementing Project Manager Training for Engineering and Operations staff in July 2018;
- Filling an average of 6 positions per month.

– In the area of Being an Efficient and Effective Organization:

- The typical service disruption decreased for the third straight month to 4.53 hours;
- Long term debt ratio was 1.29x in 2017, which beats the 1.1x target;
- Significantly beat the 5% construction change order rate target, with an average of about 2% (Owner requested changes in scope due to emergency repairs not included).

A comprehensive list of “Actions and Successes” for 2017 and 2018 are set out in an attached Exhibit, RAW-1.

Q. HAS THE PWSA FORMULATED A PLAN TO CONTINUE THIS IMPROVEMENT?

A. Yes. PWSA has adopted an “Organization and Compliance Plan” for the coming years of PWSA operation. This Organization and Compliance Plan builds on the utility’s strength, articulates goals and sets forth concrete actions that will be taken to achieve PWSA staff outside stakeholders and customers can measure its ultimate success. The Organization and Compliance Plan is attached as Exhibit RAW-2 to this testimony.

It is important to recognize that this comprehensive plan will require the cooperation and support of all stakeholders, including the PUC, the City, PWSA’s Board of Directors, our customers and the Pittsburgh business and industrial community. This rate increase proposed, as well as subsequent requests that will be needed in future years, are key necessary components of achieving these goals.

1 **VI. CONSTRUCTION IMPROVEMENT PLAN**

2 **Q. MR. WEIMAR, EARLIER IN YOUR TESTIMONY YOU INDICATED THAT A**
3 **LARGE PORTION OF THE PROPOSED RATE INCREASE WAS ASSOCIATED**
4 **WITH FINANCING PWSA'S "CAPITAL IMPROVEMENT PLAN" ("CIP").**
5 **WOULD YOU EXPLAIN THE NATURE OF THESE EXPENDITURES?**

6 A. Yes. We have finalized 5, 10 and 25 year core infrastructure facility plans based upon
7 available information. Planning projects related to water treatment, disinfection, clearwell
8 storage, pump systems, and storage have been completed. Preliminary and final designs
9 are now being prepared to initiate construction in 2019, 2020 and 2021. PWSA is
10 projecting that it will expend some \$155 million in 2019 for capital improvements that
11 are part of the CIP. The projects affect virtually every aspect of PWSA's services,
12 covering water, sewer and stormwater management. A complete list of the projects, their
13 budgeted cost, the amount projected to be expended in the FPFTY and the degree to
14 which the project has been completed is shown on Exhibit RAW-3.

15 In 2019, PWSA's CIP will continue to address replacing and/or rehabilitating
16 aging infrastructure throughout both the water and sewer systems, while meeting
17 regulatory compliance mandates set forth by the Pennsylvania Department of
18 Environmental Protection and the United States Environmental Protection Agency.
19 These efforts include work at the Aspinwall Water Treatment Plant where PWSA plans
20 to upgrade its chemical processes, high and mid voltage electrical systems, clarification
21 system, and significant modifications on the clearwell. Planned improvements in the
22 water distribution system includes building resiliency through the construction of the
23 Highland Pump Station and Rising Main, construction of a Redundant Lanpher Rising
24 Main, and improvements at each of the reservoirs while continuing to replace small
25 diameter water mains, valves, hydrants, and lead service lines. The sewer and storm

1 systems are planned to be rehabilitated or replaced through several annual programs and
2 PWSA plans to reduce the instances of combined sewer overflows to the waterways
3 through the implementation of green infrastructure and storm projects throughout the
4 City of Pittsburgh. As can be plainly seen, PWSA's CIP is comprehensive and extensive.
5 But continued progress with this plan is essential if PWSA is going to achieve its goal of
6 providing top quality, safe and reliable, water and wastewater conveyance service to the
7 Citizens of Pittsburgh.

8 **VII. SCOPE OF THIS RATE FILING**

9 **Q. PLEASE DESCRIBE THE TRANSITION FROM LOCAL RATE AND SERVICE**
10 **REGULATION UNDER THE MUNICIPALITY AUTHORITIES ACT.**

11 A. Oversight by the Commission, and satisfying the related State regulations, means more
12 stringent standards on work done at PWSA, from the top to the bottom of the
13 organization. The transition has required, and will require further tightening of our
14 performance standards, establishing and measuring new performance metrics goals for
15 each department, converting PWSA's financial and operating reports to Commission-
16 compliant format, following a more active and comprehensive reporting regime, and
17 improving PWSA overall financial standing to borrow and invest in PWSA's assets.

18 Section 3204 of the Public Utility Code establishes the regulatory timing of the
19 initial PWSA tariff filing and compliance plan. This proceeding is related to the water
20 tariff and the wastewater tariff, and is limited to the rates, rules and regulations governing
21 service provided by PWSA. PWSA made the decision to focus in this proceeding on
22 establishing its proposed rates as just and reasonable under PUC requirements, and
23 present a new Water and (separately) Wastewater Conveyance Tariff that both sets forth
24 the rates and charges for water and sewer service but also presents proposed rules and

1 regulations for billing, collection and termination procedures, line extensions and the like.
2 PWSA witness Quigley will testify in more detail about PWSA's proposed new PUC
3 tariffs.

4 Section 3204 obligates PWSA to submit a "Compliance Plan" with the
5 Commission by September 28, 2018. Specifically, Section 3204(b) states that PWSA's
6 compliance plan:

7 " ... shall include provisions to bring [the Authority's] existing information
8 technology, accounting, billing, collection and other operating systems and
9 procedures into compliance with the requirements applicable to jurisdictional
10 water and wastewater utilities under [the Public Utility Code] and applicable
11 rules, regulations and orders of the Commission. The compliance plan shall also
12 include a long-term infrastructure improvement plan in accordance with
13 Subchapter B of Chapter 13 (relating to distribution systems)."⁴

14 Accordingly, PWSA plans to file a comprehensive plan by the due date. The Plan
15 will: (1) identify areas of Commission regulation with which PWSA is currently
16 compliant; (2) identify areas in which PWSA is currently not in compliance; and 3)
17 propose a plan to move the Authority to PUC compliance in each area (or, where
18 appropriate, request waivers from PUC requirements). The Compliance Plan will also
19 include a Long Term Infrastructure Improvement Plan. PWSA's present plan is to also
20 address certain contracts and other issues that appears to be inconsistent with PUC
21 policies, or the Public Utility Code or PUC regulations. This would include such items
22 as: the PWSA/City Cooperation Agreement, services provided and payments made
23 thereto; the provision of unmetered and/or unbilled water to the City; the billing
24 arrangement with ALCOSAN; and the payments paid by PWSA to Pennsylvania
25 American Water ("PAWC") to partially cover the charges for which certain PAWC

⁴ 66 Pa.C.S. § 3204(b).

customers who are also Pittsburgh residents, are responsible. I am attaching to this testimony, as Exhibit RAW-4, an outline of PWSA's compliance filing as it stands now to provide transparency and clarity to the parties and the Commission. It is my hope that this bifurcation will make the existing Tariff case more manageable. To the extent that an issue in the Compliance Plan is resolved in a manner that requires a modification of PWSA's Tariff, PWSA would undertake that modification in its next base rate case, or at some other appropriate time.

VIII. SUMMARY OF THIS RATE FILING

Q. PLEASE DISCUSS THE IMPACTS OF THE REQUESTED RATE RELIEF

A. PWSA is requesting an increase in the commodity/consumption/usage charge as well as the customer charge for most customer classes. Those rates are set forth in the testimony of Harold J. Smith (St. 5).

I would note that the average impacts for the proposed rates are as follows — if the Authority's entire request for an annual increase of \$27.0 million is approved:

The total water and wastewater conveyance bill for a residential customer using three thousand gallons would increase from \$63.62 to \$74.23 per month or by 16.7%.

The breakdown by water and wastewater conveyance bill component is provided in the table below.

Residential Monthly Bill	FY 2018	FY 2019	% Increase
Water	\$ 42.07	\$ 49.84	18.5%
Wastewater Conveyance	<u>21.55</u>	<u>24.39</u>	<u>13.2%</u>
Total Monthly Bill	\$ 63.62	\$ 74.23	16.7%

The total bill for a commercial customer using 13 thousand gallons would increase from \$234.00 to \$283.15 per month or by 21.0%.

Commercial Monthly Bill	FY 2018	FY 2019	% Increase
Water	\$ 148.02	\$ 187.12	26.4%
Wastewater Conveyance	<u>85.98</u>	<u>96.03</u>	<u>11.7%</u>
Total Monthly Bill	\$ 234.00	\$ 283.15	21.0%

Rates for an industrial customer using 680 thousand gallons would increase from \$9,409.52 to \$12,064.95 per month or by 28.2%.

Industrial Monthly Bill	FY 2018	FY 2019	% Increase
Water	\$ 5,505.62	\$ 7,267.15	32.0%
Wastewater Conveyance	<u>3,903.90</u>	<u>4,797.80</u>	<u>22.9%</u>
Total Monthly Bill	\$ 9,409.52	\$ 12,064.95	28.2%

Rates for a health or education customer using 50 thousand gallons would increase from \$1,031.30 to \$1,131.80 per month or by 9.7%.

Health or Education Monthly Bill	FY 2018	FY 2019	% Increase
Water	\$ 649.46	\$ 762.70	17.4%
Wastewater Conveyance	<u>381.84</u>	<u>369.10</u>	<u>(3.3%)</u>
Total Monthly Bill	\$ 1,031.30	\$ 1,131.80	9.7%

IX. SUMMARY OF WITNESSES

Q. PLEASE INDICATE WHO THE WITNESSES WILL BE FOR PWSA IN THIS PROCEEDING AND THEIR RESPONSIBILITIES FOR THE RATE FILING?

A. PWSA's direct testimony is Volume II of the Filing. The witnesses and a summary of their testimony are as follows:

- Mr. Debbie M. Lestitian (PWSA Statement 2) is PWSA's Chief Corporate Counsel and Chief of Administration. Ms. Lestitian provides documentation and supporting methodology for the schedules and exhibits that support PWSA's base

1 rate increase including financial schedules for the Fully Projected Future Test
2 Year (“FPFTY”), 2019. She describes PWSA’s financial results for the FPFTY at
3 both present and proposed rates. She also details and provides supporting
4 justification for PWSA’s requested annual increase in existing base rate of \$27.0
5 million. Ms. Lestitian further describes and supports the process used to separate
6 water and wastewater conveyance costs as well as to identify the portion of
7 wastewater conveyance costs that currently are associated with stormwater
8 management. Finally, she testifies to the proposed base rate increase by customer
9 class.

10 • Ms. Katherine Clupper (PWSA Statement 3) is a Managing Director and Partner
11 with PFM Financial Advisors LLC (“PFM”). She is an expert on financial
12 markets and financial instruments whose firm is under contract to PWSA to
13 provide financial consulting services. Ms. Clupper testifies to the importance of
14 obtaining the rate increase being sought, in order to maintain PWSA’s bond
15 ratings, access to the municipal capital markets at reasonable pricing, and to
16 ensure there are not unforeseen impacts to PWSA’s capital structure.
17 Specifically, her testimony focuses on the adverse financial consequences to
18 PWSA, which could be considerable and broadly based, if the Company does not
19 receive its requested rate increase. Ms. Clupper also discusses the results of a
20 comparable utility (benchmarking) analysis.

21 • Ms. Julie Quigley (PWSA Statement 4) is Director of Administration for PWSA.
22 Ms. Quigley describes PWSA’s existing universal service programs.
23 She also explains and provides support for the Company’s proposed customer

1 service rules, and sponsors PWSA's proposed water and its separate wastewater
2 tariff.

3 • Mr. Harold Smith (PWSA Statement 5) is the Vice President of Raftelis Financial
4 Consultants, Inc. Mr. Smith presents the Company's class cost of service study
5 ("CCOSS"), which is found in Volume III of the Filing. The primary purpose of
6 the present CCOSS is to allocate the Company's costs of providing service to
7 each rate class. The purpose of his testimony is to describe the principles,
8 methodology, and data used in the CCOSS, which was utilized in order to move
9 towards cost allocations and rate design that more closely reflect cost causation.
10 Mr. Smith also shows the monthly fixed customer cost per class, and supports the
11 proposed increase in rates for each class. Mr. Smith also explains the calculation
12 of the proposed minimum charges.

13 In addition to these statements, PWSA is submitting the information and data
14 required by the PUC's filing requirements (Volume I) and its proposed Water Tariff No.
15 1 and its proposed Wastewater Tariff No. 1, (Volume IV) which sets forth all of the
16 changes and rate increases proposed by PWSA as part of this case.

17 **X. CONCLUSION**

18 **Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?**

19 **A. Yes.**

Exhibit RAW-1



2017 and 2018

ACTIONS AND SUCCESSES

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS for 2018
Communications	Developed new monthly report "Currents" for Board, PGH2O staff and External Stakeholders: Information on key staff successes, general outline of PGH2O plans, and project summaries	Report accepted by the PGH2O staff
	The Communications team has transitioned from a reactive approach to one that focuses on proactive communications to provide factual information to media and our customers about our programs.	All local media outlets now seek PGH2O Senior Public Affairs Manager. Stories more accurate, and more balanced characterization of PGH2O
	Communications Program established for project outreach; Including Project Specific and general public outreach.	Standardized Process Achieving Public Support for both traditional and GI projects
Compliance	A 100+ Permit Compliance management and documentation system developed	Provided basis for determining poor permit compliance record. DEP has complimented in PGH2O compliance improvement.
	1. The Authority has cultivated a positive and transparent working relationship with our state and federal regulators, PGH2O is establishing compliance with all its program responsibilities, a situation that impacted many state and federal permits	2. DEP officials authorized a weekly meeting with Senior Staff to accelerate review and approval of PGH2O Projects and permits to achieve regulatory compliance. Expect full compliance by year end 2018
	3. 308 Compliance Plan submitted to USEPA; including PGH2O "proposed assumption" of former City responsibilities as recommended by PADEP and USEPA	4. Documents under review at USEPA; Memorandum of Understanding with the City of Pittsburgh Departments to assign all stormwater management activities to PGH2O
	PGH2O awaiting USEPA actions to negotiate a Federal Consent Order with regards to CSO and Stormwater Compliance	PGH2O Constructed Projects show GI Stormwater approach supports regional CSO compliance needs

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS for 2018
Customer Service	Secured the first stage of a Customer Assistance Program by obtaining Board approval on October 26, 2017 of a Winter Moratorium for Low Income Residential Customers	Established Agreement with Dollar Energy Fund to vet eligible customers and to provide them with payment counseling; developed process to exclude Low Income Residential Customers from a winter shutoff from November 30 th through April 1 st
	Secured Board approval November 8, 2017 for the second stage of a Customer Assistance Program which consists of a Bill Discount Program for Low Income Residential Customers.	Facilitated an Agreement with Dollar Energy Fund to vet eligible customers; developed reduced fixed base water and sewer rates in billing system for eligible customers
	Hired a Director of Administration to spearhead critical reforms in billing, customer service, and IT. Started October 15, 2017. Director of Administration has reorganized the Customer Services and developed new staff training, task management and mentoring plan	Review by PUC Management and Audit Teams in April 2018 indicated that PGH2O is "better than some utilities that have been under the PUC oversight for more than 10 years"
	Engaged "Dollar Energy" to implement programs	More than 4000 Customers have been signed up to these subsidies
	Established Lead Service Line Replacement Team To Coordinate Lead Service Line Replacements, including public and private side lines	Focused on informing customers of options and achieving agreements for private side service line replacements

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS FOR 2018
Development Services Group	Established eBuilder pre-development application submission and documentation system capabilities in January 2017	eBuilder utilization of internal electronic form completion by June 2018
	All plan submissions being submitted electronically through eBuilder in January 2017	Increased eBuilder utilization by development community in 2018
	Instituted policy on Structures Over Facilities in October 2017	Reduce likelihood of structures being built over PGH2O facilities
	Developed 60-day Permit Payment/Pick-up Policy in June 2017	Decreased time to collect permit fees
	Increased water and sewer tap-in fees fivefold to reflect actual costs	Fees in place and collected
Engineering	Department of Engineering made history this year by investing over \$50 million in a single year, up from about \$40 M in 2016. More than 30 projects were initiated in 2017 and will be completed over the next five years	Program Team has finalized core Program Management Plan to guide every project implementation
	Engineering completed several emergency construction projects to help restore the drinking water system in 2017: <ul style="list-style-type: none"> PGH2O completed a \$2.5 million repair to the Lanpher Rising Main, the primary supply to northern neighborhoods of Pittsburgh PGH2O contractors and staff successfully completed repairs to the Lanpher reservoir cover to return half of the reservoir to service 	Follow up projects to restore facilities to full operational capability underway
	E-Builder Project Management System at full capability, robustness can accept proposed project load; Consultants, Contractors actively utilize	Key project controls, including document management now in-place
	PGH2O has digitized all lead line replacement records and has made this information available to the public in less than 6 months	Met PADEP consent order requirements
	Lead Loop Study to select Chemical Corrosion system has been completed and submitted to PADEP	Chemical treatment systems being implemented to reduce lead corrosion and comply with the Lead and Copper Rule
	Average number of days for vendor invoice approvals (via eBuilder) is 41 days	Continued reduction expected
	Average number of days Contractor payment application approvals (via eBuilder) is 38 days vs. 45 days under	Continued reduction expected
	Change order rate for 2017 is less than 1% which is below the 5% industry standard	Seeking to remain at under 2% aggregate Capital Project change orders

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS FOR 2018
Finance	PGH2O modernized our decades-old (40+ years) trust indenture and improved our credit profile, which was evidenced by issuing fixed-rate debt at 2.4% and variable-rate debt at 1.8% for 20+ year financings	National rating agencies maintaining bond rating
	The PGH2O Board recently approved a three-year rate plan. PGH2O's 2018 rates are well within the charges by other local utilities	Rate Plan approval provides financial resources for Strategic Plan Implementation
	PGH2O closed on \$380+ million of bonds to reform the financial position of the authority, lowering debt costs by about \$1 million per year	PGH2O's Department of Finance refinanced much of our older debt saving more than \$1 million per year in interest payments. Bonds Oversubscribed during sale
	PGH2O established a Performance Management Office that is establishing performance metrics applicable to all aspects of the organization to measure and report publicly is performance in providing service to PGH2O stakeholders	Consultant team hired as initial performance team. Metrics selected and will be publicly reported on Website by Late Summer 2018
	Improved Financial controls and performance which resulted in improvement in audit performance. PGH2O went from 11 audit exceptions and adjustments in 2015 to zero in 2017	Financial controls are currently manually applied. System evaluations are underway to automate most of these activities
Laboratory	PGH2O contracted CWM Laboratory staff to manage and recertify PGH2O's lab to restore our focus on water quality and regulatory compliance. CWM is awaiting State Certification for PGH2O to perform several water quality tests in-house (Lead and Microbiology), improving turnaround time and reducing costs	Daily report accuracy has improved. External EPA and DEP reporting requirements being met. Implementing Automated Lab Data Management System
Legal	Successfully Negotiated Lead Compliance Order with PADEP	Authorizing construction contracts to meet compliance requirements
	Successfully Negotiated Union Contracts which expire again in 2020	Seeking support from Unions to implement Performance Metrics to address PUC requirements
	Successfully closed out numerous residual Legal claims at a fraction of original program.	New Chief Counsel has successfully adopted a negotiations strategy for claims.

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS FOR 2018
Field Operations	PGH2O successfully piloted new methods to replace lead/water service lines to prepare for a more robust replacement program in 2018. Multiple staff trained to implement pipe bursting method for water service line replacement	Reducing costs and increasing daily replacement rates for PGH2O teams. 80% of lead service line replacements are being installed by non-destructive.
	Meter Replacement Program Restarted. Teams scouting replacement sites	2018 Budget allows for both unmetered and old meter replacement.
	Developed and Refined Action Plans for No Water Conditions, or Boil Water Advisories, including emergency communication process. Developed additional coordination strategies with Pittsburgh Emergency Operations Center.	Production, Field Operations, Engineering and Executive staff cross-communication has improved markedly. Participated in Public Safety Trial Events to hone implementation.
	Established Categories of Staff Exempt from Pittsburgh Only Domicile requirement. Which has substantially improved the quality and number of candidates for open positions in engineering, operations, IT and Customer Services	PGH2O has hired a number of former consultants in engineering and water treatment operations into key positions based upon exemption from Domicile Limitation.
Human Resources	In reaction to the attrition and retirements that have reduced our workforce to minimum levels, PGH2O has made an all-out effort to recruit and retain our staff, seeing a dramatic increase in candidates applying for advertised positions. Human Resources added over 50 new employees to our ranks in 2017	Reallocation of Senior Staff to HR has increased recruiting success.
	Established Categories of Staff Exempt from Pittsburgh Only Domicile requirement. Which has substantially improved the quality and number of candidates for open positions in engineering, operations, IT and Customer Services	PGH2O has hired more than 5 of former consultants to PGH2O in engineering, field operations, and water treatment operations into key positions based upon exemption from Domicile Limitation.
IT	Engaged Pittsburgh Specialist Consultant to Select Enterprise Resource Planning System for all PGH2O Hardware and software infrastructure. Once Core system selected. All Software Programs will be purchased to integrate with it, and between each other	Core ERP Recommendation proposes the Sets Framework for all IT software implementation

	Acquired and Implemented New Hardware and Software systems to replace 7 year old system, which had no data backup	System has new security software, and redundancy not previously implemented at PGH2O
DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS FOR 2018
Production	Operations sustained Water Supply and Facilities During Multiple Outages, including prolonged Microfiltration Plant Operation	Operations staff improving process
	Finalized \$28 M Water Treatment Plant Filter Rehabilitation Project Implementation	Developed new operations methods with PADEP and USEPA assistance to improve water quality to customers
	Improved existing water quality (WQ) monitoring system to meet EPA/DEP Compliance Requirements	Monitoring data allowing comprehensive assessment of water treatment and distribution WQ improvement options. Consultant recommendations due by July 1, 2018
Procurement	Modernized PGH2O Contract Documents for Construction and Consultant Engagement. Agreements integrated to minimize conflicts	Adopted National Standards to attract national firms for future work with PGH2O
	Established 10 Consultant Firm "On Call" Team to Improve Project Execution	Includes both local and international firms
Safety	Implemented Root Cause Analysis Program to Review Each Accident	Continuous training is essential and will be pursued
Strategic	PGH2O has developed a strategic plan with associated performance metrics to address the system's aging infrastructure. This plan has been adopted by the Board, presented to the public and the Mayor's Blue Ribbon Panel. A consultant was engaged to support this program and began work on January 2, 2018	Performance Metric process is expected to be in place by April 1

DEPARTMENT	2017 ACTION ACHIEVEMENT	STATUS FOR 2018
Stormwater	Business Plan to Develop and Implement Stormwater fee was approved by Board	Seeking final approval of fee schedule
	Developed core Plan to assume City Stormwater compliance responsibilities	To be included with new cooperation agreement
	Completed Phase II of City-wide assessment	Release for public comment
	Hired additional staff to Stormwater division	Continue to acquire experienced staff prior to 2019 launch
	Invested in \$10 million in Green Infrastructure (GI) projects in 2017	Additional anticipated spend of \$14 million on reduction projects in 2018; budgets/timelines updated to meet consent decree with EPA
	Solidifying new design specifications and details for green stormwater infrastructure projects	Seek acceptance from Art Commission, DPW and DOMI
Capital Program	Board Approved 2019 to 2023 Capital Improvement Plan, which establishes a \$1 Billion + Plan for implementation over the next 5 years	Annual Budgets/Project Timelines updated to reflect consent order requirements
	Capital Improvement Program Process Developed to incorporate System Condition Assessments. Process encoded in computerized Process for documentation purposes	Key Condition Assessment Activities are incorporated into the 2018 budget

DEPARTMENT	2018 ACTION ACHIEVEMENT	CURRENT STATUS
Communications	Expanded audience for Web, Email and Social Media	
	Community Meetings Outreach Presentations For Established Neighborhood Groups	One Per Week
	Issuing RFP for New Enhanced Web Page	July Issuance
	Establish Position of Development and Business Relations Manager to Position PWSA as a Partner to the City's Development and Business Community	Hiring underway. Started Relationship building with BOMA
	Established Position for Construction Outreach Coordinator to enable close working relationships with Customers Impacted by our Capital Projects	Hiring underway. Staff executing Smallman Project with Weekly Coordination Meetings
Compliance	Expanded Senior Staff to include Regulatory Specialist with Local and National Experience in Water, Wastewater Compliance	Hired May 2018
	Disinfection Rule Compliance Program Implementation (One year prior to compliance date)	Actively modifying system operations to meet these requirements
	New Distribution System Flushing Program to enable chemical treatment including Orthophosphate	Program requires improved compliance with DEP discharge requirements
	Renewal of MS4 Permit Requires Takeover of City DPW Neglect of Assets	Consultant Engaged and developing required Compliance Facility Location and Water Quality Information by August 1
	Process Control Committee Comprised of Lab Manager, Operations Manager, Facilities Manager, Water Quality Manager	Daily process decisions require agreements between these key managers, and include any chemical or operations changes
Customer Service	Customer Metering Interface System allowing customer access to real time Meter readings, and alerts regarding excess usage can be set up to offer instant notification of Excess Usage	December 2018 Rollout
	Unified Communication System to improve phone communication data access and expedite communication through PGH2O	August 2018 Rollout
	Implementing Mobilwork to Facilitate Paperless process for service orders and records management. Improving communications between customers, PGH2O departments and the City Coordination	Pilot planned for July 2018
	Development group now headed by technical services director to facilitate coordination with operations and engineering	Additional expertise in management of stormwater

DEPARTMENT	2018 ACTION ACHIEVEMENT	CURRENT STATUS
Development Services Group	Commercial and Business Community Coordinator Hired Into Public Affairs Group	Increasing outreach to construction community as well
Engineering	Saw Mill Run Integrated Management Plan for Regulator and Public Comment. Plan provides alternative to tunnels and treatment to address CSO and Flooding, as well as the Total Maximum Daily Load requirements.	Submitted By December 2018
	Started Capital Project Delivery for Four Mile Run and Woods Run Stream removal projects. Working Collaboratively with City, PPC, and City Parks Department. Both projects will have a major impact on CSO removal, flooding and basement backups. Total costs more than \$50 Million	Designs underway, Projects will begin construction in 2019. Completion by 2021 to 2022
	PGH2O Green Infrastructure Grants Program has supported 12 projects that have been completed by this year	At present, no additional grant funds have been allocated by the PGH2O Board to this program
	Two GI Projects to complete this construction season at Maryland Avenue, Melwood Ave /Finland Ave and Hillcrest Neighborhood. These projects will manage stormwater runoff from	These projects are located in a priority watershed to abate CSO
	Digitizing Lead Service Line Records including online public access system	Expect Completion By July 31
	Stormwater Memorandum of Understanding Has been Drafted for Technical Review. Ongoing negotiations to finalize PGH2O and City Roles and Responsibilities	Expect Completion by September 1 st .
	Negley Run/Washington Blvd GI project underway with City and USCOE to restore Negley Run Stream to the Allegheny River.	Design Complete and Project Construction Expected by 2019.
Finance	Preparing First Tariff Submittal To PUC including requisite professional testimony on the Basis of all rates and fees	Tariff due July 2.
	Compliance Plan Required By PUC September 28 2018 to outline PGH2O's actions to fully comply with PUC Standards, including performance Metrics	Consultant engaged and Actively working with Staff to Complete Submittal
	Interim Finance Director hired from Consultant to seamlessly maintain PGH2O stable financial Position. Actively hiring Comptroller and Treasurer.	Existing Bond Holders and Rating Agencies fully satisfied with action
	Completed Tariff Proposal for Submittal on July 2, 2018	Tariff request is less than prior Board action for years 2019 and 2020

DEPARTMENT	2018 ACTION ACHIEVEMENT	CURRENT STATUS
Laboratory	Purchased and installed GCMS	Restoring certification of primary water quality testing required for compliance
	Laboratory certification renewed for all chemical and biological tests expected by June	Establishing routine operational sampling to verify compliance
Legal	Engaged New PUC Legal Counsel	Engaged in detail strategy and implementation of PUC Submittals
	Created Chief Counsel Position	Seeking internal resources to mitigate consultant solicitor cost.
Field Operations	New Management Organization to step up compliance	Production and Field Ops Now Under One Management Structure to optimize synergies between staff
	Increasing role of Crews in service line replacement	First phase Lead Service lines completed at 1341 in accordance with PADEP Consent Order
	Metering program under development, key staff hired. Expect proactive meter replacement program underway in July	Upgrading meter test bench, and conducting key industrial meter replacements.
Human Resources	Hired 10 interns to facilitate MS4 Mapping project using new Tablet Style data entry system with real time viewing by Management Team.	Expect completion of more than 100 sites in less than One Month.
	Establishing Watermark Program (PGH2O University) to provide training and advancement opportunities to Operations Staff	Expect Rollout Late Summer 2018
	Key hires in Operation, Engineering and Finance due to Domicile Waiver	Management Team Has Been Increased by 10 key experienced managers.

DEPARTMENT	2018 ACTION ACHIEVEMENT	CURRENT STATUS
IT/MIS	Updated Cogsdale Software for Customer Service and Billing Functions	Changes have reduced billing and collection processing times and call center resolution times
	Implementing Secondary Data Center to Provide Resiliency Against Equipment Failure or Cyber security issues	Service in place December 2018
Production	Improvement to Staff Organization has increased staff performance and accountability	Expect Continuous Improvement
	Major System Maintenance Activities Underway to improve treatment system performance	Major Equipment upgrades will be completed by 3 rd Quarter 2018
Procurement	Implementing eBuilder automated Procurement System, including MWBE compliance reporting	Improve outreach and coordination of Bid Documents and Bid Review and Approval
	Finalizing Procurement Standards of Practice for Board Approval	Prior interim standards are being updated to ensure compliance with current Municipal Authority Act statutes.
Safety	Added New Safety and Security Position Reporting to Executive Director	Seeking qualified Candidates.
	Updating Emergency Management Plan based upon recent trials	Revisions Complete by December 2018
Strategic	Finalizing Metrics for each department to be used to demonstrate overall improvement against National Metrics. Implementing Metrics in all Departments to incentivize staff and management to achieve	Public access to monthly performance metrics information updates expected late Summer 2018
Stormwater	Stormwater Program Under Development for Compliance Submittal	Plan due to PUC by September 28 th .
	MS4 Compliance Plan prepared and being implemented for submittal to USEPA	Plan never filed with USEPA in 2004
	Negotiating Memorandum of Understanding with City RE Stormwater	PWSA establishing basis of responsibilities

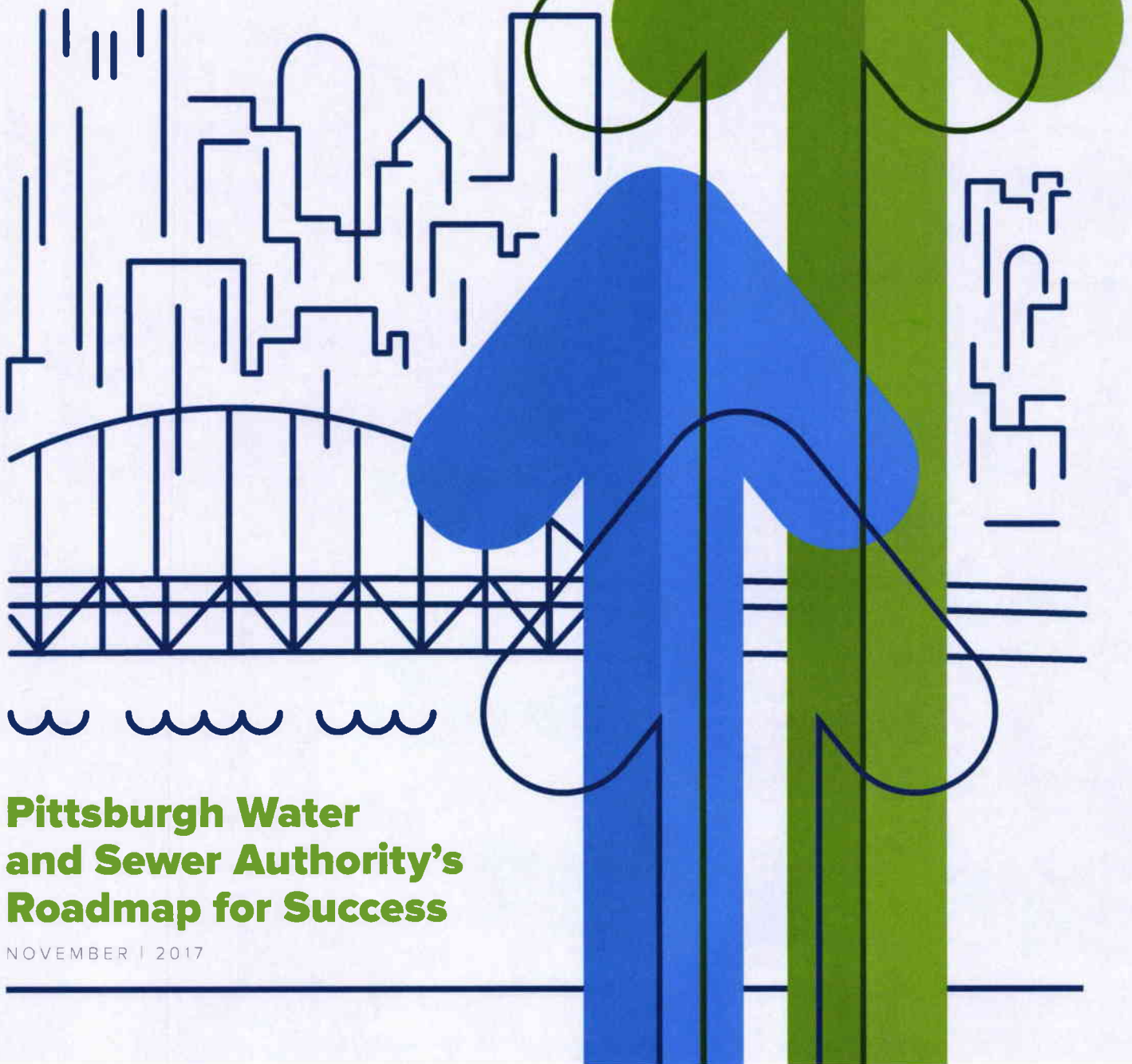
DEPARTMENT	2018 ACTION ACHIEVEMENT	CURRENT STATUS
Capital Program	Revised Capital Plan Approved BY Board At April 2018 Board Meeting	Project Assignments Awarded to Consultants for Implementation over next 5 years.
	Replaced 1200 Lead Service Lines including 300 Private Side lines by Mid June, ontrack to comply with DEP Consent Order to complete 2682 by year end	Largest Single Project by PWSA ever at \$44 Million
	MFP Upgrade for Ultraviolet Disinfection Underway	Restoring key water distribution system
	Orthophosphate system now being implemented to provide corrosion control.	State approval granted, construction underway

Exhibit RAW-2

FOCUSING ON THE

FUTURE

PGH₂O



**Pittsburgh Water
and Sewer Authority's
Roadmap for Success**

NOVEMBER | 2017

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Message from the Executive Director:

The people of Pittsburgh have enjoyed access to public water service for more than 200 years. Today, that service is provided by the Pittsburgh Water and Sewer Authority (PWSA), which exists to support the community's vitality by protecting public health and the environment through safe, reliable, and cost-effective delivery of water, wastewater conveyance, and stormwater services.

PWSA's challenges are well defined; but they are neither unique, nor insurmountable. Extended periods of underinvestment and organizational instability have led to infrastructure failures, regulatory lapses, and organizational turnover. These are common challenges that most urban water systems in the northeast face. Through a combination of new and existing initiatives, talented leadership, and a supportive Board of Directors, PWSA is committed to improving its operations and addressing these challenges.

PWSA has a solid foundation to build upon – an ample water supply from the Allegheny River, adequate delivery capacity throughout its distribution system, and a stable customer base. This Organizational and Compliance Plan builds on the utility's strength. It articulates PWSA's goals, the concrete actions that will be taken to achieve those goals, and the measures by which PWSA staff, outside stakeholders, and customers can measure its ultimate success.

With this plan – and hard work – we will be successful. We will continue working, every day, to deliver safe, reliable, and cost-effective drinking water, wastewater conveyance, and stormwater services. We will continue working, every day, to protect public health and the environment. And we will continue working, every day, to be a highly responsive and trusted public utility, recognized for excellence and valued by our community.

Pittsburgh deserves no less.

Robert Weimar, P.E.
Interim Executive Director
Pittsburgh Water and Sewer Authority

WHAT IS OUR FUTURE?

PWSA is a highly responsive and trusted public utility, recognized for excellence and valued by our community.

WHAT DO WE DO?

PWSA supports community vitality by protecting public health and the environment through safe, reliable and cost-effective delivery of drinking water, wastewater and stormwater services.

OUR GOALS



Protect Public Health and the Environment

To protect and support the long-term health of our community and environment



Ensure Customer and Stakeholder Satisfaction

To enhance customer and stakeholder confidence by communicating effectively and engaging our community



Improve Infrastructure Reliability

To ensure service reliability through responsible infrastructure investment and proactive maintenance



Maintain a High-Performing Workforce

To recruit, develop, and retain a motivated and well-qualified team



Be an Efficient and Effective Organization

To optimize the use of our resources through innovative technology, effective processes, and continuous improvement



There are several trends that water-sector utilities must contend with and respond to, including **increased utility financial constraints, regulations, workforce issues, and customer expectations.** PWSA faces each of these, and each trend challenges PWSA's ability to maintain the traditional utility approach: out of sight, out of mind.

TREN

This Organizational and Compliance Plan addresses these trends.

TREND 1:

CUSTOMER EXPECTATIONS

Changing requirements for service delivery are being driven by a new generation of customers who expect more rapid, and easy access to information. The customers of the future are driving the investments of today.

PWSA must respond by providing updated customer billing and information management systems that meet the expectations of a changing customer base.

TREND 2:

FINANCIAL CONSTRAINTS

With capital and operating budgets rising, and stakeholder groups who are increasingly resistant to rate increases, utilities struggle to make necessary investments.

PWSA carries a significant debt load of more than \$840 million, and additional capital investment is needed. Rates are expected to rise over the next several years as we replace in our aging infrastructure and strengthen our delivery of services.

TREND 3:

REGULATIONS

Across the board, regulations are becoming more stringent, which requires greater investment of an organization's scarce resources. Compliance with environmental regulations tends to be especially challenging (and costly).

In 2008, the Pittsburgh region entered a Consent Decree with the US Environmental Protection Agency to reduce and eliminate sewage contamination in local streams and rivers. The Consent Decree requires all 83 communities within the regional service area to repair broken sewer

lines, reduce storm water entering the system, reduce the frequency and amount of combined sewer overflows, and eliminate sanitary sewer overflows.

TREND 4:

WORKFORCE ISSUES

Water-sector utilities struggle to recruit and retain staff with the necessary skills and competencies to manage utility operations. Typically, utilities have aging workforces, which make knowledge retention and succession planning significant challenges.

PWSA has experienced frequent leadership turnover in the last several years, and operates in a union environment, which can limit workforce flexibility. Compensation is limited, and often not competitive as compared to the private sector. Additionally, the utility's financial constraints have curtailed some employee development and training opportunities.

IDS



GOAL 1

PROTECT PUBLIC HEALTH AND THE ENVIRONMENT

To protect and support the long-term health of our community and environment

The primary mission of any water and wastewater utility is to protect public health and the environment. Drinking water must meet all regulatory water quality requirements when it leaves PWSA treatment facilities and when it is used at a customer's tap. PWSA must ensure that wastewater is collected from customers without backups or spills, and conveyed through the wastewater collection system to the regional ALCOSAN treatment facility. The conveyance process must be secure, and occur without sanitary sewer overflows (SSOs) that could damage the environment. Treatment then renders the wastewater safe, before it is discharged back to the environment.

FOCUS AREA 1:

DELIVER HIGH QUALITY DRINKING WATER

Our goal is to continuously meet or exceed customer and regulatory standards for the water that we provide. To do that, PWSA will pursue the following strategies:

- Perform regular tests at certified laboratories to ensure high water quality and service levels
- Report water quality results to customers in an annual Consumer Confidence Report
- Continue to actively manage and replace lead service lines

Ensuring success in this area will require PWSA to effectively manage its distribution system, including increasing the number of water quality monitoring points; regularly flushing the system; incorporating best-in-class technology and enhanced modeling capabilities; and improving its cross-connection control program to meet industry best practices.

MEASURE OF SUCCESS

Compliance with regulatory water quality standards



TARGET PERFORMANCE

365 days of full water quality compliance

Implement cross-connection control



- 100% of service connections rated for potential threat level and catalogued
- All backflow devices tested at regular intervals

Compliance with lead standards



Lead levels: in compliance with EPA standards

Achieve water pressure standards



Meet target maximum and minimum pressure in water mains; minimum fire flow at hydrants

Service Line Inspections (for Lead lines)



FOCUS AREA 2:

SAFELY AND EFFECTIVELY CONVEY WASTEWATER AND STORMWATER

Our goal is to continuously meet or exceed customer and regulatory standards as we convey wastewater and stormwater to the ALCOSAN treatment facility. PWSA is committed to:

- Maintaining wastewater system cleaning, root removal, and maintenance activity to prevent back-ups
- Routinely inspecting manholes
- Monitoring and reporting on all combined and sanitary sewer overflows
- Regularly performing condition assessments on all gravity pipe segments

PWSA's continued success in this area will also require implementing a risk-based wastewater system renewal program; incorporating similar best-in-class technology and modeling capability to what is required for the water system; and adopting a lateral inspection and renewal program.

MEASURE OF SUCCESS

Compliance with regulatory wastewater and stormwater quality standards

Eliminate sanitary sewer overflows (SSOs)

Compliance with combined sewer overflow (CSO) requirements

Minimize back-ups and failures

Clean and inspect wastewater mains and manholes

TARGET PERFORMANCE

→ 365 days of full compliance

→ Zero SSOs per year

→ Reduced number and volume of CSOs

→ Fewer than one unplanned failure per 5,000 accounts (AWWA benchmark)

→ 10% of system annually



GOAL 2

MAINTAIN A HIGH-PERFORMING WORKFORCE

To recruit, develop, and retain a motivated and well-qualified team

Attracting, training, and developing the next generation of utility staff is quickly becoming a significant focus area for every major water utility. A high-performing organization needs to address capturing and transferring institutional knowledge, succession planning, career development and personal growth opportunities for its workforce. Training and incentives that enhance and recognize employee efforts provide the means to establish higher standards to meet the needs of modern utility operations. PWSA's shift to a learning-based culture will help attract and support a high-performing workforce.

FOCUS AREA 1:

INCREASE HIRING EFFECTIVENESS

Developing a strong workforce relies on identifying and hiring qualified applicants. To that end, PWSA is committed to:

- Implementing a new Human Resources Information System (HRIS)
- Reviewing and improving job postings and position descriptions
- Optimizing and streamlining the hiring process and timeline
- Reviewing employee total compensation packages

Additionally, PWSA will look to extend outreach to industry publications, community partnerships, and other venues to reach prospective talent; as well as evaluating the possibility of eliminating the City's domicile employment requirements that hinder finding and retaining good people.

MEASURE OF SUCCESS

Hiring Response Time



TARGET PERFORMANCE

Average time to fill existing positions is less than three months from the date of the vacancy

Position Vacancy Rate



Average vacancy rate is less than 3%



FOCUS AREA 2:

ENHANCE WORKFORCE ENGAGEMENT AND PERFORMANCE

Increasing the efficiency and effectiveness of our organization requires engaged, developed, and high-performing PWSA employees. Creating this workforce will require PWSA to:

- Work cooperatively with unions to find and act on opportunities to increase workforce performance and effectiveness
- Complete a training program roadmap and inventory of the training requirements for all positions at PWSA
- Dedicate additional resources to training and development; as well as health, safety, and risk management
- Establish and track productivity goals for work groups, where applicable

Additionally, PWSA will develop a program to recognize high-performing employees and will support employee involvement in industry groups and events.

MEASURE OF SUCCESS

Training hours per year



TARGET PERFORMANCE

Twenty hours per employee per year

Safety Compliance



Maintain a workers' compensation experience modification rate of less than 1.0

OSHA Compliance



Meet OSHA requirements

Conduct a staff engagement survey every three years



Increased engagement levels



GOAL 3

ENSURE CUSTOMER AND STAKEHOLDER SATISFACTION

To enhance customer and stakeholder confidence by → communicating effectively and engaging our community

PWSA is committed to maintaining an elevated level of quality, performance, and value. While the utility has recently experienced infrastructure failures, billing issues, and negative media reports, PWSA is actively working to regain community confidence. Recognizing that the utility must earn customer's support and trust, PWSA has already begun to engage the community and communicate many of the positive changes that are being made to enhance service.

FOCUS AREA 1:

RESPOND TO CUSTOMERS AND STAKEHOLDERS IN A TIMELY MANNER

Being responsive to customers is paramount to earning their trust and recognition of PWSA as a valuable community resource. To do that, PWSA will:

- Develop Standard Operating Procedures (SOPs) and standard scripts for effectively managing common types of customer contacts
- Provide customer service staff with additional training and call monitoring
- Increase call center resources to meet call volumes and achieve target performance goals

MEASURE OF SUCCESS

Less than 5% of calls abandoned



TARGET PERFORMANCE

Average answer speed of less than three minutes

Reduce call abandonment



Less than 3% of calls abandoned

Minimize customer complaints



Less than 5.9 complaints per 1,000 accounts annually

FOCUS AREA 2:

REGULARLY PROVIDE CLEAR AND EFFECTIVE INFORMATION

Customer and stakeholder support and trust begin with understanding, and that begins with the information that PWSA shares. PWSA is committed to:

- Developing a communications plan, to include social media and web-based strategies
- Increasing transparency and developing educational materials
- Providing regular progress reports to key PWSA stakeholders

MEASURE OF SUCCESS

TARGET PERFORMANCE

Conduct an annual customer and stakeholder satisfaction survey	→	Increased satisfaction rates
Increase social media interaction	→	Increased platforms, followers, and engagement

FOCUS AREA 3:

UTILIZE ADVANCED METER INFRASTRUCTURE (AMI) TO GENERATE ACCURATE CUSTOMER BILLS

Ensuring customer satisfaction, as well as utility revenue sufficiency, relies on PWSA's ability to accurately read meters and generate the corresponding bills. This requires PWSA to:

- Meter all users, including public and commercial users
- Verify AMI and CIS communications to ensure accurate data transfers
- Adopt industry best practices for billing quality control and assurance
- Adopt AWWA Water Loss Management Practices

Additionally, PWSA will maintain a robust meter monitoring, testing, and replacement program; ensure all meters are connected to the AMI system; conduct leak detection analysis; and alter the printed bill layout to ensure that it is easily understandable.

MEASURE OF SUCCESS

TARGET PERFORMANCE

Percent of accounts metered within 18 months	→	100% of active, permanent accounts metered
Equip all meters with AMI technology	→	98% of active, permanent meters have AMI technology
Ensure accurate meters	→	95% of residential and 98% of commercial meters meet minimum acceptable accuracy levels (any over-billed accounts are adjusted promptly)
Provide timely and accurate bills to customers	→	99.9% of bills are sent on time with no errors in charges/fees
Minimize non-revenue water	→	Reduce non-revenue water to less than 20% of treated volume



GOAL 4

IMPROVE INFRASTRUCTURE RELIABILITY

To ensure service reliability through responsible infrastructure investment and proactive maintenance

PWSA operates and maintains over 2,000 miles of water and sewer pipe, two water treatment plants, and numerous water storage reservoirs, pumps stations, manholes, and fire hydrants. Unfortunately, most assets are underground and hidden from view, so problems with these important networks often goes unnoticed until failures occur. This has led to decades of underinvestment. PWSA is dedicated to investing the necessary resources to elevate the condition of its infrastructure and minimize system failures.

FOCUS AREA 1:

IMPLEMENT ENHANCED MAINTENANCE PRACTICES

Enhanced maintenance practices allow PWSA to extend the useful life of its assets and reduce costs over time. Doing so requires PWSA to:

- Inspect and rate the condition of gravity pipe segments on a regular schedule
- Add additional crews to implement and maintain a 2-year cycle of valve and hydrant exercising
- Increase field crew productivity

PWSA will need to focus on increasing the ratio of proactive to reactive maintenance; shift to replacing infrastructure based on risk and performance, rather than years in service; and fully integrate capital project and maintenance management technology systems.

MEASURE OF SUCCESS

Increase the number of proactive work orders

Perform manhole inspections

Conduct condition assessment of wastewater mains using CCTV

TARGET PERFORMANCE



80% of work orders are proactive



20% of manholes are inspected annually



15% of the wastewater collection system to be assessed annually



FOCUS AREA 2:

RENEW AGING/FAILING INFRASTRUCTURE

PWSA's success in achieving its mission and accomplishing its goals relies heavily on the condition and sufficiency of its infrastructure. Continuing to focus on developing and maintaining that infrastructure to meet customer needs now and into the future will occur by:

- Implementing and staffing the internal Project Management capability necessary to oversee and manage capital projects
- Ensuring sufficient resources to align capital renewal with the desired service levels

Renewing aging/failing infrastructure will require development of installation and repair SOPs; implementing a risk-based renewal system; adopting a lateral inspection and renewal plan; and initiating the water loss programs discussed in the previous section.

MEASURE OF SUCCESS

Replace/rehabilitate buried assets at an accelerated rate

Reduce water main breaks

Ensure the financial resources are available to implement the capital plan

TARGET PERFORMANCE

→ Renew at least 2% of buried assets per year

→ Achieve a failure rate of less than 50 breaks per 100 miles of water main annually

→ Acceptance and approval of user charges to fully fund CIP

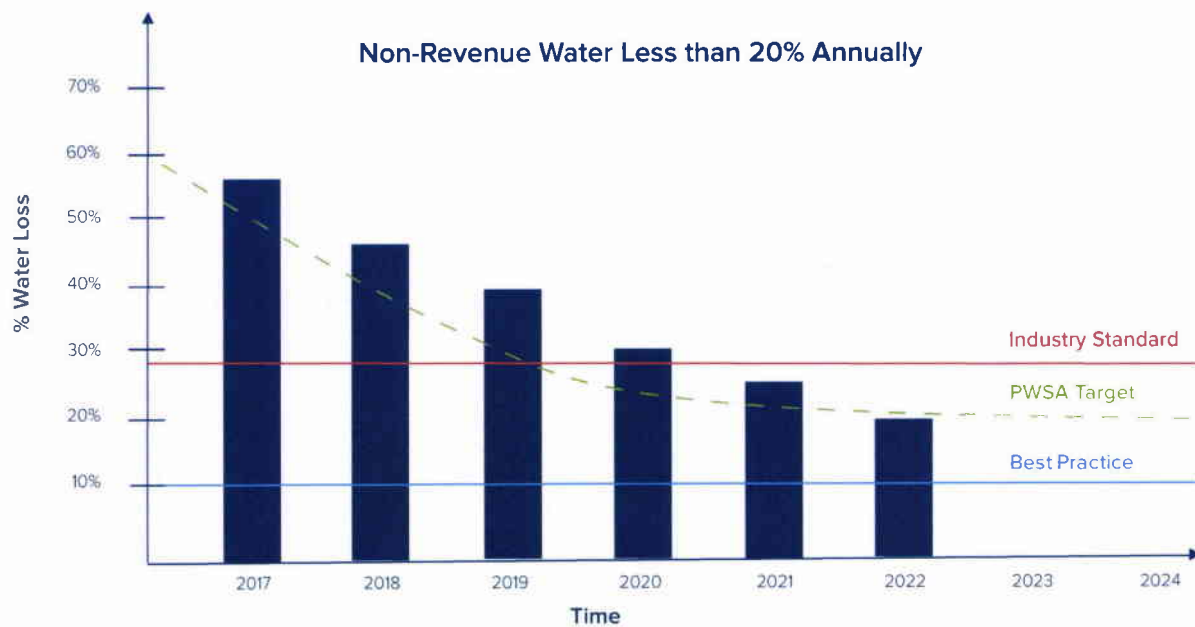


GOAL 5

BE AN EFFICIENT
AND EFFECTIVE
ORGANIZATION

To optimize the use of our resources through innovative technology, effective processes, and continuous improvement

The people of Pittsburgh expect PWSA to provide excellent value, spending the public's money and using its resources as efficiently and effectively as possible to ensure the delivery of high quality services. To meet these expectations, PWSA will increase its productivity and streamline its systems and processes. Ultimately, PWSA is focused on instituting better practices, implementing modern technologies, and using data to drive improvements to organizational performance. These changes will allow us to continue to provide the high-quality and timely services our customers deserve.





FOCUS AREA 1:

IMPLEMENT ENHANCED WORK PRACTICES AND STANDARDS

Increasing the efficiency and effectiveness of our organization starts with instilling a culture of continuous improvement in PWSA employees. This will allow us to look critically at our existing operations, use data to identify key areas for improvement, implement change, and measure success. Specifically, PWSA will:

- Establish a Performance Improvement group to help instill and grow a culture of continuous improvement
- Adopt technologies and reporting processes to seamlessly communicate progress in key performance areas
- Use a combination of internal and external resources to address critical staffing needs

Particular areas of opportunity include centralizing the field work yards and the warehouse; optimizing the use of fleet and vehicle assets; and implementing an operations technical support function to focus on treatment optimization and process control.

MEASURE OF SUCCESS

Consistent measurement and reporting of Key Performance Indicators (KPIs)

Efficient staffing levels

Field Crew Work Activity Tracking

Service disruptions are addressed quickly, minimizing time without service

TARGET PERFORMANCE

→ Continuously monitor operations and processes against KPIs, and report results

→ Maintain staffing numbers and cost per account ratios in line with industry standards

→ Time spent on task is greater than 75% of available time

→ Average service disruption time is less than 12 hours

FOCUS AREA 2:

INVEST IN INFORMATION TECHNOLOGY SYSTEMS AND RESOURCES

Our goal is to enhance our organization's performance through the implementation of modern technology, which will support the work practices and standards described in Focus Area 1. To achieve this goal, PWSA will:

- Implement robust IT systems that allow for increased levels of service and the elimination of paper-based recordkeeping. These systems include a computerized maintenance management system (CMMS), a Human Resources Information System (HRIS), and an updated Customer Information System (CIS).
- Increase IT resources to support security, programming, database administration, and desk-top support

Additionally, PWSA is focused on increasing its use of business analytics, GIS integration, and use of an electronic document management system.

MEASURE OF SUCCESS

TARGET PERFORMANCE

Procure and begin CMMS Implementation	→	6 months to procure and 1 year to fully implement
Procure and begin CIS Implementation	→	8 months to procure and 2 years to fully implement
Procure and begin HRIS Implementation	→	8 months to procure and 1 year to fully implement

FOCUS AREA 3:

MAINTAIN FINANCIAL INTEGRITY

Our goal is to consistently meet or exceed targeted financial metrics while delivering clean, safe, and reliable service to customers at rates they can afford. To do that, PWSA will:

- Establish and maintain revenue sufficiency to meet increasing levels of operating and capital costs
- Implement cost-justified rates that are consistent with industry best practices
- Report the results of operations annually in a Comprehensive Annual Financial Report
- Implement an affordability program to provide customer assistance

Ensuring success in the financial focus area will require PWSA to establish financial metrics that can be continuously monitored; implement proactive and cost-justified rate increases; enhance the billing process to reduce billing errors; develop an affordability program; and assess the program's impact on system revenues.

MEASURE OF SUCCESS

TARGET PERFORMANCE

Fully fund operating and capital costs	→	Set water and sewer rates at a level that allows for full funding of utility operating and capital costs
Improve PWSA's bond rating	→	Increase debt service coverage above the covenant-required 1.25% and increase liquidity through annual reserve contributions
Maintain equitable and cost-justified rates	→	Implement equitable and defensible water and sewer rates
Maintain a clean or unmodified opinion annually from PWSA external auditors	→	Adhere to GASB and Pennsylvania PUC-endorsed accounting practices



COMMUNICATIONS

Through this Organizational and Compliance Plan, PWSA has committed to improving internal and external communications. Effective communication is critical not only for the successful implementation of the plan, but also for the overall success of PWSA. The issue of communication cuts across the various goals and initiatives discussed herein.

While most specifically called out in the Ensure Customer and Stakeholder Satisfaction goal area, PWSA has committed to significantly increasing communications in many areas, through:

- Reporting water quality information to regulatory agencies and the public
- Communication of progress against metrics in key performance areas, both internally and externally
- Production of a Comprehensive Annual Financial Report
- Increased social media and web-based customer and stakeholder interaction
- Creation of community outreach and education materials
- Conducting an annual customer satisfaction survey
- Communication of OSHA and other safety compliance information
- Conducting an employee satisfaction survey every three years

Overall, enhanced communications will be a major initiative at all levels of PWSA to assure employee commitment and to facilitate various teams and individuals working toward the same vision and mission, regardless of which goals or initiatives are their primary focus.



MOVING TO THE FUTURE

PWSA recognizes that the status quo cannot continue, and that the organization's challenges must be addressed with a sense of urgency. While this Organizational and Compliance Plan has only recently been formalized, many of the initiatives and actions contained within are already underway. A plan alone, however, is not sufficient to address the magnitude of the work that must be completed.

Key hires have already been made, and rates will increase by approximately 28% in FY 2018, which will allow for essential investment in PWSA's critical infrastructure and funding for many of the initiatives included in this plan.

PWSA is also realigning its organizational structure to ensure that sustained progress continues, with the creation of a Strategy and Performance Office. This office will provide needed support in the areas of business process optimization, strategic planning and implementation, and overall performance management. Ultimately, the office will have responsibility for ensuring that PWSA adopts processes and methods to continuously evaluate and improve the organization's operations. Central to this responsibility is the requirement that proven approaches such as LEAN and Six Sigma process improvement analysis methods be deployed as necessary to assist with the organization's overall optimization objectives.

Making progress on the initiatives contained within this plan, continuing to staff key positions with qualified employees, moving toward revenue sufficiency, and reorganizing to support continuous improvement will allow PWSA to achieve its ultimate goal of:

**Supporting
community vitality
by protecting
public health and
the environment
through safe,
reliable and cost-
effective delivery
of drinking water,
wastewater, and
stormwater services.**

PGH₂O



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Exhibit RAW-3

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Utility Cost Shares	Infrastructure replacement due to coordination with other agencies or utilities. Coordination with other utilities can reduce expenditures up to 75% of the total project cost and reduces the length of time that the public is inconvenienced due to construction efforts.	AFUDC: \$3,000,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	N/A	N/A	0%
Baum and Bigelow	Utility cost share agreement with PENNDOT for infrastructure replacement during roadway reconstruction. Construction is complete; awaiting invoice from PENNDOT.	AFUDC: \$28,500 N-AFUDC: \$0	AFUDC: \$12,649 N-AFUDC: \$0	Unknown	December 2006	99%
Mifflin Road Culverts	Utility cost share agreement with PENNDOT for sanitary sewer infrastructure replacement during roadway reconstruction. Construction is complete; awaiting invoice from PENNDOT.	AFUDC: \$652,000 N-AFUDC: \$0	AFUDC: \$94,173 N-AFUDC: \$0	Unknown	December 2006	99%
SRS1 Bausman to Ivyglen	Utility cost share agreement with PENNDOT for infrastructure replacement during roadway reconstruction. Construction is complete; awaiting invoice from PENNDOT.	AFUDC: \$13,375 N-AFUDC: \$0	AFUDC: \$8,852 N-AFUDC: \$0	Unknown	December 2006	99%
CMMS (Computerized Maintenance Management System)	Acquire, install, develop, and implement a Computerized Maintenance Management System, including training staff to assist with capital investment prioritization.	AFUDC: \$0 N-AFUDC: \$10,000,000	AFUDC: \$0 N-AFUDC: \$0	July 2018	December 2026	0%
2017 Catch Basin and Inlet Replacement (Annual IDIQ Contract)	Strategic replacement of approximately 400 catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.	AFUDC: \$3,013,480 N-AFUDC: \$0	AFUDC: \$2,411,646 N-AFUDC: \$0	July 2017	July 2018	90%
2018 Catch Basin and Inlet Replacement (Annual IDIQ Contract)	Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.	AFUDC: \$10,392,500 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2018	August 2019	0%
2019 Catch Basin and Inlet Replacement (Annual IDIQ Contract)	Strategic replacement of approximately 840 catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.	AFUDC: \$11,132,500 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2019	August 2020	0%
MS4 Compliance Projects	Four stormwater BMP projects that will reduce pollutants to impaired waters, which include stream restoration and inlet inserts at various sites. These projects are required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection.	AFUDC: \$1,955,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	August 2020	0%
Maytide Storm and Sanitary Sewer System Improvements	Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue, the realignment of the sanitary sewer on Maytide (Sanderson to Valline), and the rehabilitation and/or reconstruction of the sanitary sewer mains on the undeveloped right-of-ways in the vicinity. Localized property and street flooding has been well-documented for several years at this location and the undeveloped right-of-way of Sanderson has significantly deteriorated. Additionally, inspections of the sanitary sewers in the vicinity revealed structural and construction defects.	AFUDC: \$2,690,000 N-AFUDC: \$0	AFUDC: \$12,620 N-AFUDC: \$0	March 2018	March 2020	2%
2019 Storm System Improvements	Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding.	AFUDC: \$5,155,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2018	July 2020	0%
2020 Storm System Improvements	Strategic replacement or rehabilitation of storm mains or structures to improve system reliability and minimize disturbance to the community, including reducing flooding.	AFUDC: \$5,595,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2019	July 2021	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Saw Mill Run Stream Bank Restoration	Stream restoration of approximately 1,500 linear feet of the Saw Mill Run Creeks to reduce pollutants in the impaired waterway. This project is required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection.	AFUDC: \$1,385,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	August 2020	0%
Volunteer's Field Storm Water Management	Installation of BMPs to reduce sediment, other pollutant loads, stormwater volume, and peak flows to the Saw Mill Run watershed. This project is required to comply with the MS4 NPDES permit application submitted to the Pennsylvania Department of Environmental Protection and to meet the waste load reductions required in the EPA-approved Sediment TMDL in the Saw Mill Run watershed.	AFUDC: \$655,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Overbrook Pollution and Flood Reduction	Implementation of stormwater treatment and reconnection of streams to vegetated floodplains to help mitigate stormwater peak flows and reduce sediment and other pollutant loads. This project will demonstrate the effectiveness of green infrastructure in reducing pollutants, controlling CSO/SSOs, and restoring the health of the aquatic ecosystems in the Saw Mill Run watershed to comply with Regulatory obligations.	AFUDC: \$6,500,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Tide Gate Installations	Installation of tide gates at 44 combined sewer overflow diversion chamber locations to assist in preventing river water intrusion.	AFUDC: \$4,500,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Stormwater System Mapping	Locating and mapping the City of Pittsburgh's stormwater system to comply with the MS4 NPDES permit application requirements. Includes confirmation that the drains from the City of Pittsburgh buildings do not spill into water ways.	AFUDC: \$0 N-AFUDC: \$1,320,000	AFUDC: \$0 N-AFUDC: \$0	June 2018		0%
2018 Green Infrastructure Cost Shares	In efforts to control wet weather issues in the Negley Run Sewershed, the Authority has entered into two cost share agreements to support green infrastructure improvements.	AFUDC: \$500,000 N-AFUDC: \$300,000	AFUDC: \$500,000 N-AFUDC: \$0	January 2018	December 2018	0%
EPA 308/City of Pittsburgh Source Reduction Response	Modeling of the remaining priority combined sewersheds within the City of Pittsburgh, as well as the separate sewersheds within the City in order to meet an EPA submission requirement.	AFUDC: \$0 N-AFUDC: \$750,000	AFUDC: \$0 N-AFUDC: \$459,992	June 2017	July 2018	90%
Centre and Herron Green Infrastructure	Installation of a bioswale feature with subsurface storage to capture and detain impervious road and sidewalk runoff in the Hill District neighborhood of the City of Pittsburgh, which is tributary to the M-19 combined sewer outfall.	AFUDC: \$1,161,168 N-AFUDC: \$0	AFUDC: \$555,144 N-AFUDC: \$0	April 2016	July 2018	90%
Hillcrest Green Infrastructure	Installation of surface and subsurface storage to capture and detain impervious road and sidewalk runoff in the Garfield neighborhood of the City of Pittsburgh, which is tributary to the A-22 combined sewer outfall.	AFUDC: \$1,336,642 N-AFUDC: \$0	AFUDC: \$1,137,368 N-AFUDC: \$0	May 2016	July 2018	95%
Melwood/Finland Green Infrastructure	Installation of roadside bioretention features to capture and detain impervious road runoff from Melwood Avenue, Cargill Street, and Bethoven Streets in the Polish Hill neighborhood of the City of Pittsburgh, which is tributary to the A-22 combined sewer outfall.	AFUDC: \$971,025 N-AFUDC: \$0	AFUDC: \$205,955 N-AFUDC: \$0	May 2016	September 2018	15%
Wightman Park Green Infrastructure	Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the Squirrel Hill neighborhood of the City of Pittsburgh, which is tributary to the M-29 combined sewer outfall.	AFUDC: \$2,365,000 N-AFUDC: \$0	AFUDC: \$104,549 N-AFUDC: \$0	November 2017	November 2019	4%
Woods Run Stream Removal -Phase 1	Installation of stormwater management features to detain and slow release the existing stream base and wet weather flow currently discharging directly into a 36-inch diameter combined sewer on Mairdale Avenue.	AFUDC: \$1,430,000 N-AFUDC: \$0	AFUDC: \$158,888 N-AFUDC: \$0	October 2017	May 2020	4%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Panther Hollow/Four Mile Green/Stormwater Infrastructure	Sewer separation, stream restoration, stream daylighting, bioretention, and underground storage to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in M-29.	AFUDC: \$41,100,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	May 2018	September 2023	0%
Spring Garden Stream Removal	Sewer separation, stream restoration, bioretention, and underground storage (if necessary) to remove the existing stream base and wet weather flow currently discharging into the combined sewer located in A-60.	AFUDC: \$10,700,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
MLK Field Green Infrastructure	Installation of regenerative step pools, rain gardens, and underground detention facilities to capture and detain impervious acres from the adjacent streets and upstream separate storm sewers, which currently discharging into the combined sewer located in M-19. This project will also explore retrofitting 100' of an abandoned 60-inch sewer to be utilized as a detention and slow release system.					
Woodland Drive Green Infrastructure	Installation of stormwater management features to capture and detain impervious acres from the adjacent streets and steeply sloping hillside and to remove the existing stream base and wet weather flow from the combined sewer. Additionally, it will mitigate downstream flooding conditions in the Shadyside neighborhood, and is tributary to the A-22 combined sewer outfall.	AFUDC: \$1,275,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Thomas and McPherson Green Infrastructure	Installation of roadside bioretention features to capture and detain impervious road runoff in the North Point Breeze neighborhood of the City of Pittsburgh, which is tributary to the A-42 combined sewer outfall.	AFUDC: \$2,580,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Homewood Park Green Infrastructure	Installation of bioswales, underground storage, and permeable paving to divert stormwater from the MLK East Busway and adjacent streets to the redesign of Homewood Park, which is tributary to the A-42 combined sewer outfall.					
Bus Rapid Transit (BRT) Green Infrastructure	A cost share with the City's Department of Mobility and Infrastructure on the redesign of Forbes Avenue and Fifth Avenue to accommodate bus rapid transit from downtown to Birmingham Bridge. This project will include the installation of permeable paving, underground storage, and bioretention plantings and is tributary to the M-05 and M-19 outfall.					
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Lawn and Ophelia Green Infrastructure	Installation of stormwater management features to capture and detain impervious acres from the adjacent streets into the park in the South Oakland neighborhood, which is tributary to the M-19B combined sewer outfall.	AFUDC: \$755,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Southside Stormwater	Sewer separation, stream restoration, and the installation of green stormwater management systems starting at the South Side Park and reestablishing a connection to the Monongahela River via South 21st Street which is tributary to the M-16 combined sewer outfall.					
Smallman Street Reconstruction	Sewer separation and water main replacement due to the redevelopment of the Produce Terminal Building, realignment of the streetscape, and the location of the existing combined sewer infrastructure, which is located under the existing building. Includes the installation of approximately 2,500 linear feet of new storm sewer piping ranging in size from 24-inch to 54-inch, 2,000 linear feet of new sanitary sewer piping ranging in size from 18-inch to 48-inch, 2,000 linear feet of new 12-inch water main, and 1,500 linear feet of new 36-inch water transmission main.	AFUDC: \$16,867,000 N-AFUDC: \$0	AFUDC: \$360,948 N-AFUDC: \$0	September 2017	March 2019	10%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Sewer Master Plan	Comprehensive plan of the sewer system, including risk based prioritization for internal inspection purposes and assessment of the four pump stations.	AFUDC: \$0 N-AFUDC: \$500,000	AFUDC: \$0 N-AFUDC: \$0	July 2018	January 2019	0%
2018 Sewer Reconstruction (Annual IDIQ Contract)	Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.	AFUDC: \$1,470,000 N-AFUDC: \$0	AFUDC: \$12,864 N-AFUDC: \$0	January 2018	January 2019	15%
2019 Sewer Reconstruction (Annual IDIQ Contract)	Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.	AFUDC: \$1,620,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	January 2019	January 2020	0%
2018 Sewers Under Structures	Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes. The following four sites have been identified: Ellsworth Avenue (695 linear feet of 20-inch vitrified clay, combined sewer main located 5135 Ellsworth Avenue), Oakwood Bridge (215 linear feet of 24-inch vitrified clay, combined sewer main located adjacent to the Oakwood Road Bridge), South 16th Street (700 linear feet of 20 and 24-inch vitrified clay, combined sewer main located under the Union Supply Company building, CSX railroad tracks, and the Three Rivers Heritage Trail), and Centre Avenue (575 linear feet of 15-inch vitrified clay, combined sewer main located under a 20-inch water main that serves UPMC Shadyside and a telecommunications duct bank.	AFUDC: \$6,680,000 N-AFUDC: \$0	AFUDC: \$25,905 N-AFUDC: \$0	March 2018	November 2020	2%
2019 Sewers Under Structures	Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.	AFUDC: \$7,120,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2018	February 2021	0%
2020 Sewers Under Structures	Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.	AFUDC: \$7,290,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2019	February 2022	0%
2019 Wastewater System Improvements	Reconstruction of existing structurally deficient sewer mains on Wiese Street, Wilbur Street, Creedmoor Avenue, Ornament Way, Cooperfield Avenue, N. Sheridan Avenue, Port Way, and Swimburne Street.	AFUDC: \$5,350,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2018	January 2021	0%
2018 Small Diameter Sewer Rehabilitation (Annual IDIQ Contract)	Trenchless rehabilitation of less than 24-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections. Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective.	AFUDC: \$1,910,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	September 2019	0%
2019 Small Diameter Sewer Rehabilitation	Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation. Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective.	AFUDC: \$9,260,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	April 2020	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
2020 Small Diameter Sewer Rehabilitation	Proactive, trenchless rehabilitation of approximately 6 miles of less than 36-inch diameter sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning, pre and post construction CCTV inspections, and if necessary, excavated point repairs and manhole rehabilitation. Provides the Authority a means to address inflow and infiltration and several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective.	AFUDC: \$9,350,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	March 2019	October 2020	0%
2020 Large Diameter Sewer Rehabilitation	Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections. Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective.	AFUDC: \$3,800,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	January 2019	April 2020	0%
2021 Large Diameter Sewer Rehabilitation	Proactive, trenchless rehabilitation of approximately 0.5 mile of 36-inch diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow, includes cleaning and pre and post construction CCTV inspections. Provides the Authority a means to address several moderate/major structural defects in a pipe segment prior to complete failure. This trenchless pipe renewal method eliminates disruptive digging and restoration and is cost effective.	AFUDC: \$4,130,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	January 2020	April 2021	0%
31 st Ward Sewer System Improvements	Evaluation to identify and locate the source(s) of the infiltration and inflow (I/I), removal of public I/I sources, and rehabilitation/replacement of the Rogers Street and Mifflin Road Pump Station and force main. Project will be designed and constructed in a minimum of two phases to ensure the pump stations are properly sized and the flow conveyed will not negatively impact the downstream sewer subshed.	AFUDC: \$13,700,000 N-AFUDC: \$0	AFUDC: \$429,159 N-AFUDC: \$0	March 2017	February 2021	5%
Larimer Avenue Sewer and 28 th Street Stabilization	Evaluation of rerouting storm laterals, sewer televising, geotechnical investigations, and slope stabilization to address a structurally deficient 18-inch combined sewer that has severely eroded the ground surface on the slope below Brereton Street and above the Port Authority of Allegheny County's East Busway.	AFUDC: \$695,901 N-AFUDC: \$0	AFUDC: \$58,776 N-AFUDC: \$0	January 2018	October 2019	5%
2017 Hydrant Replacement (Annual IDIQ Contract)	Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays.	AFUDC: \$1,170,438 N-AFUDC: \$0	AFUDC: \$21,831 N-AFUDC: \$0	October 2017	October 2018	5%
2018 Hydrant Replacement (Annual IDIQ Contract)	Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays.	AFUDC: \$1,335,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	October 2019	0%
2019 Hydrant Replacement (Annual IDIQ Contract)	Replacement of approximately 100 broken or older model type hydrants throughout the water distribution system, excluding hydrants replaced during relays.	AFUDC: \$1,335,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2019	October 2020	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & in Service	Percent Project Currently Complete
2017 Valve Replacement (Annual IDIQ Contract)	Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions.	AFUDC: \$2,358,380 N-AFUDC: \$0	AFUDC: \$455,779 N-AFUDC: \$0	October 2017	October 2018	30%
2018 Valve Replacement (Annual IDIQ Contract)	Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves. Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions.	AFUDC: \$5,960,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	October 2019	0%
2019 Valve Replacement (Annual IDIQ Contract)	Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during relays. Includes locating, assessing and documenting the operability, raising to grade, and/or cleaning existing buried or obstructed valves. Increasing the number of operable valves in the system will reduce the number of customers that may be impacted and the number of valves that would need to be closed during emergency conditions.	AFUDC: \$6,455,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2019	October 2020	0%
2017 Water Relay (Annual IDIQ Contract)	Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.	AFUDC: \$1,146,885 N-AFUDC: \$0	AFUDC: \$978,968 N-AFUDC: \$0	July 2017	July 2019	95%
2018 Water Relay (Annual IDIQ Contract)	Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.	AFUDC: \$1,620,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	September 2019	0%
2019 Water Relay (Annual IDIQ Contract)	Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.	AFUDC: \$1,720,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2019	September 2020	0%
2018 Small Water Main Replacement	Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. In 2018, the following mains have been selected for replacement: Hamilton Avenue from N. Dallas Avenue to N. Homewood Avenue; Railroad Street from 25th Street to 32nd Street; and S. Millvale Avenue from Liberty Avenue to Friendship Avenue.	AFUDC: \$10,680,000 N-AFUDC: \$0	AFUDC: \$213,681 N-AFUDC: \$0	December 2017	May 2020	5%
2019 Small Water Main Replacement	Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains.	AFUDC: \$10,880,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	July 2018	December 2020	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
2020 Small Water Main Replacement	Strategic replacement of water mains, including lead service lines, to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality and available hydrant flows will also improve by removing tuberculated mains.	AFUDC: \$21,520,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	March 2019	August 2021	0%
District Water and Pressure Meters	Installation of water meters and pressure monitors in the distribution system to determine water usage and loss, and pressure loss.	AFUDC: \$2,835,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%
Ft. Duquesne Bridge Water Air Release	Perform transient analysis along existing 30-inch water main that is suspended from the Fort Duquesne Bridge. Design and construct new pipe supports, couplings, and thrust restraint based on the results of the analysis. Includes the replacement of the existing air-release valve on the 30-inch water main, including insulation or heat tracing to reduce potential for freezing and cracking of the valve.	AFUDC: \$2,510,000 N-AFUDC: \$0	AFUDC: \$87,437 N-AFUDC: \$0	January 2017	May 2019	5%
Washout Disconnection	Investigation and, if necessary, disconnection of large water main washouts from the sewer system. A number of older washouts on larger mains were directly connected to sewers with a closed valve during construction. These washouts (cross connections) in accordance PA DEP requirements, must be completely disconnected from the sewer.	AFUDC: \$13,140,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	September 2023	0%
2017 Lead Service Line Replacement	Replacement of 7% of lead service lines, both public and private. Due to the exceedance of the action levels from compliance tests for lead and copper, the Pennsylvania Department of Environmental Protection required the Authority to perform additional distribution system water quality monitoring, optimization of corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement.	AFUDC: \$8,353,347 N-AFUDC: \$0	AFUDC: \$1,686,144 N-AFUDC: \$0	January 2017	June 2018	80%
2018 Lead Service Line Replacement	Replacement of 7% of lead service lines, both public and private. Due to the exceedance of the action levels from compliance tests for lead and copper, the Pennsylvania Department of Environmental Protection required the Authority to perform additional distribution system water quality monitoring, optimization of corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement.	AFUDC: \$43,300,000 N-AFUDC: \$0	AFUDC: \$84,066 N-AFUDC: \$0	March 2018	February 2019	5%
2019 Lead Service Line Replacement	Replacement of 7% of lead service lines, both public and private. Due to the exceedance of the action levels from compliance tests for lead and copper, the Pennsylvania Department of Environmental Protection required the Authority to perform additional distribution system water quality monitoring, optimization of corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement.	AFUDC: \$44,560,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	February 2020	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
2018 Curb Box Inspections	Curb Box Inspections provide the Authority with a cost effective way to visually identify the material on both the public and private sides of the water service lines. Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements. Curb Boxes typically require moderate cleaning through a combination of vacuum extraction, high pressure air and high pressure water before a clear visual of the service line can be obtained.	AFUDC: \$0 N-AFUDC: \$2,980,134	AFUDC: \$0 N-AFUDC: \$0	December 2017	March 2019	20%
2019 Curb Box Inspections	Curb Box Inspections provide the Authority with a cost effective way to visually identify the material on both the public and private sides of the water service lines. Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements. Curb Boxes typically require moderate cleaning through a combination of vacuum extraction, high pressure air and high pressure water before a clear visual of the service line can be obtained.	AFUDC: \$0 N-AFUDC: \$4,070,000	AFUDC: \$0 N-AFUDC: \$0	October 2018	March 2020	0%
2019 Large Diameter Water Main Improvements	Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings. In 2019, Rising Mains 3 and 4 from the Bruecken Pump Station have been selected for improvements, which is approximately 2.3 miles of main.	AFUDC: \$23,550,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	August 2018	March 2022	0%
2020 Large Diameter Water Main Improvements	Strategic replacement or rehabilitation of large diameter water mains (16-inch and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in a savings in the replacement cost as compared to emergency/reactive repair costs. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of specialty fabricated fittings.	AFUDC: \$11,770,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	January 2019	August 2022	0%
Aspinwall Pump Station to Lanpher Reservoir Rising Main	Construction of a new, redundant rising main from Aspinwall Pump Station to Lanpher Reservoir. The existing 60-inch rising main that supplies the Lanpher Reservoir is a 150 year old riveted steel pipe, has several tap connections to critical and bulk customers, and has experienced recent pipe failures. The proposed rising main would serve as a primary supply source for Lanpher Reservoir during the Clearwell Replacement Project and a redundant supply line in case of a failure or planned cleaning and rehabilitation of the existing 60-inch supply main.	AFUDC: \$49,454,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	September 2022	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date ¹	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Aspinwall Pump Station Improvements	Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems and rehabilitation of the building architectural and energy management systems. The current pump station was constructed in 1914 and many of the components were installed in 1958. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for the staff.	AFUDC: \$29,690,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	April 2019	February 2023	0%
Bruecken Pump Station Improvements	Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems and rehabilitation of the building architectural and energy management systems. The pump station was constructed in 1931. The pump station is in need of renovations and upgrades to maintain service, restore a 20 to 25 year useful life expectancy, and to provide safer conditions for the staff.	AFUDC: \$24,990,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	April 2019	February 2023	0%
Bruecken Pump Station Valve Vault	Upgrade to the mechanical and structural reliability of the six discharge manifold valve vaults at the Bruecken Pump Station, including associated electrical and control improvements. Includes the replacement of fourteen electric motor operated gate valves; addition of a surge relief valve in each of four rising mains; addition of aluminum access platforms, ladders, and hatchways in the roof of each vault; providing new lighting in each vault; replacement of the control panel for the gate valves; and, replacement of the the standby generator that enables operation of the gate valves during power outages. To meet improvements mandated by an Administrative Order issued by the PADEP on 10/25/17, three diesel engine driven pumps and standby generators capable of operating one of the pump station's main pumps will also be purchased and installed.	AFUDC: \$6,115,918 N-AFUDC: \$0	AFUDC: \$5,694,620 N-AFUDC: \$0	June 2013	December 2018	80%
Chlorine Booster Station Improvements	Rehabilitation or replacement of the existing sodium hypochlorite booster stations in the distribution system, excluding Lanpher and Herron Hill. Includes installation of flow meters, if necessary.	AFUDC: \$10,090,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	December 2021	0%
Garfield Tank Improvements	Perform a comprehensive inspection of the existing elevated storage tank, evaluate the system's need for additional storage for regulatory compliance, the need for an additional storage tank, and rehabilitation of the existing tank.	AFUDC: \$4,050,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	April 2021	0%
Lincoln Tank Improvements	Perform a comprehensive inspection of the existing storage tank, evaluate the system's need for additional storage for regulatory compliance, the need for an additional tank, and rehabilitation of the existing tank.	AFUDC: \$4,195,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	April 2021	0%
Herron Hill Reservoir Improvements	Installation of new liner and cover and provide ancillary improvements to the entire facility, including Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work.	AFUDC: \$5,520,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2018	December 2020	0%
Lanpher Reservoir Improvements	Installation of new liner and cover and provide ancillary improvements to the entire facility, including Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work.	AFUDC: \$19,630,000 N-AFUDC: \$0	AFUDC: \$4,163,848 N-AFUDC: \$0	September 2017	December 2019	30%
Highland No. 2 Reservoir Improvements	Installation of new liner and cover and provide ancillary improvements to the entire facility, including new outlet piping for Highland Pump Station and Rising Main, Sodium Hypochlorite injection system, SCADA system improvements, site electrical improvements, sluice gate rehabilitation, dewatering pumps, concrete repairs and necessary site work.	AFUDC: \$27,510,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	September 2018	July 2021	0%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date	Start Date	Date of Completion & In Service	Percent Project Currently Complete
Highland Pump Station and Rising Main	Construction of a new finished water pump station and transmission main to supply water to the Highland No.1 Service Area from Highland No. 2 Reservoir. All compliant water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the Membrane Filtration Plant (MFP) or directly into the system. There is no online storage for the system, and there is no other source water supply for the Highland No. 1 Service Area. In addition to providing alternate supply, this project will temporarily provide finished water that meets the chlorine disinfection rules to the Highland No. 1 Service Area during the Clearwell Replacement Project. Additionally, this new facility will also be designed to service the Garfield pressure district, thus eliminating the need to rehabilitate the (New) Highland Pump Station.	AFUDC: \$37,130,000 N-AFUDC: \$0	AFUDC: \$397,991 N-AFUDC: \$0	March 2017	June 2022	3%
Aspinwall and MFP Fiberglass Reinforced Plastic Chemical Tank Inspections and Repairs/Replacement	Inspection and rehabilitation and/or replacement of the fiberglass reinforced plastic chemical tanks.	AFUDC: \$292,000 N-AFUDC: \$0	AFUDC: \$157,996 N-AFUDC: \$0	April 2017	June 2019	50%
Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements	Improvements to pretreatment chemical systems, clarifiers, sedimentation, and associated systems to provide enhanced water treatment.	AFUDC: \$27,310,000 N-AFUDC: \$0	AFUDC: \$190,717 N-AFUDC: \$0	March 2017	February 2023	2%
Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	Improvements to electrical systems at Aspinwall Water Treatment Plant, including provisions for backup power systems, upgrades to existing electrical distribution system, and replacement of motor control centers.	AFUDC: \$26,520,000 N-AFUDC: \$0	AFUDC: \$269,857 N-AFUDC: \$0	March 2017	February 2023	2%
Clearwell Emergency Response Project	Construction of piping, suction wells, if necessary, and appurtenances to bypass the existing clearwell.	AFUDC: \$27,670,000 N-AFUDC: \$0	AFUDC: \$669,381 N-AFUDC: \$0	March 2017	April 2022	2%
Clearwell Improvements	Replacement of the existing 108 year old, single cell clearwell (finished water structure). The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. It has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands and providing sufficient retention contact time for disinfection to meet the requirements of the Federal Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. Considering the age and condition of the clearwell, it is the water system's weakest link as there are no practical means to deliver water by bypassing the clearwell, while maintaining the required volume, quality, and contact time.	AFUDC: \$67,810,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	April 2019	March 2024	0%
Corrosion Control Chemical Storage and Feed Systems	Installation of phosphoric acid storage and feed systems located at Aspinwall Pump Station, Bruecken Pump Station, and near the Membrane Filtration Plant to provide corrosion control in the distribution system.	AFUDC: \$3,960,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	May 2018	October 2018	10%
Filter Rehabilitation	Rehabilitation of the 18 rapid sand filters at PWSA's Aspinwall water treatment plant. Project includes the replacement of the filter bed, process control valves, and electrical control panels at each of the rapid sand filters, replacement of the filter backwash pump, HVAC improvements, electrical and lighting improvements, and lead paint remediation.	AFUDC: \$28,829,360 N-AFUDC: \$0	AFUDC: \$27,799,589 N-AFUDC: \$0	October 2013	August 2018	95%
Highland Park Membrane Filtration Module Replacement Program	Replace membrane modules, which includes a total of 10 racks each with 80 modules. Note: Four racks were replaced in 2017.	AFUDC: \$2,289,711 N-AFUDC: \$0	AFUDC: \$582,054 N-AFUDC: \$0	May 2017	January 2020	40%
Highland Park Membrane Filtration Plant UV System	Installation of a UV treatment system and appurtenances at the Highland Park Membrane Filtration Plant (MFP) to comply with the 1 log inactivation of Giardia cysts and the PADEP Administrative Order dated October 25, 2017.	AFUDC: \$2,800,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0	October 2017	November 2018	10%

Project Name	Project Descriptions	Budgeted Cost	Amount Expended to Date	Start Date	Date of Completion & In Service	Percent Project Currently Complete
MFP Assessment and Critical Process Improvements	Complete a condition assessment of systems supporting the treatment process and perform critical improvements to maintain water treatment and allow full warranty of replacement modules. Improvements may include electrical, chemical feed, strainers, and other support systems.	AFUDC: \$1,831,539 N-AFUDC: \$0	AFUDC: \$599,914 N-AFUDC: \$0	March 2017	December 2018	75%
MFP Transformer Repair and UPS Replacement	Replacement of a failed cooling fan on the electrical transformer supplying all power to the Membrane Filtration Plant (MFP) and replacement of the 2nd Floor UPS providing backup power to process controls.	AFUDC: \$89,425 N-AFUDC: \$0	AFUDC: \$67,378 N-AFUDC: \$0	April 2017	June 2018	95%
Aspinwall Water Treatment Plant Condition Based Assessment	Perform a condition assessment at the Aspinwall Water Treatment Plant to identify the condition of the buildings, site, process equipment, and support systems and to develop a prioritized capital improvements project list and to identify required improvements to meet upcoming federal regulations and future system expansion goals.	AFUDC: \$0 N-AFUDC: \$600,000	AFUDC: \$0 N-AFUDC: \$0			0%
Water System GIS Improvements	Rescan Water Record Books, Input material and pipe age into GIS. Update valve layer.	AFUDC: \$0 N-AFUDC: \$1,200,000	AFUDC: \$0 N-AFUDC: \$0			0%
Water Master Plan	Comprehensive plan, including analysis of demands, future demands, capacities, and pipe condition based assessment.	AFUDC: \$0 N-AFUDC: \$200,000	AFUDC: \$0 N-AFUDC: \$0			0%
Pump Station Assessment	Complete the condition assessment at the following pump stations: Herron Hill, Herron Hill Tank, Howard, Inline at Coral and Pacific, Lincoln, Mission, and Saline to identify the condition of the buildings, site, process equipment, and support systems and to develop a prioritized capital improvements project list and to identify required improvements to meet upcoming federal regulations and future system expansion goals.	AFUDC: \$0 N-AFUDC: \$200,000	AFUDC: \$0 N-AFUDC: \$0			0%
Low Pressure Area Remediation	Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps. This project is in response to the low pressure monitors required by the October 2017 Administrative Order.	AFUDC: \$2,000,000 N-AFUDC: \$0	AFUDC: \$0 N-AFUDC: \$0			0%

Exhibit RAW-4

Pennsylvania Public Utility Commission

Compliance Plan

for

The Pittsburgh Water & Sewer Authority

1. Purpose of Document
 - a. Focusing on the Future
2. Short History of the Pittsburgh Water & Sewer Authority
 - a. History of Water and Sewer Infrastructure Development in Pittsburgh
 - b. Charter and Organization
 - c. Operating History
 - d. Recent Developments
 - i. Present Governance
 - ii. Potential Policy Changes
 - iii. Goals for the Future
3. System and Operations Activities
 - a. Water System
 - b. Wastewater System
 - c. Stormwater System
4. PUC Compliance Requirements and Reporting - Overview
 - a. Financial Practices
 - b. Accounting Practices
 - i. Plans to convert to the Uniform Standards of Accounts;¹
 - c. Customer Service Practices² (Not covered by filed PUC Tariff)
 - d. PWSA's Proposed Tariff filed at R-2018-3002645,47 proposes rules and regulations that fully comply with the billing, collection, complaint, and termination rules of Chapter 14 of the Public Utility Code and Chapter 56 of the Commission's regulations (except where waivers are requested)
 - e. Registration of Securities (66 Pa. C.S. §1901-1904)

¹ Required by PUC FIO.

² Required by PUC FIO.

5. Compliance by (Relevant) Title 52 Chapter (PWSA proposed compliance with relevant section of Title 66 also included)
- a. Subpart C. Fixed Service Utilities
 - i. Chapter 56. Standards and Billing Practices for Residential Utility Service
 - ii. PWSA's Proposed Tariff filed at R-2018-3002645,47 proposes rules and regulations that fully comply with the billing, collection, complaint, and termination rules of Chapter 14 of the Public Utility Code and Chapter 56 of the Commission's regulations (except where waivers are requested)
 - iii. Chapter 65. Water Service
 - 1. Property Records (§ 65.4(b))
 - 2. Complaint Records (§ 65.3)
 - 3. Pressure Test Records (§ 65.6)
 - 4. Meter Test Records (§ 65.8(c))
 - 5. Productions and Consumption Records (§ 65.14(b))
 - 6. Annual Financial Reports (§ 65.19)
 - 7. Accidents (§ 65.2)
 - iv. Chapter 67. Service Outages
 - v. Chapter 69. General Orders, Policy Statements and Guidelines on Fixed Utilities
 - vi. Chapter 71. Financial Reports
 - 1. Quarterly Earnings Reports (§ 71.1 – 71.9)
 - vii. Chapter 73. Annual Depreciation Reports, Service Life Studies and Capital Investment Plans
 - 1. Service Life Study Report
 - 2. Capital Investment Plan Report
 - b. Subpart D. Subpart E. Public Utility Security Planning and Readiness
 - i. Chapter 101. Public Utility Preparedness through Self Certification
 - ii. Chapter 102. Confidential Security Information
 - c. Subpart G. Distribution System Improvement Charge
 - i. Chapter 121. Long-Term Infrastructure Improvement Plan (Discussed Separately)
 - ii. Annual Water Audit Summary³

³ Docket No. M-2008-2062697, Tentative Opinion and Order M-2017-2582566 which became final on December 10, 2011. Docket No. M-2017-2582566 (Water Audit Reports for 2017).

6. Other Compliance Issues

- a. Introduction.
 - i. This Section describes how PWSA proposes to deal with procedures, contracts and operations that are not consistent with the standard PUC practice or policy
- b. PWSA Services Contract with City of Pittsburgh ("City")
- c. Unmetered and/or Unbilled Usage (including City usage)
- d. Billing Arrangement With ALCOSAN
- e. Billing Arrangement With PA American Water
- f. Future implementation of a stormwater tariff⁴
- g. Plan to address lead levels in the water supply and the replacement of lead service lines (included in LTIIIP)⁵
- h. Plan to address Unaccounted for Water
- i. Bureau of Consumer Services access to PWSA customer service management information system⁶

7. Issues to be Addressed in Subsequent Proceedings

- a. Sales For Resale to Municipalities – Next Rate Case
- b. Bulk Water Contract – Next Rate Case
- c. Stormwater Tariff – Next Rate Case

Appendixes:

- a) Summary Table of PUC Compliance by Title 52 Chapter
- b) Long-Term Infrastructure Improvement Plan (LTIIIP):
- c) Public Utility Security Planning and Readiness Self-Certification Form:
- d) Additional Forms and Certificates as Required
- e) System Maps and Plans (as needed and not included in the LTIIIP)

⁴ Required by PUC FIO.

⁵ Required by PUC FIO.

⁶ Required by PUC FIO.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

DEBBIE M. LESTITIAN

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos. R-2018-3002645 and R-2018-3002647

Pittsburgh Water and Sewer Authority
Initial Tariff Filings and Rate Requests

July 2, 2018

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1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND POSITION WITH THE COMPANY.**

3 A. My name is Debbie M. Lestitian. My position with Pittsburgh Water and Sewer
4 Authority (“PWSA”) is Chief Corporate Counsel and Chief of Administration.

5 **Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.**

6 A. I hold a Bachelor of Arts degree in Accounting from Washington & Jefferson
7 College, and a Juris Doctor degree from Duquesne University School of Law. I
8 am also a Certified Public Accountant.

9 **Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT**
10 **EXPERIENCE.**

11 A. I have been at the Authority since February 2018. Prior to working at the
12 Authority, I served as Chief of Administration and Human Resources and
13 Director of Human Resources for the City of Pittsburgh from 2014 through 2018.
14 Additionally, I was appointed to the PWSA Board in April 2017 and was elected
15 Chair of the Board at the beginning of my appointment. Before my role at the City
16 of Pittsburgh, I was Assistant Treasurer at Carnegie Mellon University. Prior to
17 Carnegie Mellon University, I spent twenty years in legal and accounting
18 consulting.

19 **Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES WITH PWSA?**

20 A. In my present position, I am responsible for overseeing a variety of activities of
21 the Authority including providing advice concerning legal rights and obligations
22 under federal, state and local laws.

23 In summary, my roles and responsibilities include but are not limited to:

- 24 • Advising the Executive Director and the heads of all departments as to legal
25 questions affecting the Authority’s interests;

- 1 • Supporting the Executive Director by acting in that role in his/her absence;
- 2 • Being responsible for working across all administrative departments to ensure that
- 3 effective and efficient processes are in place to support those departments;
- 4 • Mentoring and coaching administrative staff, delegating work effectively and
- 5 holding team members to a high standard of excellence;
- 6 • Improving processes and policies and managing administrative staff and long
- 7 term organizational planning;
- 8 • Representing the Authority in all legal matters and proceedings in which the
- 9 Authority is a party or interested, or in which any of its officers are officially
- 10 interested;
- 11 • Representing the Authority in all collective bargaining, side-bar, and grievance
- 12 matters;
- 13 • Developing strategies in preparation for litigation, arbitration, mediation, labor
- 14 negotiations, financing transactions and administrative agency proceedings;
- 15 • Researching legal issues and preparing legal memorandum and correspondence;
- 16 • Managing matters referred to outside counsel;
- 17 • Managing the preparation of contracts, leases and internal policies for all
- 18 Authority divisions;
- 19 • Assisting the Human Resources Department with internal investigations;
- 20 • Reviewing rules, policies, plans and forms prepared by other Authority personnel
- 21 for compliance with applicable laws;
- 22 • Preparing and/or reviewing documents for construction projects and for the
- 23 purchase, lease, or sale of goods, services and professional services including

1 specifications, bid documents, requests for proposals, and requests for
2 qualifications, bonds, and contractual documents; and

- 3 • Maintaining and developing knowledge about laws, regulations, and court
4 decisions affecting the Authority.

5 **Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THE**
6 **PENNSYLVANIA PUBLIC UTILITY COMMISSION (“COMMISSION”**
7 **OR “PUC”)?**

8 A. No.

9 **Q. HAVE YOU PRESENTED TESTIMONY AS AN EXPERT IN OTHER**
10 **PROCEEDINGS?**

11 A. I have never testified before the PUC. However, I have testified in other court
12 proceedings.

13 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

14 A. The purpose of my testimony is to: 1) provide the documentation and supporting
15 methodology for the schedules and exhibits that are included in PWSA’s base rate
16 filing; 2) describe PWSA’s financial results for the fully projected future test year
17 (comprised of the period from January 1, 2019 through December 31, 2019); and
18 3) detail and provide supporting justification for PWSA's requested increase in
19 existing annual base rates of \$27.0 million.
20

1 **II. BACKGROUND FOR CONSIDERATION OF RATE REQUEST**

2 **Q. ON WHAT BASIS IS PWSA’S REQUESTED RATE RELIEF TO BE**
3 **CONSIDERED?**

4 A. This is the first case in which PWSA’s revenue requirement will be determined by
5 the Commission as a regulated public utility that is subject to most chapters of the
6 Public Utility Code.¹ Chapter 32 of the Public Utility Code, added in 2017, gives
7 the Commission jurisdiction over PWSA’s provision of water, wastewater and
8 service.² The Commission has determined that it has jurisdiction over stormwater
9 service provided by PWSA.³ The Commission has decided that PWSA’s revenue
10 requirement will be determined using the “Cash Flow” method, the traditional
11 method of determining just and reasonable rates for municipal utilities such as
12 PWSA. This is appropriate because PWSA has no shareholders and does not pay
13 a dividend or a rate of return to its owner. Accordingly, all of the funds it needs
14 to run the Company come from ratepayers or from borrowing (the costs of which
15 then must be paid by ratepayers). Therefore, rather than having its revenue
16 requirement determined on the basis of a fair rate of return on a used and useful
17 rate base, PWSA’s rates are set by determining the levels of cash necessary to
18 fund an operating budget that enables PWSA to maintain the system, pay for
19 needed capital improvements and maintain access to the capital markets at
20 reasonable rates.

21 **Q. PLEASE PROVIDE A SUMMARY OF PWSA’S RECENT RATE**
22 **INCREASE ACTIVITY.**

¹ See 66 Pa.C.S. §§ 102, 3201, 3202(a).

² *Id.*

³ *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water And Sewer Authority*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Final Implementation Order entered March 15, 2018, at p. 5.

A. In 2017, prior to coming under the authority of the PUC, the PWSA Board voted to implement a three-stage rate increase: 27.9% starting on January 1, 2018; 9.6% on January 1, 2019; and a third increase in 2020 of 11.0%. The 2018 increase has been implemented. PWSA's schedules assume a full year of that rate increase in 2018. In light of the intervening passage of Act 65, as well as to recognize changing budget inputs, PWSA is proposing to put into effect the rate increase proposed here rather than continuing with the approved series of rate adjustments authorized by the PWSA Board of Directors.

Q. PLEASE SUMMARIZE THE MAIN DRIVERS FOR THE RATE INCREASE REQUESTED HERE.

A. The following Table shows this.

Table 1
("000")

2018 – 2019	
Revenue Requirement Increase:	
Increase in revenues to cover total System Revenue Requirement	\$19,800
Increase in Rate Revenue Requirement from Retail User Charges	\$27,000
Increase in Total Revenue	\$27,400 ⁴
Net Increase in Expenses	
Increase in Direct Operating Expenses:	\$ 1,200
Increase in Debt Service	\$13,200
Increase in loss on ALCOSAN billings	\$ 200
Introduce "PAYGO"	\$ 1,500
Net Transfer to Reserves (for Rate Stabilization Fund and Reserves)	\$ 3,700
Increase in Revenues	
Increment to cover Revenue Requirement	\$19,800
Increment to Cover Reduced FPFTY Sales	\$ 7,600
TOTAL	\$27,400⁵

⁴ Includes Wholesale Sales and Miscellaneous Revenue.

⁵ Differences due to rounding.

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As can be seen on Table 1, PWSA’s rate increase request, compared to 2018 revenues, is being driven by two main items. The largest driver is increased debt service caused by the issuance of approximately \$150 million in additional long-term debt.

Q. PLEASE SUMMARIZE RECENT ACTIVITY REGARDING PWSA’S LONG-TERM DEBT ISSUANCES.

A. As explained in more detail by PWSA witness Katherine L. Clupper, in 2017, PWSA closed on over \$380 million of bonds to reform the financial position of the Authority, lowering debt costs by about \$1 million per year. This also improved its credit profile and the standing of its bond indenture. In the coming months, PWSA is planning to expand the capacity of its line of credit and market new bonds to fund the revitalization of Pittsburgh’s water and wastewater conveyance infrastructure.

Q. WHAT PLANS DOES PWSA HAVE TO SELL BONDS IN THE FORESEEABLE FUTURE?

A. PWSA anticipates issuing Revenue Bonds in the par amount of approximately \$150 million in the first or second quarter of 2019. The exact timing of the issuance will be subject to market conditions. The revenue requirement effects of this additional bond issuance is reflected in the revenue requirement that PWSA has calculated.

Q. PLEASE EXPLAIN THE OTHER DRIVERS OF THE REQUESTED RATE INCREASE.

A. As shown on Table 1, the other factor that has resulted in PWSA’s need to increase rates is a significant decrease in anticipated water sales compared to prior

1 projections. As I will discuss in more detail, PWSA analyses indicates that this
2 reduced level of sales will continue in 2019 and beyond.

3 Notably, only \$1.2 million of the rate increase is associated with a net
4 Operating Budget increase, compared to PWSA's 2018 Operating Budget. Prior
5 to coming under PUC jurisdiction the PWSA Board approved Operating Budget
6 increases needed to implement a variety of programs and initiatives designed to
7 improve the safety, efficiency and quality of PWSA's water and wastewater
8 conveyance service. The 2019 Operating Budget continues these essential
9 programs. I will discuss a few of the other rate increase drivers later in my
10 testimony.

11 **III. PRO FORMA FINANCIAL RESULTS**

12 **Q. HAVE YOU PREPARED A PRO FORMA TEST YEAR INCOME**
13 **STATEMENT, CASH FLOW, DEBT SERVICE COVERAGE AND**
14 **BALANCE SHEET THAT PROJECTS THE COMPANY'S STATUS IN**
15 **THE CURRENT YEAR AS WELL AS ON A PROJECTED BASIS?**

16 **A. Yes.**

17 **Q. FIRST, PLEASE EXPLAIN THE TEST YEAR ON WHICH PWSA'S**
18 **CLAIMED REVENUE REQUIREMENT IS BASED.**

19 **A.** As permitted by Act 11 of 2012, PWSA has based its claimed revenue
20 requirement on the fully forecasted 12 months ending December 31, 2019,
21 referred to as the Fully Projected Future Test Year ("FPFTY"). The Future Test
22 Year ("FTY") is calendar year 2018, January 1, 2018 to December 31, 2018, and
23 the Historical Test Year ("HTY") is calendar year 2017, January 1, 2017 to
24 December 31, 2017. Those results are displayed on Exhibit DML-1. Each page
25 of this exhibit shows data for: (1) the HTY, the 12 months ended December 31,

2017 or FY 2017; (2) the FTY, the 12 months ended December 31, 2018 or FY 2018; and (3) the FPFTY, the 12 months ended December 31, 2019 or FY 2019.

Q. HAS THE COMPANY RELIED UPON OTHER PROVISIONS OF ACT 11 IN DEVELOPING THIS CASE?

A. Yes. As authorized by Section 1311(c) of the Code, PWSA is also proposing to determine its revenue requirement on a combined water and wastewater basis. The use of 1311(c) continues the prior accounting and ratemaking practice of PWSA.

Q. PLEASE DESCRIBE HOW THE DATA FOR THE HISTORIC TEST YEAR WERE DERIVED.

A. The HTY is the actual audited results for FY 2017.

Q. PLEASE DESCRIBE HOW THE FUTURE TEST YEAR AND FULLY PROJECTED FUTURE TEST YEAR RESULTS WERE DERIVED.

A. The FTY and FPFTY results were derived through a comprehensive utility-wide budgeting process. PWSA uses a zero-based budgeting method to develop annual budgets. Previous year's budgets are referenced when developing the FPFTY budget, but each cost is individually considered when developing the budget. This is contrary to a traditional budgeting approach in which an escalation factor is applied for a generic anticipated increase in a specific type of cost. A traditional budgeting process, using escalation factors, is used to forecast the Forecast Period, the operating results for FY 2020 – FY 2023, shown on Exhibit DML-2.

Each of the seventeen departments within PWSA prepares budget requests for the upcoming fiscal year. Those requests are reviewed by the Finance Department for accuracy and adherence to the realistic expectations and/or projections. The Finance Department prepares a "roll-up" of initial funding and

1 expense recommendations for the Executive Director. The Executive Director
2 then may make recommendations on the initial recommendations. Any
3 recommendations are discussed with the applicable department and, if accepted,
4 results in a revised set of recommendations. Once satisfied, the Executive
5 Director (with the assistance of the Finance Department) prepares an operating
6 budget for review by the Board. The Board may accept or modify the operating
7 budget. The final operating budget is approved by the Board. Typically, this is
8 done in November or December for the fiscal year commencing on January 1. If
9 necessary, the Operating Budget can be revised during the fiscal year.

10 On Exhibit DML-3 I have provided additional information concerning the
11 budget process. Page 1 of Exhibit DML-3 shows the Operating Budgets for 2018
12 and 2019 as well as the actual Operating Expenses incurred in 2017. Page 2
13 shows the types of expenses incurred or projected for each department. Notably
14 the largest portion of each Annual Operating Budget is for Labor and associated
15 benefits.

16 In addition to the operating budget and the capital costs related to existing
17 debt service and debt service related to the additional borrowing described above,
18 PWSA incurs several other costs. The Authority has historically paid \$7.15
19 million to the City of Pittsburgh's General Fund, which is included in the revenue
20 requirements segregated by water and wastewater conveyance obligation.
21 Additionally, the Authority carries bad debt expense for collections related to pass
22 through charges by ALCOSAN, the region's wastewater treatment provider. The
23 pass through charges that are assessed to the Authority are based on billed
24 volume, not collected revenue, and thus costs Authority customers approximately

1 \$3-5 million per year. Another cost presently passed onto Authority customers is
2 a rate subsidy paid directly to Pennsylvania American Water Company
3 (“PAWC”). This subsidy offsets PAWC’s water rates to the Authority’s sewer
4 only customers. This subsidy is projected to be \$4.8 million in the FPFTY.
5 PWSA is proposing to address each of these issues in its Compliance Plan.

6 Exhibit DML-3 pages 3-6 describe each of PWSA’s operating
7 departments, other operating expenses and capital costs in greater detail. This
8 table provides information regarding changes in budgeted levels from 2017
9 (HTY) to 2018 (FTY) and from 2018 (FTY) to 2019 (FPFTY). Pages 3-6 provide
10 not only context behind these changes but also identifies the primary drivers for
11 each category of costs. In many cases, expenses were only a driver to the overall
12 increase in one year or the other. While the primary focus of this rate filing is
13 justifying the increase for the FPFTY, it is important for the PUC to understand
14 the significant ramp up in costs for the FTY, which current rates support,
15 especially operating costs to meet new standards that the Pennsylvania
16 Department of Environmental Protection mandates, and an enhanced level of
17 service for which PWSA proposes continuing in the FPFTY budget.

18 **Q. ARE THE COSTS OF COMPLYING WITH PUC REGULATION AND**
19 **LITIGATING THIS RATE CASE INCLUDED IN THE FPFTY?**

20 **A.** Yes, PWSA has budgeted for these expenditures and is proposing to include them
21 as projected in its revenue requirement rather than amortizing or “normalizing”
22 these expenditures over some period of time. As a cash flow company, PWSA’s
23 rates reflect what it actually incurs in a year and collecting those costs in rates
24 over two or three years is not reasonable.

1 **Q. DOES PWSA ALSO PREPARE A FIVE YEAR FORECAST OF**
2 **FINANCIAL OPERATIONS (HERE REFERRED TO AS THE FORECAST**
3 **PERIOD)?**

4 A. Yes. PWSA rolls forward its budgeted operating results using the Budget year, or
5 the FPFTY, as the base year to create a five-year forecast, taking account of any
6 known rate or other changes that might affect the results in a particular year. For
7 this filing, PWSA accelerated its budgeting process for FY 2019 to establish a
8 fully developed FPFTY as the test year in this proceeding and as a base year of its
9 five-year forecast. Beyond FPFTY, for the Forecast Period, PWSA uses the
10 aforementioned traditional budgeting method of applying escalation factors to
11 certain groups or types of cost in anticipation of increased cost of service. The
12 Forecast Period results are shown on Exhibit DML-2.

13 **Q. AS NOTED PREVIOUSLY, PWSA MADE AN ADJUSTMENT TO**
14 **FUTURE TEST YEAR REVENUE AT PRESENT RATES TO REFLECT**
15 **ACCURATE CONSUMPTION. CAN YOU PROVIDE ADDITIONAL**
16 **DETAIL?**

17 A. Yes. PWSA has revised its demand projections for 2019. Its 2018 projections
18 were developed using data from 2014-2016. However, PWSA experienced
19 customer billing issues during 2014-2016 which resulted in demand projections
20 that were higher than actual consumption. The revised 2019 demand forecast,
21 based on 2017 consumption, is lower than previous expectations but is likely a
22 much more reasonable estimate of customer demand. This is substantiated by five
23 months of year-to-date actuals in FY 2018 (FTY), showing that PWSA has
24 experienced an overall reduction usage by residential and non-residential
25 customers compared to what was originally forecasted for FY 2018. PWSA has
26 conducted a demand analysis to evaluate this issue, and the result is that PWSA
27 believes that this recent reduction in usage will reflect performance in 2019 and

beyond. Therefore, PWSA has adjusted its water and wastewater conveyance demand units to more accurately reflect anticipated year end usage and adjusted budgeted revenue downward for the FTY and future years. The new set of consumption and demand units for the FTY was then used as the basis for the units for the FPFTY.

IV. CALCULATION OF REVENUE REQUIREMENT

Q. PLEASE EXPLAIN THE BASIS ON WHICH PWSA HAS CALCULATED ITS REVENUE REQUIREMENT FOR THE FPFTY.

A. As noted, PWSA is not regulated on the basis of a fair rate of return on a used and useful rate base as are investor-owned utilities; instead, the Company's revenue requirement is established on the basis of the "Cash Flow Method."

All but a small portion of the calculated revenue requirement is needed simply to fund budgeted operations in the FPFTY and to offset projected lost sales volumes that PWSA believes will continue in the FPFTY and beyond. In addition, PWSA has added a small increment (\$5.7 million, \$3.7 million net) to begin to establish a cash reserve of non-borrowed cash. In addition PWSA is also proposing the establishment of a small amount that can be used to finance capital improvements on a PAYGO basis. Ms. Clupper explains why this is an important financial metric.

Beyond funding PWSA's budgeted Operating Expenses and paying debt service, it is also important that the revenue requirement produce coverage levels that exceed those minimally required by PWSA Bond Ordinance. A coverage level above that minimally required by PWSA's Bond Covenants is needed both to assure that PWSA has the cash it needs to pay its operating expenses, and also to justify PWSA's current bond rating. A related metric is year-end cash on hand.

Cash on hand is important both to be able to fund contingencies and to maintain PWSA's credit rating.⁶ Ms. Clupper provides more information about the importance of these metrics.

Q. PLEASE SUMMARIZE PWSA'S FINANCIAL METRICS IN THE FPFTY THAT RESULT FROM APPLYING THE REVENUE REQUIREMENT AND REVENUE PROJECTIONS THAT PWSA HAS CALCULATED AT PRESENT RATES.

A. PWSA's financial results at present rates, after assuming the Operating Budget and projected revenues established for the FPFTY are shown on Exhibit DML-1. PWSA's debt service coverage ratios (on its senior debt) for 2018, the FTY, are projected to be 1.39x, just minimally above its Bond Ordinance coverage requirement of 1.25x. However, the calculation of debt service coverage for the FPFTY shows a coverage of only .95, or 30 basis points below the minimum level needed to avoid not satisfying the coverage covenant in its bonds.

Q. PLEASE DISCUSS PWSA'S FPFTY CASH BALANCES AT CURRENT RATES.

A. While PWSA's Days of Cash on Hand ("DCOH") in the FTY are slightly positive (18.8 DCOH at year end), DCOH turns sharply negative in the FPFTY, to a negative 56.8 DCOH.

⁶ 52 Pa.Code § 69.2703. The Commission has also stated that, in determining just and reasonable rate levels for PWSA it would consider, among other relevant factors including, the following financial factors:

- PWSA's test year-end and (as a check) projected future levels of non-borrowed year-end cash.
- Available short term borrowing capacity and internal generation of funds to fund construction.
- Debt to equity ratios and financial performance of similarly situated utility enterprises.
- Level of financial performance needed to maintain or improve PWSA's bond rating thereby permitting PWSA to access the capital markets at the lowest reasonable costs to customers over time.
- PWSA is addressing internally generated funds by proposing that the rate increase include a very small amount (\$1.5 million) from rates to fund capital projects.
- PWSA's level of debt compared to total capitalization currently exceeds 100%.

1 **Q. DOES PWSA HAVE ACCESS TO SHORT TERM BORROWING THAT**
2 **IT COULD USE TO OFFSET THESE NEGATIVE CASH BALANCES?**

3 A. As of the date of this filing, PWSA does not have an Operating Cashflow Line of
4 Credit or Working Capital Line of Credit for emergency needs, but PWSA is
5 currently researching this type of financing instrument for potential
6 implementation in the fall of 2018. The line would be a short-term financing
7 instrument and used for emergency purposes only.

8 PWSA does have a Line of Credit that it utilizes to bridge capital spending
9 between revenue bonds issuances. The total amount of credit of the line is \$80
10 million, with approximately \$25 million available as of the date of this filing, and
11 PWSA is currently working to expand that to a total of \$150 million by
12 September 2018. PWSA already projects using almost \$80 million in the FTY.
13 Moreover, PWSA cannot rely on this vehicle because it exists to be spent on
14 capital projects, not emergency cash needs or contingences.

15 **Q. WHAT ARE YOUR CONCLUSIONS BASED ON THE FINANCIAL**
16 **RESULTS AT PRESENT RATES FOR THE FPFTY AND THE**
17 **FORECAST PERIOD?**

18 A. The operating results at present rates show that it is crucially important that
19 PWSA obtain rate relief in order to repair these financial indicators, as well as to
20 have sufficient cash in order to prudently operate the Company at the budgeted
21 levels. A failure to improve these results with additional revenues would almost
22 certainly result in a bond rating downgrade, which would raise the costs of
23 borrowing and limit PWSA's access to capital markets. Moreover, a failure to
24 approve the level of rate relief requested would seriously threaten PWSA's ability
25 to pay its bills when due.

1 **Q. WHAT LEVEL OF RATE RELIEF DOES PWSA REQUIRE TO**
2 **MAINTAIN ITS FINANCIAL INDICATORS AT THE APPROPRIATE**
3 **LEVELS AND HAVE SUFFICIENT CASH TO PRUDENTLY OPERATE**
4 **THE COMPANY?**

5 A. PWSA has determined that an increase of \$27.0 million would provide barely
6 sufficient additional revenues to enable it to maintain its financial metrics at
7 adequate levels and maintain its existing bond rating.

8 **Q. HAVE YOU CALCULATED PWSA'S FINANCIAL RESULTS IN THE**
9 **FPFTY AS WELL AS IN THE FORECAST PERIOD IF ITS PROPOSED**
10 **\$27.0 MILLION RATE INCREASE IS GRANTED?**

11 A. Yes, those results are shown on Exhibit DML-2. At \$27.0 million, PWSA would
12 have coverages on Senior Debt of 1.47 x in the FPFTY. PWSA projects that the
13 coverages in the Forecast Period would range from 1.40 to 1.47. As I indicated
14 above, coverages at this level are required to permit PWSA to have the funds it
15 needs throughout the year to satisfy all of its obligations over and above its debt
16 service. It is important to note that beginning in 2019 (FPFTY), the City's Co-op
17 payment is no longer a component of the coverage calculation per the revised
18 indenture but still remains an obligation, which reduces the liquidity margin for
19 the Authority.

20 The proposed rate increase would also produce about 25.7 DCOH, and
21 74.0 DCOH including Unrestricted and Operating Reserve Cash in 2019. While
22 positive, these are below the levels expected by the bond rating agencies for a
23 credit with PWSA's bond rating.

24 **Q. HOW WOULD THE RATE INCREASE AFFECT PWSA'S FINANCIAL**
25 **PERFORMANCE DURING THE FORECAST PERIOD?**

26 A. In the FPFTY and in 2020, it would keep PWSA at levels less robust than it
27 experienced in the historic test year.

1 **Q. EARLIER YOU INDICATED THAT THE PROPOSED RATE INCREASE**
2 **INCLUDED THE FUNDING OF A \$5.4 MILLION “RATE**
3 **STABILIZATION FUND”. PLEASE EXPLAIN WHY PWSA IS MAKING**
4 **THIS PROPOSAL AND HOW SUCH A FUND WOULD WORK.**

5 A. The RSF is a standard feature of municipal ratemaking. It is designed to provide
6 a cushion to a municipal utility to deal with contingencies as well as to
7 demonstrate to the financial community that it is financially stable. Some
8 municipal utilities (for example, the Philadelphia Water Department) have Rate
9 Stabilization Funds (“RSF”) of hundreds of millions of dollars. Such funds help
10 to enhance the credit standing of the utility and provide an additional source of
11 funds to pay for unforeseen circumstances. Such a fund may also become the
12 repository of cash in excess of expenditures in any year, thereby assuring that any
13 savings realized by the utility vis-à-vis its revenue requirement will be maintained
14 to offset or mitigate future rate increases. PWSA proposes to establish the RSF in
15 this way in this case. In other words, if PWSA does not realize the level of
16 expenditure projected for the test year, but does experience the level of revenues
17 at proposed rates it is projecting, PWSA would commit to placing all of the
18 positive difference into the RSF. Thus, the creation of such a fund not only
19 provides some financial security to PWSA but also provides a means of assuring
20 that all funds collected will ultimately be used to benefit PWSA customers.

21 **Q. PLEASE EXPLAIN PWSA’S PROPOSAL TO INCLUDE AN AMOUNT**
22 **FOR “RATE FUNDED CAPITAL” (“PAYGO”) IN THE RATE**
23 **INCREASE.**

24 A. Right now, PWSA is almost entirely reliant on long term debt in order to fund
25 capital projects. Ideally, a utility should be able to fund some portion of its
26 capital improvement projects from funds generated through rates. This serves to
27 reduce the amount of debt that the utility must issue, thereby reducing financial

1 risk. It also provides a small contingency if the utility was unable to access the
2 capital market, at least for a short period. Ms. Clupper explains this in greater
3 detail. Because of the level of rate increase needed to fund projected operations,
4 PWSA is proposing a very small amount (\$1.5 million) be recovered from the
5 proposed rate increase and used for capital improvements. This will establish the
6 PAYGO concept as a goal that PWSA, working with the Commission, can
7 attempt to expand upon in the future.

8
9 **V. ALLOCATION OF REVENUE REQUIREMENT BETWEEN WATER**
10 **AND WASTEWATER CONVEYANCE**

11 **Q. AFTER DETERMINING THE TOTAL SYSTEM REVENUE**
12 **REQUIREMENTS, HOW ARE THE WATER AND WASTEWATER**
13 **CONVEYANCE UTILITY SERVICE REVENUE REQUIREMENTS**
14 **DETERMINED?**

15 A. The Revenue requirements, as established in Exhibits DML-1 and DML-2, are
16 designated as water only, wastewater conveyance only, or allocated between
17 water and wastewater conveyance based on a set of allocation factors. The
18 separate water and wastewater conveyance set of revenue requirements for HTY,
19 FTY, FPFTY, and future forecast are shown in Exhibit DML-4, pages 1 and 2,
20 respectively.

21 **Q. WHAT COSTS ARE DESIGNATED AS WATER ONLY?**

22 A. Operating budgets for the water quality lab, water treatment plant, and water
23 distribution system are designated as water only costs.

24 **Q. WHAT COSTS ARE DESIGNATED AS WASTEWATER CONVEYANCE**
25 **ONLY?**

26 A. The operating budget for sewer operations is designated as wastewater
27 conveyance only.

1 **Q. HOW ARE THE REMAINING COSTS ALLOCATED BETWEEN**
2 **WATER AND WASTEWATER CONVEYANCE?**

3 A. The remaining costs are allocated based on a set of allocation factors. The
4 allocation factors used in the establishment of utility service revenue requirements
5 are shown in Exhibit DML-4 , pages 4 and 5. The allocation factors are provided
6 in summary form in Exhibit DML-4, page 4 and the descriptions are provided on
7 page 5. These allocation factors, with the exception of the sewer to stormwater
8 allocation factors, described in more detail below, were analyzed and updated for
9 this analysis and are based on the calculations provided in Exhibit DML-4, page
10 5.

11 The majority of Administrative Division expenses were allocated based on
12 the operations costs, with the exception of customer service. Under the
13 Operations Division, most costs are allocated as 100% water or wastewater
14 conveyance. The exceptions are environmental compliance, which has its own set
15 of allocation factors shown in Exhibit DML-4, page 4, based on staff's
16 determination, and warehouse, which is allocated based on operations factors.
17 Engineering and construction is allocated based on the Construction Improvement
18 Plan, as described in Exhibit DML-4, page 5. Existing debt is allocated by fixed
19 assets. Proposed debt and PAYGO are allocated on the basis of the capital plan.
20 Costs of transfers to reserves are allocated based on FPFTY rate revenue between
21 water and wastewater conveyance.

22 The revenue requirement, segregated between water and wastewater
23 conveyance in Exhibit DML-4, pages 1 and 2 were provided to PWSA witness
24 Harold Smith who then performed a cost of service analysis for the purpose of
25 allocating the rate increase to customer classes.

1 **Q. HAVE YOU IDENTIFIED THE LEVEL OF PROJECTED**
2 **STORMWATER COSTS FOR THE FPFTY?**

3 **A. Yes. The breakdown is presented in DML-4, page 3. This exhibit shows**
4 wastewater conveyance costs for the FPFTY by sewer only and stormwater only
5 to illustrate the magnitude of costs associated with providing stormwater service.
6 These costs were derived using the allocation factors provided in DML-4, pages 4
7 and 5. The allocation factors were applied to the total system revenue
8 requirements in some cases and to only the wastewater conveyance costs in other
9 cases, as shown in the allocation tables.

10 The allocation factors for determining stormwater costs were based on a
11 set of allocation factors developed in 2016 as a product of a separate stormwater
12 feasibility study. For the development of a stormwater fee, proposed during the
13 next wastewater tariff filing, these allocation factors will be revisited and revised
14 for accuracy. This will be discussed in greater detail in the Compliance Plan.

15 It is also important to note that while we have identified approximately
16 \$30 million of stormwater related costs in the FPFTY, shown in Exhibit DML-4,
17 page 3, this is not to suggest the level of revenue requirement for the basis of a
18 stormwater fee would be \$30 million. The cost of service analysis would be
19 updated at the time of a stormwater tariff filing. Additionally, the stormwater
20 revenue requirement for the FPFTY does not include all the costs that would be
21 necessary when a stormwater fee is implemented. For example, additional billing,
22 customer service, and field operations labor and materials costs are anticipated for
23 the implementation of a fee. Also, the stormwater fee would be allocated a
24 greater share of overhead and administrative costs given the enhanced level of
25 service.

1
2 **VI. PROPOSED RATES AND CHARGES**

3 **Q. PLEASE DESCRIBE THE RATES UNDER PWSA'S PRIOR TARIFF.**

4 A. The rates under PWSA's prior tariff are contained in Exhibit JAQ-5, which can be
5 found in Volume IV of this filing. Section 3204 provides that those rates have the
6 force and effect of law, and will continue, until the effective date of a
7 Commission order approving rates in a new tariff.

8 **Q. PLEASE DESCRIBE THE RATES UNDER PWSA'S PROPOSED TARIFF.**

9 A. PWSA's proposed rates and charges are contained in Exhibit JAQ-1 (water) and
10 Exhibit JAQ-3 (wastewater), which can be found in of Volume IV of this filing.
11 Those proposed tariffs set forth all of the changes and rate increases proposed by
12 PWSA as part of this case. PWSA witness Harold Smith, utilizing the results of
13 his class cost of service study, made recommendations to PWSA for the allocation
14 of the proposed rate increase. Upon review of those recommended increases,
15 PWSA accepted those recommendations. PWSA's review indicated that Mr.
16 Smith's recommendations made a reasonable attempt to establish rates for each
17 customer class that were consistent with the class cost of service or moved toward
18 that goal in a reasonable manner.

19 **VII. CONCLUSION**

20 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

21 A. Yes.

Exhibit DML-1

Pittsburgh Water and Sewer Authority
Statement of Income - Current Rates

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>
System Revenues			
1 Water Sales	\$ 80,953,618	\$ 97,139,741	\$ 97,139,741
2 Wastewater Sales	40,948,748	60,906,513	60,871,016
3 Sale for Resale & Contract Sales	5,151,309	5,116,913	5,010,055
4 Other Revenues	5,015,515	5,379,148	5,462,647
5 Total: System Revenues	\$132,069,190	\$168,542,316	\$168,483,460
System Revenue Requirements			
<u>Operating Expenses</u>			
<i>Direct Operating Expenses</i>			
6 Executive Director	\$ 2,771,316	\$ 2,183,848	\$ 3,347,718
7 Customer Service	6,791,810	6,708,658	7,839,668
8 Management Information Systems	2,056,224	3,948,512	3,161,584
9 Finance	1,433,000	4,983,669	3,789,734
10 Procurement	281,865	564,190	461,436
11 Human Resources	955,078	1,545,155	1,582,683
12 Legal	2,230,893	3,736,001	2,327,622
13 Public Affairs	422,247	808,374	999,993
14 Environmental Compliance	-	4,373,272	4,391,797
15 Warehouse	1,099,174	421,862	428,061
16 Ops Capital Assets	78,989	27,499	36,000
17 Water Quality (Lab)	1,607,006	3,949,740	3,847,559
18 Water Treatment Plant	14,144,593	19,994,446	20,204,262
19 Sewer Operations	10,234,288	18,660,666	16,518,454
20 Water Distribution	14,497,341	22,506,332	23,575,829
21 Engineering & Construction	11,226,880	13,969,759	17,009,386
22 <i>Subtotal: Direct Operating Expenses</i>	<i>\$ 69,830,704</i>	<i>\$ 108,381,984</i>	<i>\$ 109,521,788</i>
<i>Other Operating Expenses</i>			
23 Loss / (Gain) on ALCOSAN Billings	\$ 8,759,535	\$ 3,457,699	\$ 3,699,738
24 Co-Op Agreement Op. Expenses - Water	2,075,000	4,150,000	4,150,000
25 Co-Op Agreement Op. Expenses - Sewer	1,500,000	3,000,000	3,000,000
26 Non-City Water Subsidy	5,260,476	4,800,000	4,800,000
27 <i>Subtotal: Other Operating Expenses</i>	<i>\$ 17,595,011</i>	<i>\$ 15,407,699</i>	<i>\$ 15,649,738</i>
28 Total: Operating Expenses	\$ 87,425,715	\$123,789,683	\$125,171,526
<u>Debt Service</u>			
29 Senior Debt Service	\$ 47,304,178	\$ 44,194,395	\$ 56,955,515
30 Subordinate Debt Service	4,125,343	4,855,310	4,855,310
31 Revolving Line of Credit Interest	610,992	1,266,936	1,686,120
32 Total: Debt Service	\$ 52,040,513	\$ 50,316,641	\$ 63,496,946
<u>Capital Expenditures & Transfers</u>			
33 Rate Funded Capital (PAYGO)	\$ -	\$ -	\$ 1,500,000
34 Other Transfers to Reserves	3,144,510	2,000,000	5,700,000
35 Reimbursements (Municipalities & Pennvest)	(793,929)	-	-
36 Remarketing & Liquidity Charges	1,493,100	-	-
37 Total: Capital Expenditures & Transfers	\$ 3,843,681	\$ 2,000,000	\$ 7,200,000
38 Total: Systemwide Revenue Requirements	\$143,309,909	\$176,106,324	\$195,868,472
39 System Revenue Surplus / (Deficit)	\$ (11,240,719)	\$ (7,564,008)	\$ (27,385,012)

**Pittsburgh Water and Sewer Authority
Projected Fund Balances - Current Rates**

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>
Operating Fund			
Beginning Balance	\$ 22,736,168	\$ 11,495,449	\$ 2,901,110
<u>Sources:</u>			
Operating Surplus/(Deficit)	\$ (11,240,719)	\$ (7,564,008)	\$ (27,385,012)
Budgeted Contributions	3,144,510	2,000,000	5,700,000
<u>Uses:</u>			
Contributions to Rate Stabilization Fund	-	-	(2,850,000)
Contributions to Operating Reserve Fund	(3,144,510)	(3,030,331)	(115,154)
<i>Ending Balance</i>	<u>\$ 11,495,449</u>	<u>\$ 2,901,110</u>	<u>\$ (21,749,056)</u>
Rate Stabilization Fund			
Beginning Balance	\$ -	\$ -	\$ -
<u>Sources/Uses</u>			
Contributions from Operating Fund	-	-	2,850,000
Withdrawals	-	-	-
<i>Ending Balance</i>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 2,850,000</u>
Operating Reserve Fund			
Beginning Balance	\$ 9,418,347	\$ 12,657,040	\$ 15,813,942
<u>Sources:</u>			
Contributions from Operating Fund	3,144,510	3,030,331	115,154
Interest Income	94,183	126,570	158,139
<u>Uses:</u>			
Withdrawals	-	-	-
<i>Ending Balance</i>	<u>\$ 12,657,040</u>	<u>\$ 15,813,942</u>	<u>\$ 16,087,235</u>
<i>Operating Reserve Requirement</i>	<i>10,531,700</i>	<i>13,975,119</i>	<i>19,439,947</i>
Combined Cash and Investments Balance			
Total Beginning Balance - Cash & Investments	\$ 32,154,515	\$ 24,152,489	\$ 18,715,051
Total Ending Balance - Cash & Investments	<u>\$ 24,152,489</u>	<u>\$ 18,715,051</u>	<u>\$ (2,811,822)</u>
Total Change in Cash Fund Balances	<u>\$ (8,002,026)</u>	<u>\$ (5,437,438)</u>	<u>\$ (21,526,873)</u>
Capital Line of Credit (JP Morgan)			
Total Line of Credit	\$ 80,000,000	\$ 150,000,000	\$ 150,000,000
Beginning Available Credit	68,200,000	106,200,000	44,831,918
Used for Capital	(32,000,000)	(61,368,082)	(153,690,611)
Bond Issue Amount	-	-	156,000,000
<i>Ending Available Credit</i>	<u>\$ 36,200,000</u>	<u>\$ 44,831,918</u>	<u>\$ 47,141,307</u>
Days Cash on Hand (Days O&M)			
Unrestricted Cash & RSF	53.3	8.8	(56.8)
Unrestricted and Operating Reserve Cash	112.1	56.8	(8.4)

Pittsburgh Water and Sewer Authority
Debt Service Coverage - Current Rates

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>
<u>Revenues</u>			
1 Operating Revenue	\$ 132,069,190	\$ 168,542,316	\$ 168,483,460
2 ALCOSAN Collections	63,795,503	74,538,967	79,756,694
3 Unrestricted Cash on Hand	22,736,168	11,075,964	-
4 <i>Subtotal: Revenues</i>	<u>\$ 218,600,861</u>	<u>\$ 254,157,246</u>	<u>\$ 248,240,154</u>
<u>Current Expenses</u>			
5 Direct Operating Expenses	\$ (69,830,704)	\$ (108,381,984)	\$ (109,521,788)
6 ALCOSAN Charges	(72,555,038)	(77,996,666)	(83,456,432)
7 City Co-Op Agreement Payments	(3,575,000)	(7,150,000)	-
8 Non-City Water Subsidy	(5,260,476)	(4,800,000)	(4,800,000)
9 <i>Subtotal: Current Expenses</i>	<u>\$ (151,221,218)</u>	<u>\$ (198,328,650)</u>	<u>\$ (197,778,220)</u>
10 Revenues Available for Debt Service	\$ 67,379,642	\$ 55,828,597	\$ 50,461,934
<u>Debt Service</u>			
Existing Debt			
11 Senior Debt	\$ 43,347,743	\$ 40,296,276	\$ 43,326,828
12 Subordinate	4,125,343	4,855,310	4,855,310
13 Pennvest	3,956,434	3,898,119	3,904,146
14 Revolver Interest	610,992	1,266,936	1,686,120
15 <i>Subtotal: Existing Debt</i>	<u>\$ 52,040,513</u>	<u>\$ 50,316,641</u>	<u>\$ 53,772,404</u>
Future Debt			
16 Senior Debt	\$ -	\$ -	\$ 9,724,542
17 Subordinate	-	-	-
18 Pennvest	-	-	-
19 <i>Subtotal: Future Debt</i>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 9,724,542</u>
20 <i>Subtotal: Debt Service</i>	<u>\$ 52,040,513</u>	<u>\$ 50,316,641</u>	<u>\$ 63,496,946</u>
21 Senior Debt Service Coverage	1.55	1.39	0.95
22 <i>Minimum Requirement</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>
23 Total Debt Service Coverage	1.29	1.11	0.79
24 <i>Minimum Requirement</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

Pittsburgh Water and Sewer Authority
Projected Balance Sheet - Current Rates

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>
	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>
Assets			
<u>Current assets</u>			
1 Cash and cash equivalents	\$ 11,076,000	\$ 2,901,110	\$ (21,749,056)
Accounts Receivable, net:			
Water			
2 Billed	\$ 9,335,000	\$ 11,634,718	\$ 11,632,105
3 Unbilled	6,760,000	8,544,055	8,542,136
4 Total Water	16,095,000	20,178,773	20,174,241
Wastewater treatment			
5 Billed	9,975,000	10,006,852	10,707,331
6 Unbilled	3,746,000	3,757,962	4,021,019
7 Total Wastewater treatment	13,721,000	13,764,813	14,728,350
8 Other Receivables	1,074,000	1,074,000	1,074,000
9 Total Accounts Receivable, net:	30,890,000	35,017,586	35,976,591
10 Prepaid Expenses	674,000	674,000	674,000
11 Inventory	3,777,000	3,777,000	3,777,000
12 <i>Total current assets</i>	\$ 46,417,000	\$ 42,369,695	\$ 18,678,534
<u>Noncurrent assets:</u>			
Restricted assets:			
13 Cash and cash equivalents	\$ 18,264,000	\$ 18,264,000	\$ 30,420,406
14 Investments	11,684,000	15,813,942	16,087,235
15 Total restricted assets	29,948,000	34,077,942	46,507,641
16 Capital assets, not being depreciated	\$ 100,240,000	\$ 126,337,592	\$ 77,907,692
17 Capital assets, net of accumulated depreciation	589,567,000	608,313,275	693,617,549
18 <i>Total noncurrent assets</i>	\$ 719,755,000	\$ 768,728,808	\$ 818,032,882
19 Total Assets	\$ 766,172,000	\$ 811,098,503	\$ 836,711,416
Deferred Outflows of Resources			
20 Deferred charge on refunding	110,326,000	110,326,000	110,326,000
21 Accumulated decrease in fair value of hedging derivative	3,279,000	3,279,000	3,279,000
22 Total Deferred Outflows of Resources	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000

**Pittsburgh Water and Sewer Authority
Projected Balance Sheet - Current Rates**

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>
Liabilities			
<u>Current liabilities:</u>			
23 Bonds and loans payable	\$ 24,603,000	\$ 24,554,283	\$ 24,638,846
24 Accrued payroll and related obligations	1,217,000	1,217,000	1,217,000
25 Accounts payable wastewater treatment	17,863,000	17,863,000	17,863,000
26 Accounts payable and other accrued expenses	15,506,000	24,495,422	37,171,979
27 Accounts payable from restricted assets	-	-	-
28 Accrued interest payable from restricted assets	3,773,000	4,855,310	4,855,310
29 Total current liabilities	<u>\$ 62,962,000</u>	<u>\$ 72,985,015</u>	<u>\$ 85,746,135</u>
<u>Noncurrent liabilities:</u>			
30 Unearned revenue	\$ 164,000	\$ 164,000	\$ 164,000
31 Accrued payroll and related obligations	594,000	594,000	594,000
32 Swap liability	18,319,000	18,319,000	18,319,000
33 Bonds and loans payable, net	841,574,000	883,231,446	952,019,081
34 Total noncurrent assets	<u>\$ 860,651,000</u>	<u>\$ 902,308,446</u>	<u>\$ 971,096,081</u>
35 Total Liabilities	<u>\$ 923,613,000</u>	<u>\$ 975,293,461</u>	<u>\$ 1,056,842,217</u>
Net Position			
36 Net investment in capital assets	\$ (29,609,000)	\$ (36,362,958)	\$ (92,298,800)
37 Restricted	13,240,000	13,240,000	13,240,000
38 Unrestricted	(27,467,000)	(27,467,000)	(27,467,000)
39 Total Net Position	<u>\$ (43,836,000)</u>	<u>\$ (50,589,958)</u>	<u>\$ (106,525,800)</u>

Exhibit DML-2

**Pittsburgh Water and Sewer Authority
Statement of Income - Proposed Rates**

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>
System Revenues							
1 Water Sales	\$ 80,953,618	\$ 97,139,741	\$ 118,524,020	\$ 131,541,243	\$ 146,008,356	\$ 162,049,712	\$ 179,865,153
2 Wastewater Sales	40,948,748	60,906,513	66,542,420	73,863,711	81,985,022	90,993,134	101,020,395
3 Sale for Resale & Contract Sales	5,151,309	5,116,913	5,399,869	5,735,393	6,107,204	6,515,166	6,965,664
4 Other Revenues	5,015,515	5,379,148	5,460,309	5,644,386	5,852,288	6,078,489	6,318,213
5 Total: System Revenues	\$132,069,190	\$168,542,316	\$195,926,618	\$216,784,733	\$239,952,871	\$265,636,500	\$294,169,425
System Revenue Requirements							
<u>Operating Expenses</u>							
<i>Direct Operating Expenses</i>							
6 Executive Director	\$ 2,771,316	\$ 2,183,848	\$ 3,347,718	\$ 3,428,564	\$ 3,511,577	\$ 3,596,824	\$ 3,684,371
7 Customer Service	6,791,810	6,708,658	7,839,668	8,072,641	8,313,319	8,561,978	8,818,905
8 Management Information Systems	2,056,224	3,948,512	3,161,584	3,251,525	3,344,255	3,439,866	3,538,454
9 Finance	1,433,000	4,983,669	3,789,734	3,888,984	3,991,155	4,096,343	4,204,647
10 Procurement	281,865	564,190	461,436	478,743	496,719	515,391	534,785
11 Human Resources	955,078	1,545,155	1,582,683	1,637,217	1,693,754	1,752,367	1,813,139
12 Legal	2,230,893	3,736,001	2,327,622	2,384,293	2,442,501	2,502,295	2,563,722
13 Public Affairs	422,247	808,374	999,993	1,031,726	1,064,562	1,098,541	1,133,706
14 Environmental Compliance	-	4,373,272	4,391,797	4,500,465	4,612,031	4,726,579	4,844,194
15 Warehouse	1,099,174	421,862	428,061	444,727	462,050	480,055	498,770
16 Ops Capital Assets	78,989	27,499	36,000	36,720	37,454	38,203	38,968
17 Water Quality (Lab)	1,607,006	3,949,740	3,847,559	3,958,761	4,073,309	4,191,305	4,312,858
18 Water Treatment Plant	14,144,593	19,994,446	20,204,262	20,800,577	21,415,607	22,049,971	22,704,309
19 Sewer Operations	10,234,288	18,660,666	16,518,454	17,035,306	17,568,688	18,119,139	18,687,217
20 Water Distribution	14,497,341	22,506,332	23,575,829	24,298,965	25,126,701	25,983,551	26,870,565
21 Engineering & Construction	11,226,880	13,969,759	17,009,386	17,483,479	17,972,208	18,476,067	18,995,566
22 Subtotal: Direct Operating Expenses	\$ 69,830,704	\$ 108,381,984	\$ 109,521,788	\$ 112,732,695	\$ 116,125,891	\$ 119,628,475	\$ 123,244,177
<i>Other Operating Expenses</i>							
23 Loss / (Gain) on ALCOSAN Billings	\$ 8,759,535	\$ 3,457,699	\$ 3,699,738	\$ 3,958,720	\$ 4,235,830	\$ 4,447,622	\$ 4,670,003
24 Co-Op Agreement Op. Expenses - Water	2,075,000	4,150,000	4,150,000	4,150,000	4,150,000	4,150,000	4,150,000
25 Co-Op Agreement Op. Expenses - Sewer	1,500,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
26 Non-City Water Subsidy	5,260,476	4,800,000	4,800,000	4,800,000	4,800,000	4,800,000	4,800,000
27 Subtotal: Other Operating Expenses	\$ 17,595,011	\$ 15,407,699	\$ 15,649,738	\$ 15,908,720	\$ 16,185,830	\$ 16,397,622	\$ 16,620,003
28 Total: Operating Expenses	\$ 87,425,715	\$123,789,683	\$125,171,526	\$128,641,415	\$132,311,721	\$136,026,097	\$139,864,180
<u>Debt Service</u>							
29 Senior Debt Service	\$ 47,304,178	\$ 44,194,395	\$ 56,955,515	\$ 71,766,103	\$ 81,889,863	\$ 101,360,829	\$ 118,155,870
30 Subordinate Debt Service	4,125,343	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310
31 Revolving Line of Credit Interest	610,992	1,266,936	1,686,120	1,706,184	1,822,232	1,868,197	1,915,431
32 Total: Debt Service	\$ 52,040,513	\$ 50,316,641	\$ 63,496,946	\$ 78,327,598	\$ 88,567,404	\$108,084,336	\$124,926,611
<u>Capital Expenditures & Transfers</u>							
33 Rate Funded Capital (PAYGO)	\$ -	\$ -	\$ 1,500,000	\$ 4,000,000	\$ 7,000,000	\$ 10,000,000	\$ 15,000,000
34 Other Transfers to Reserves	3,144,510	2,000,000	5,700,000	3,500,000	8,500,000	6,500,000	6,500,000
35 Reimbursements (Municipalities & Pennvest)	(793,929)	-	-	-	-	-	-
36 Remarketing & Liquidity Charges	1,493,100	-	-	-	-	-	-
37 Total: Capital Expenditures & Transfers	\$ 3,843,681	\$ 2,000,000	\$ 7,200,000	\$ 7,500,000	\$ 15,500,000	\$ 16,500,000	\$ 21,500,000
38 Total: Systemwide Revenue Requirements	\$143,309,909	\$176,106,324	\$195,868,472	\$214,469,013	\$236,379,126	\$260,610,433	\$286,290,791
39 System Revenue Surplus / (Deficit)	\$ (11,240,719)	\$ (7,564,008)	\$ 58,146	\$ 2,315,720	\$ 3,573,745	\$ 5,026,067	\$ 7,878,633

**Pittsburgh Water and Sewer Authority
Projected Fund Balances - Proposed Rates**

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>	<u>FY 2020</u> <i>Forecast</i>	<u>FY 2021</u> <i>Forecast</i>	<u>FY 2022</u> <i>Forecast</i>	<u>FY 2023</u> <i>Forecast</i>
Operating Fund							
Beginning Balance	\$ 22,736,168	\$ 11,495,449	\$ 2,901,110	\$ 5,694,102	\$ 9,259,822	\$ 16,583,567	\$ 24,359,634
<u>Sources:</u>							
Operating Surplus/(Deficit)	\$ (11,240,719)	\$ (7,564,008)	\$ 58,146	\$ 2,315,720	\$ 3,573,745	\$ 5,026,067	\$ 7,878,633
Budgeted Contributions	3,144,510	2,000,000	5,700,000	3,500,000	8,500,000	6,500,000	6,500,000
<u>Uses:</u>							
Contributions to Rate Stabilization Fund	-	-	(2,850,000)	(1,750,000)	(4,250,000)	(3,250,000)	(3,250,000)
Contributions to Operating Reserve Fund	(3,144,510)	(3,030,331)	(115,154)	(500,000)	(500,000)	(500,000)	(500,000)
Ending Balance	\$ 11,495,449	\$ 2,901,110	\$ 5,694,102	\$ 9,259,822	\$ 16,583,567	\$ 24,359,634	\$ 34,988,267
Rate Stabilization Fund							
Beginning Balance	\$ -	\$ -	\$ -	\$ 2,850,000	\$ 4,600,000	\$ 8,850,000	\$ 12,100,000
<u>Sources/Uses</u>							
Contributions from Operating Fund	-	-	2,850,000	1,750,000	4,250,000	3,250,000	3,250,000
Withdrawals	-	-	-	-	-	-	-
Ending Balance	\$ -	\$ -	\$ 2,850,000	\$ 4,600,000	\$ 8,850,000	\$ 12,100,000	\$ 15,350,000
Operating Reserve Fund							
Beginning Balance	\$ 9,418,347	\$ 12,657,040	\$ 15,813,942	\$ 16,087,235	\$ 16,748,107	\$ 17,415,588	\$ 18,089,744
<u>Sources:</u>							
Contributions from Operating Fund	3,144,510	3,030,331	115,154	500,000	500,000	500,000	500,000
Interest Income	94,183	126,570	158,139	160,872	167,481	174,156	180,897
<u>Uses:</u>							
Withdrawals	-	-	-	-	-	-	-
Ending Balance	\$ 12,657,040	\$ 15,813,942	\$ 16,087,235	\$ 16,748,107	\$ 17,415,588	\$ 18,089,744	\$ 18,770,641
Operating Reserve Requirement	10,531,700	13,975,119	19,439,947	19,670,254	20,248,569	20,860,287	21,479,350
Combined Cash and Investments Balance							
Total Beginning Balance - Cash & Investments	\$ 32,154,515	\$ 24,152,489	\$ 18,715,051	\$ 24,631,337	\$ 30,607,929	\$ 42,849,155	\$ 54,549,378
Total Ending Balance - Cash & Investments	\$ 24,152,489	\$ 18,715,051	\$ 24,631,337	\$ 30,607,929	\$ 42,849,155	\$ 54,549,378	\$ 69,108,909
Total Change in Cash Fund Balances	\$ (8,002,026)	\$ (5,437,438)	\$ 5,916,285	\$ 5,976,592	\$ 12,241,226	\$ 11,700,223	\$ 14,559,531
Capital Line of Credit (JP Morgan)							
Total Line of Credit	\$ 80,000,000	\$ 150,000,000	\$ 150,000,000	\$ 150,000,000	\$ 150,000,000	\$ 150,000,000	\$ 150,000,000
Beginning Available Credit	68,200,000	106,200,000	44,831,918	47,141,307	31,913,191	27,188,056	20,743,387
Used for Capital	(32,000,000)	(61,368,082)	(153,690,611)	(252,228,116)	(319,725,135)	(286,444,669)	(251,060,814)
Bond Issue Amount	-	-	156,000,000	237,000,000	315,000,000	280,000,000	250,000,000
Ending Available Credit	\$ 36,200,000	\$ 44,831,918	\$ 47,141,307	\$ 31,913,191	\$ 27,188,056	\$ 20,743,387	\$ 19,682,573
Days Cash on Hand (Days O&M)							
Unrestricted Cash & RSF	53.3	8.8	25.7	40.6	72.5	101.1	135.9
Unrestricted and Operating Reserve Cash	112.1	56.8	74.0	89.6	122.1	151.3	186.6

**Pittsburgh Water and Sewer Authority
Debt Service Coverage - Proposed Rates**

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>	<u>FY 2020</u> <i>Forecast</i>	<u>FY 2021</u> <i>Forecast</i>	<u>FY 2022</u> <i>Forecast</i>	<u>FY 2023</u> <i>Forecast</i>
<u>Revenues</u>							
1 Operating Revenue	\$ 132,069,190	\$ 168,542,316	\$ 195,926,618	\$ 216,784,733	\$ 239,952,871	\$ 265,636,500	\$ 294,169,425
2 ALCOSAN Collections	63,795,503	74,538,967	79,756,694	85,339,663	91,313,439	95,879,111	100,673,067
3 Unrestricted Cash on Hand	22,736,168	11,075,964	-	-	-	-	-
4 <i>Subtotal: Revenues</i>	<u>\$ 218,600,861</u>	<u>\$ 254,157,246</u>	<u>\$ 275,683,312</u>	<u>\$ 302,124,396</u>	<u>\$ 331,266,310</u>	<u>\$ 361,515,611</u>	<u>\$ 394,842,491</u>
<u>Current Expenses</u>							
5 Direct Operating Expenses	\$ (69,830,704)	\$ (108,381,984)	\$ (109,521,788)	\$ (112,732,695)	\$ (116,125,891)	\$ (119,628,475)	\$ (123,244,177)
6 ALCOSAN Charges	(72,555,038)	(77,996,666)	(83,456,432)	(89,298,383)	(95,549,270)	(100,326,733)	(105,343,070)
7 City Co-Op Agreement Payments	(3,575,000)	(7,150,000)	-	-	-	-	-
8 Non-City Water Subsidy	(5,260,476)	(4,800,000)	(4,800,000)	(4,800,000)	(4,800,000)	(4,800,000)	(4,800,000)
9 <i>Subtotal: Current Expenses</i>	<u>\$ (151,221,218)</u>	<u>\$ (198,328,650)</u>	<u>\$ (197,778,220)</u>	<u>\$ (206,831,078)</u>	<u>\$ (216,475,160)</u>	<u>\$ (224,755,208)</u>	<u>\$ (233,387,247)</u>
10 Revenues Available for Debt Service	\$ 67,379,642	\$ 55,828,597	\$ 77,905,092	\$ 95,293,318	\$ 114,791,149	\$ 136,760,403	\$ 161,455,245
<u>Debt Service</u>							
<u>Existing Debt</u>							
11 Senior Debt	\$ 43,347,743	\$ 40,296,276	\$ 43,326,828	\$ 43,379,746	\$ 43,163,160	\$ 43,121,828	\$ 43,197,328
12 Subordinate	4,125,343	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310
13 Pennvest	3,956,434	3,898,119	3,904,146	3,904,141	3,895,146	3,864,239	3,171,639
14 Revolver Interest	610,992	1,266,936	1,686,120	1,706,184	1,822,232	1,868,197	1,915,431
15 <i>Subtotal: Existing Debt</i>	<u>\$ 52,040,513</u>	<u>\$ 50,316,641</u>	<u>\$ 53,772,404</u>	<u>\$ 53,845,381</u>	<u>\$ 53,735,847</u>	<u>\$ 53,709,574</u>	<u>\$ 53,139,708</u>
<u>Future Debt</u>							
16 Senior Debt	\$ -	\$ -	\$ 9,724,542	\$ 24,482,217	\$ 34,831,557	\$ 54,374,762	\$ 71,786,904
17 Subordinate	-	-	-	-	-	-	-
18 Pennvest	-	-	-	-	-	-	-
19 <i>Subtotal: Future Debt</i>	<u>\$ -</u>	<u>\$ -</u>	<u>\$ 9,724,542</u>	<u>\$ 24,482,217</u>	<u>\$ 34,831,557</u>	<u>\$ 54,374,762</u>	<u>\$ 71,786,904</u>
20 <i>Subtotal: Debt Service</i>	<u>\$ 52,040,513</u>	<u>\$ 50,316,641</u>	<u>\$ 63,496,946</u>	<u>\$ 78,327,598</u>	<u>\$ 88,567,404</u>	<u>\$ 108,084,336</u>	<u>\$ 124,926,611</u>
21 Senior Debt Service Coverage	1.55	1.39	1.47	1.40	1.47	1.40	1.40
22 <i>Minimum Requirement</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>
23 Total Debt Service Coverage	1.29	1.11	1.23	1.22	1.30	1.27	1.29
24 <i>Minimum Requirement</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

Pittsburgh Water and Sewer Authority
Projected Balance Sheet - Proposed Rates

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>	<u>FY 2020</u> <i>Forecast</i>	<u>FY 2021</u> <i>Forecast</i>	<u>FY 2022</u> <i>Forecast</i>	<u>FY 2023</u> <i>Forecast</i>
Assets							
<u>Current assets</u>							
1 Cash and cash equivalents	\$ 11,076,000	\$ 2,901,110	\$ 5,694,102	\$ 9,259,822	\$ 16,583,567	\$ 24,359,634	\$ 34,988,267
Accounts Receivable, net:							
Water							
2 Billed	\$ 9,335,000	\$ 11,634,718	\$ 13,623,834	\$ 15,121,072	\$ 16,783,939	\$ 18,627,978	\$ 20,677,644
3 Unbilled	6,760,000	8,544,055	10,004,779	11,104,288	12,325,429	13,679,615	15,184,804
4 Total Water	16,095,000	20,178,773	23,628,612	26,225,360	29,109,368	32,307,593	35,862,448
Wastewater treatment							
5 Billed	9,975,000	10,006,852	10,707,331	11,456,844	12,258,824	12,871,765	13,515,353
6 Unbilled	3,746,000	3,757,962	4,021,019	4,302,490	4,603,664	4,833,848	5,075,540
7 Total Wastewater treatment	13,721,000	13,764,813	14,728,350	15,759,335	16,862,488	17,705,612	18,590,893
8 Other Receivables	1,074,000	1,074,000	1,074,000	1,074,000	1,074,000	1,074,000	1,074,000
9 Total Accounts Receivable, net:	30,890,000	35,017,586	39,430,962	43,058,694	47,045,856	51,087,206	55,527,341
10 Prepaid Expenses	674,000	674,000	674,000	674,000	674,000	674,000	674,000
11 Inventory	3,777,000	3,777,000	3,777,000	3,777,000	3,777,000	3,777,000	3,777,000
12 Total current assets	\$ 46,417,000	\$ 42,369,695	\$ 49,576,064	\$ 56,769,517	\$ 68,080,423	\$ 79,897,840	\$ 94,966,609
<u>Noncurrent assets:</u>							
Restricted assets:							
13 Cash and cash equivalents	\$ 18,264,000	\$ 18,264,000	\$ 30,420,406	\$ 48,871,656	\$ 73,410,156	\$ 95,222,156	\$ 114,697,156
14 Investments	11,684,000	15,813,942	16,087,235	16,748,107	17,415,588	18,089,744	18,770,641
15 Total restricted assets	29,948,000	34,077,942	46,507,641	65,619,763	90,825,744	113,311,900	133,467,798
16 Capital assets, not being depreciated	\$ 100,240,000	\$ 126,337,592	\$ 77,907,692	\$ 106,159,080	\$ 167,512,066	\$ 161,263,569	\$ 80,631,784
17 Capital assets, net of accumulated depreciation	589,567,000	608,313,275	693,617,549	900,385,837	1,141,391,055	1,414,838,100	1,718,700,718
18 Total noncurrent assets	\$ 719,755,000	\$ 768,728,808	\$ 818,032,882	\$ 1,072,164,680	\$ 1,399,728,866	\$ 1,689,413,569	\$ 1,932,800,300
19 Total Assets	\$ 766,172,000	\$ 811,098,503	\$ 867,608,946	\$ 1,128,934,197	\$ 1,467,809,289	\$ 1,769,311,409	\$ 2,027,766,909
Deferred Outflows of Resources							
20 Deferred charge on refunding	110,326,000	110,326,000	110,326,000	110,326,000	110,326,000	110,326,000	110,326,000
21 Accumulated decrease in fair value of hedging derivative	3,279,000	3,279,000	3,279,000	3,279,000	3,279,000	3,279,000	3,279,000
22 Total Deferred Outflows of Resources	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000	\$ 113,605,000

**Pittsburgh Water and Sewer Authority
Projected Balance Sheet - Proposed Rates**

	<u>FY 2017</u> <i>HTY</i>	<u>FY 2018</u> <i>FTY</i>	<u>FY 2019</u> <i>FPFTY</i>	<u>FY 2020</u> <i>Forecast</i>	<u>FY 2021</u> <i>Forecast</i>	<u>FY 2022</u> <i>Forecast</i>	<u>FY 2023</u> <i>Forecast</i>
Liabilities							
<u>Current liabilities:</u>							
23 Bonds and loans payable	\$ 24,603,000	\$ 24,554,283	\$ 24,638,846	\$ 28,759,941	\$ 33,771,915	\$ 39,678,524	\$ 44,864,080
24 Accrued payroll and related obligations	1,217,000	1,217,000	1,217,000	1,217,000	1,217,000	1,217,000	1,217,000
25 Accounts payable wastewater treatment	17,863,000	17,863,000	17,863,000	17,863,000	17,863,000	17,863,000	17,863,000
26 Accounts payable and other accrued expenses	15,506,000	24,495,422	37,171,979	47,861,473	52,973,257	66,537,615	78,147,100
27 Accounts payable from restricted assets	-	-	-	-	-	-	-
28 Accrued interest payable from restricted assets	3,773,000	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310	4,855,310
29 <i>Total current liabilities</i>	<u>\$ 62,962,000</u>	<u>\$ 72,985,015</u>	<u>\$ 85,746,135</u>	<u>\$ 100,556,723</u>	<u>\$ 110,680,483</u>	<u>\$ 130,151,449</u>	<u>\$ 146,946,490</u>
<u>Noncurrent liabilities:</u>							
30 Unearned revenue	\$ 164,000	\$ 164,000	\$ 164,000	\$ 164,000	\$ 164,000	\$ 164,000	\$ 164,000
31 Accrued payroll and related obligations	594,000	594,000	594,000	594,000	594,000	594,000	594,000
32 Swap liability	18,319,000	18,319,000	18,319,000	18,319,000	18,319,000	18,319,000	18,319,000
33 Bonds and loans payable, net	841,574,000	883,231,446	952,019,081	1,161,375,235	1,443,505,987	1,684,906,492	1,890,635,021
34 <i>Total noncurrent assets</i>	<u>\$ 860,651,000</u>	<u>\$ 902,308,446</u>	<u>\$ 971,096,081</u>	<u>\$ 1,180,452,235</u>	<u>\$ 1,462,582,987</u>	<u>\$ 1,703,983,492</u>	<u>\$ 1,909,712,021</u>
35 Total Liabilities	<u>\$ 923,613,000</u>	<u>\$ 975,293,461</u>	<u>\$ 1,056,842,217</u>	<u>\$ 1,281,008,959</u>	<u>\$ 1,573,263,470</u>	<u>\$ 1,834,134,941</u>	<u>\$ 2,056,658,511</u>
Net Position							
36 Net investment in capital assets	\$ (29,609,000)	\$ (36,362,958)	\$ (61,401,270)	\$ (24,242,761)	\$ 22,377,819	\$ 63,008,468	\$ 98,940,398
37 Restricted	13,240,000	13,240,000	13,240,000	13,240,000	13,240,000	13,240,000	13,240,000
38 Unrestricted	(27,467,000)	(27,467,000)	(27,467,000)	(27,467,000)	(27,467,000)	(27,467,000)	(27,467,000)
39 Total Net Position	<u>\$ (43,836,000)</u>	<u>\$ (50,589,958)</u>	<u>\$ (75,628,270)</u>	<u>\$ (38,469,761)</u>	<u>\$ 8,150,819</u>	<u>\$ 48,781,468</u>	<u>\$ 84,713,398</u>

Exhibit DML-3

Pittsburgh Water and Sewer Authority
Operating Budget Summary

2019 BUDGET

Department		
Department Name	Number	Total
Executive Director	910	\$ 3,347,718
Customer Service	911	\$ 7,839,668
MIS	912	\$ 3,161,584
Finance	913	\$ 3,789,734
Procurement	914	\$ 461,436
Human Resources	915	\$ 1,582,683
Legal	916	\$ 2,327,622
External Affairs	921	\$ 999,993
Ops Executive	922	\$ -
Admin General	900	\$ 36,000
Warehouse	918	\$ 428,061
Water Quality (Lab)	321	\$ 3,847,559
Water Treatment Plant	322	\$ 20,204,262
Water Distribution	325	\$ 23,575,829
Sewer Operations	424	\$ 16,518,454
Engineering & Construction	930	\$ 17,009,386
Environmental Compliance	999	\$ 4,391,797
Total		\$ 109,521,788

2018 FORECAST

Department		
Department Name	Number	Total
Executive Director	910	\$ 2,183,848
Customer Service	911	\$ 6,708,658
MIS	912	\$ 3,948,512
Finance	913	\$ 4,983,669
Procurement	914	\$ 564,190
Human Resources	915	\$ 1,545,155
Legal	916	\$ 3,736,001
External Affairs	921	\$ 808,374
Ops Executive	922	\$ -
Admin General	900	\$ 27,499
Warehouse	918	\$ 421,862
Water Quality (Lab)	321	\$ 3,949,740
Water Treatment Plant	322	\$ 19,994,446
Water Distribution	325	\$ 22,506,332
Sewer Operations	424	\$ 18,660,666
Engineering & Construction	930	\$ 13,969,759
Environmental Compliance	999	\$ 4,373,272
Total		\$ 108,381,984

2017 ACTUALS

Department		
Department Name	Number	Total
Executive Director	910	\$ 2,771,316
Customer Service	911	\$ 6,791,810
MIS	912	\$ 2,056,224
Finance	913	\$ 1,433,000
Procurement	914	\$ 281,865
Human Resources	915	\$ 955,078
Legal	916	\$ 2,230,893
External Affairs	921	\$ 422,247
Ops Executive	922	\$ -
Admin General	900	\$ 78,989
Warehouse	918	\$ 1,099,174
Water Quality (Lab)	321	\$ 1,607,006
Water Treatment Plant	322	\$ 14,144,593
Water Distribution	325	\$ 14,497,341
Sewer Operations	424	\$ 10,234,288
Engineering & Construction	930	\$ 11,226,880
Environmental Compliance	999	\$ -
Total		\$ 69,830,704

Pittsburgh Water and Sewer Authority
Operating Budget Summary

2019 BUDGET

Department Name	Department Number	Labor	Chemicals Materials Inventory	Equipment	Operating Contracts	Repair & Maintenance	Testing	Admin	Professional Services	Utilities	Total
Executive Director	910	\$ 671,457	\$ -	\$ -	\$ -	\$ 46,200	\$ -	\$ 899,831	\$ 1,727,830	\$ 2,400	\$ 3,347,718
Customer Service	911	\$ 3,801,476	\$ -	\$ -	\$ 15,000	\$ -	\$ -	\$ 1,520,320	\$ 2,496,752	\$ 6,120	\$ 7,839,668
MIS	912	\$ 939,232	\$ -	\$ 100,000	\$ -	\$ 692,547	\$ -	\$ 176,000	\$ 1,086,100	\$ 167,705	\$ 3,161,584
Finance	913	\$ 1,161,963	\$ -	\$ 21,600	\$ -	\$ -	\$ -	\$ 330,989	\$ 2,272,662	\$ 2,520	\$ 3,789,734
Procurement	914	\$ 403,906	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,530	\$ 52,000	\$ -	\$ 461,436
Human Resources	915	\$ 1,121,849	\$ -	\$ 44,400	\$ -	\$ -	\$ -	\$ 83,184	\$ 328,750	\$ 4,500	\$ 1,582,683
Legal	916	\$ 505,903	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 421,199	\$ 1,398,000	\$ 2,520	\$ 2,327,622
External Affairs	921	\$ 580,903	\$ -	\$ 11,500	\$ -	\$ -	\$ -	\$ 116,090	\$ 285,500	\$ 6,000	\$ 999,993
Ops Executive	922	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Admin General	900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 36,000	\$ -	\$ -	\$ 36,000
Warehouse	918	\$ 400,883	\$ 6,655	\$ 3,290	\$ -	\$ 5,425	\$ -	\$ 10,008	\$ -	\$ 1,800	\$ 428,061
Water Quality (Lab)	321	\$ 465,793	\$ -	\$ 366,441	\$ -	\$ 97,100	\$ 2,030,004	\$ 119,710	\$ 767,671	\$ 840	\$ 3,847,559
Water Treatment Plant	322	\$ 5,110,378	\$ 5,273,861	\$ 899,823	\$ 1,815,800	\$ 1,164,000	\$ -	\$ 366,200	\$ 174,200	\$ 5,400,000	\$ 20,204,262
Water Distribution	325	\$ 11,087,425	\$ 1,772,300	\$ 2,470,000	\$ 3,924,204	\$ 3,894,300	\$ -	\$ 170,600	\$ 203,000	\$ 54,000	\$ 23,575,829
Sewer Operations	424	\$ 2,988,072	\$ 710,730	\$ 1,033,900	\$ 9,521,952	\$ 1,777,800	\$ -	\$ 64,000	\$ 350,000	\$ 72,000	\$ 16,518,454
Engineering & Construction	930	\$ 5,689,002	\$ -	\$ 47,100	\$ 1,505,111	\$ 460,260	\$ -	\$ 346,924	\$ 8,933,990	\$ 27,000	\$ 17,009,386
Environmental Compliance	999	\$ 498,032	\$ -	\$ 81,100	\$ 480,000	\$ 526,050	\$ -	\$ 78,735	\$ 2,678,200	\$ 49,680	\$ 4,391,797
Total		\$ 35,426,274	\$ 7,763,546	\$ 5,079,164	\$ 17,262,067	\$ 8,663,682	\$ 2,030,004	\$ 4,745,321	\$ 22,754,655	\$ 5,797,085	\$ 105,521,788

2018 FORECAST

Department Name	Department Number	Labor	Chemicals Materials Inventory	Equipment	Operating Contracts	Repair & Maintenance	Testing	Admin	Professional Services	Utilities	Total
Executive Director	910	\$ 379,694	\$ -	\$ 3,000	\$ -	\$ 126,200	\$ -	\$ 836,345	\$ 835,009	\$ 3,600	\$ 2,183,848
Customer Service	911	\$ 3,145,578	\$ -	\$ 22,000	\$ 232,470	\$ -	\$ -	\$ 1,158,792	\$ 2,144,419	\$ 5,400	\$ 6,708,658
MIS	912	\$ 799,330	\$ -	\$ 668,050	\$ -	\$ 498,792	\$ -	\$ 203,400	\$ 1,634,160	\$ 144,780	\$ 3,948,512
Finance	913	\$ 993,580	\$ -	\$ 18,100	\$ -	\$ -	\$ -	\$ 335,718	\$ 3,634,060	\$ 2,210	\$ 4,983,669
Procurement	914	\$ 391,228	\$ -	\$ 8,000	\$ -	\$ -	\$ -	\$ 12,962	\$ 152,000	\$ -	\$ 564,190
Human Resources	915	\$ 1,020,401	\$ -	\$ 44,320	\$ -	\$ -	\$ -	\$ 81,084	\$ 395,750	\$ 3,600	\$ 1,545,155
Legal	916	\$ 464,980	\$ -	\$ 5,400	\$ -	\$ -	\$ -	\$ 414,221	\$ 2,849,000	\$ 2,400	\$ 3,736,001
External Affairs	921	\$ 492,664	\$ -	\$ 4,000	\$ -	\$ -	\$ -	\$ 114,350	\$ 193,800	\$ 3,560	\$ 808,374
Ops Executive	922	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Admin General	900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 27,499	\$ -	\$ -	\$ 27,499
Warehouse	918	\$ 381,905	\$ 7,680	\$ 23,650	\$ 1,480	\$ 1,575	\$ -	\$ 3,784	\$ -	\$ 1,788	\$ 421,862
Water Quality (Lab)	321	\$ 393,878	\$ -	\$ 413,580	\$ -	\$ 89,700	\$ 2,177,501	\$ 139,525	\$ 734,404	\$ 1,152	\$ 3,949,740
Water Treatment Plant	322	\$ 4,186,610	\$ 5,779,256	\$ 452,364	\$ 2,615,400	\$ 1,498,616	\$ -	\$ 300,100	\$ 164,400	\$ 4,997,700	\$ 19,994,446
Water Distribution	325	\$ 10,584,939	\$ 2,764,318	\$ 149,900	\$ 5,171,926	\$ 3,566,200	\$ -	\$ 36,650	\$ 196,400	\$ 36,000	\$ 22,506,332
Sewer Operations	424	\$ 2,984,790	\$ 502,213	\$ 110,600	\$ 13,182,033	\$ 1,443,130	\$ -	\$ 24,500	\$ 353,400	\$ 60,000	\$ 18,660,666
Engineering & Construction	930	\$ 3,999,307	\$ -	\$ 366,439	\$ 330,000	\$ 348,029	\$ -	\$ 333,881	\$ 8,586,978	\$ 5,125	\$ 13,969,759
Environmental Compliance	999	\$ 360,489	\$ -	\$ 34,052	\$ 204,000	\$ 526,050	\$ 108,000	\$ 31,381	\$ 3,109,300	\$ -	\$ 4,373,272
Total		\$ 30,679,371	\$ 9,063,466	\$ 2,323,456	\$ 21,737,309	\$ 8,098,292	\$ 2,285,501	\$ 4,064,193	\$ 24,983,080	\$ 5,267,316	\$ 108,381,984

2017 ACTUALS

Department Name	Department Number	Labor	Chemicals Materials Inventory	Equipment	Operating Contracts	Repair & Maintenance	Testing	Admin	Professional Services	Utilities	Total
Executive Director	910	\$ 127,630	\$ -	\$ 2,901	\$ -	\$ 8,284	\$ -	\$ 1,556,171	\$ 1,073,167	\$ 3,163	\$ 2,771,316
Customer Service	911	\$ 2,305,052	\$ -	\$ 242,547	\$ 1,322,264	\$ -	\$ -	\$ 1,052,656	\$ 1,823,247	\$ 46,044	\$ 6,791,810
MIS	912	\$ 367,829	\$ -	\$ 336,882	\$ 75,329	\$ 717,979	\$ -	\$ 133,084	\$ 243,631	\$ 181,490	\$ 2,056,224
Finance	913	\$ 452,386	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 304,989	\$ 674,845	\$ 780	\$ 1,433,000
Procurement	914	\$ 204,618	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 13,380	\$ 63,867	\$ -	\$ 281,865
Human Resources	915	\$ 852,279	\$ -	\$ 1,488	\$ 2,138	\$ -	\$ -	\$ 5,002	\$ 92,325	\$ 1,846	\$ 955,078
Legal	916	\$ 220,146	\$ -	\$ 519	\$ -	\$ -	\$ -	\$ 231,600	\$ 1,777,103	\$ 1,525	\$ 2,230,893
External Affairs	921	\$ 318,294	\$ -	\$ 4,610	\$ 10,795	\$ -	\$ -	\$ 36,708	\$ 48,925	\$ 2,915	\$ 422,247
Ops Executive	922	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Admin General	900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 78,989	\$ -	\$ -	\$ 78,989
Warehouse	918	\$ 373,256	\$ 620,200	\$ -	\$ -	\$ -	\$ -	\$ 104,590	\$ -	\$ 1,128	\$ 1,099,174
Water Quality (Lab)	321	\$ 510,721	\$ -	\$ 19,626	\$ 25,192	\$ 20,937	\$ 847,118	\$ 95,656	\$ 86,433	\$ 1,323	\$ 1,607,006
Water Treatment Plant	322	\$ 3,413,413	\$ 3,970,586	\$ 78,609	\$ 770,544	\$ 507,581	\$ -	\$ 295,017	\$ 79,340	\$ 5,029,503	\$ 14,144,593
Water Distribution	325	\$ 7,367,574	\$ 815,336	\$ 585,464	\$ 2,601,354	\$ 2,741,321	\$ -	\$ 266,883	\$ 82,152	\$ 37,257	\$ 14,497,341
Sewer Operations	424	\$ 2,972,610	\$ 258,967	\$ 100,712	\$ 5,217,795	\$ 1,495,546	\$ 92	\$ 27,115	\$ 117,493	\$ 43,958	\$ 10,234,288
Engineering & Construction	930	\$ 2,025,234	\$ -	\$ 58,790	\$ 815,373	\$ 282,667	\$ -	\$ 85,030	\$ 7,957,585	\$ 2,201	\$ 11,226,880
Environmental Compliance	999	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total		\$ 21,511,042	\$ 5,665,089	\$ 1,432,148	\$ 10,840,784	\$ 5,774,316	\$ 847,210	\$ 4,286,870	\$ 14,120,113	\$ 6,363,133	\$ 69,830,704

Pittsburgh Water and Sewer Authority
Cost Increase Drivers

		Description	Primary Budget Items	Primary driver of Increase/ (decrease) from FY 2017 to FY 2018	Primary driver of Increase/ (decrease) from FY 2018 to FY 2019	Driver of Overall Increase in RevReq from FY 2017 to FY 2018	Driver of Overall Increase in RevReq from FY 2018 to FY 2019
<i>Direct Operating Expenses</i>							
Administrative Division							
	Executive Director	Provide strategic vision and manage the overall utility	Salaries/Benefits, Main office lease (Penn Ave), PUC annual allocation (new)	Decrease: fines/penalties paid in 2017	Increase: newly budgeted PUC regulatory expense (annual allocation)		X
	Customer Service	Engage customers for all questions and handle all billing activities	Salaries/Benefits, billing and metering analysis contracts, and AMI infrastructure	Increase: added positions for PUC Compliance and added administrative services for affordability program	Increase: Added positions for PUC Compliance		X
	Management Information Systems	Provide internally all hardware and software needs and technical support	Salaries/Benefits, hardware and software costs, and third party contracts for specialized support	Increase: Budgeted positions in 2017 were delayed being filled, cybersecurity upgrade, new phone system	Increase: 3 new positions		
	Finance	Develop annual budgets, conduct and maintain accurate accounting and payroll, and provide a strategic financing plan for funding capital projects	Salaries/Benefits and professional services contracts for financial consultants	Increase: \$1 million in bond issuance cost, financial consultants for PUC tariff and compliance plan filing	Decrease: No bond issuance cost and reduction of financial consulting services		
	Procurement	Manage the purchasing and contractual process for engaging outside vendors	Salaries/Benefits	Increase: added positions, consultants for outsourcing project	Decrease: Reduction of consulting services		
	Human Resources	Hire and provide onboarding for new employees and provide employee support for questions or concerns	Salaries/Benefits and for professional services contracts related to employee medical	Increase: added positions and increased recruitment budget	Minor change: added 1 more staff but reduced recruitment budget		
	Legal	Provide internal legal support for the interpretation of rules and regulations	Salaries/Benefits and for outside legal counsel for ongoing operation and for PUC filing legal counsel	Increase: Outside legal counsel for PUC filings	Decrease: reduced budgeted outside legal counsel		
	Public Affairs	Coordinate all external communication, including press releases, website, and community communications	Salaries/Benefits and materials for communications	Increase: Staff and consulting services for government relations and webpage redesign	Increase: consulting services for government relations, compliance, and public relations support		

Pittsburgh Water and Sewer Authority
Cost Increase Drivers

	Description	Primary Budget Items	Primary driver of increase/ (decrease) from FY 2017 to FY 2018	Primary driver of Increase/ (decrease) from FY 2018 to FY 2019	Driver of Overall increase in RevReq from FY 2017 to FY 2018	Driver of Overall Increase in RevReq from FY 2018 to FY 2019
Operations Division						
Environmental Compliance	Ensures compliance with regulatory agencies, including EPA and DEP	Salaries/Benefits, professional services contracts for maintaining MS4 and NDPES permits	New department in 2018	Minor change: increase in wage/benefit cost of existing staff	X	
Warehouse	Maintain and monitor inventory for water and sewer field operations	Salaries/Benefits and miscellaneous equipment	Decrease: reduced budgeted inventory items	Minor change: increase in wage/benefit cost of existing staff		
Ops Capital Assets	Cost Category still exists for one primary function of unforeseen shipping costs	Shipping costs				
Water Quality (Lab)	Regulatory and process control; sampling and analysis of drinking water	Salaries/benefits and CWM Operating Contract for lab services	Increase: consulting contract for CWM services	Decrease: minor reducing in budgeted testing costs and equipment		
Water Treatment Plant	Treat, produce, and pump high quality potable water into the water distribution system	Salaries/Benefits, chemicals, electricity and operating contracts for pumps and motors	Increase: new staff positions, chemical cost, operating contracts	Increase: New positions but reduced operating contracts, increase in electricity	X	
Sewer Operations	Repair and maintain the collection system, including catch basins and manholes	Salaries/Benefits, operating contracts and repairs supplies	Increase: catch basin cleaning and repair, ops contracts related to cleaning and televising of lines and manhole point location, inspection, and repair	Decrease: reduced anticipated catch basin cleaning and repairs	X	
Water Distribution	Repair and maintain the distribution system, including water mains, laterals, meters, and valves	Salaries/Benefits, operating contracts and repairs supplies	Increase: \$3 million in new budgeted positions to ramp up field work, \$2.5 million increase in emergency line repair contract and inspection, and increase in meters purchased	Increase: a few new positions, and significant replacement/addition to fleet	X	
Engineering & Construction Division						
Engineering & Construction	Planning and oversight of major capital projects included in PWSA's CIP	Salaries/Benefits, consulting contracts	Increase: Added staff positions to ramp up capital spend to meet new targets,	Increase: Added staff positions to ramp up capital spend to meet new targets, increased field inspections, increased consulting budgets		X

Pittsburgh Water and Sewer Authority
Cost Increase Drivers

Description	Primary Budget Items	Primary driver of Increase/ (decrease) from FY 2017 to FY 2018	Primary driver of Increase/ (decrease) from FY 2018 to FY 2019	Driver of Overall Increase in RevReq from FY 2017 to FY 2018	Driver of Overall Increase in RevReq from FY 2018 to FY 2019
<i>Other Operating Expenses</i>					
Loss / (Gain) on ALCOSAN Billings	Budgeted cost of uncollectibles on ALCOSAN pass through charges	Decrease: large adjustments in FY 2017 resulted in more paid than expected in HTY than budget.	Increase: Minor increase to reflect budgeted increase in rates		
Co-Op Agreement Op. Expenses - Water	Payment to the City for shared services (Water utility responsibility)	Decrease: Authority paid only 1/2 of the full year payment in FY 2017	Increase: Budget full payment in FY 2019		
Co-Op Agreement Op. Expenses - Sewer	Payment to the City for shared services (Sewer utility responsibility)	Decrease: Authority paid only 1/2 of the full year payment in FY 2017	Increase: Budget full payment in FY 2019		
Non-City Water Subsidy	City agreement for payment to Pennsylvania American Water (PAWC) to subsidize customer water rates served by PAWC but within City service area	Decrease: with increase in PWSA rates, the resulting subsidy is reduced.	No Change		
Affordability Program	Any additional affordability program costs not captured in department budgets	No budgeted dollars	No budgeted dollars		
<i>Debt Service</i>					
<i>Existing Debt</i>					
Senior Debt Service	Total annual payment for outstanding senior lien debt	Decrease: Less annual payment in FY 2018 as a result of refunding	Increase: FY 2019 reflects full payment		
Subordinate Debt Service	Total annual payment for outstanding subordinate lien debt	Increase: minor increase in debt based on payment schedules	No Change		
<i>Subtotal: Existing Debt</i>					
<i>Proposed Debt</i>					
Revolving Line of Credit Interest	Interest cost for funds from the capital revolving line of credit	Increase: More money drawn from revolver	Increase: More money drawn from revolver		
Revenue Bonds	Total annual payment for proposed senior lien debt for new money		Increase: New money in FY 2019 resulting in additional debt service payments.		X
SRF Loans	Total annual payment for proposed subordinate lien debt for new money	No budgeted dollars	No budgeted dollars		

Pittsburgh Water and Sewer Authority
Cost Increase Drivers

Description		Primary Budget Items	Primary driver of increase/ (decrease) from FY 2017 to FY 2018	Primary driver of increase/ (decrease) from FY 2018 to FY 2019	Driver of Overall Increase in RevReq from FY 2017 to FY 2018	Driver of Overall Increase in RevReq from FY 2018 to FY 2019
<u>Capital Expenditures & Transfers</u>						
Rate Funded Capital (PAYGO)	Pay-as-you-go capital, which is funding for capital projects out of annual rate revenues (not financed)		No change	Increase: ramping up rate funded capital spending		
DISC Deposit	No longer applicable		No budgeted dollars	No budgeted dollars		
Other Transfers to Reserves	Contribution to PWSA reserve funds for improving days cash on hand or for rate stabilization fund		Decrease: reduced budgeted transfer to reserves in FY 2018	Increase: ramping up reserve fund levels to meet financial targets		X
Reimbursements (Municipalities & Pennvest)	Reimbursements from agreements with Pennvest and neighboring Municipalities					
Remarketing & Liquidity Charges	Annual expenses related to SWAP agreements		Only minor change	No change		
Bad Debt Expense	Expense of uncollectibles; in our approach, rather than showing an expense, we applied a 'collection factor' to anticipated operating revenue (user charge revenue) that accounted for 4.43% of revenue uncollected as a result of customers not paying their bills		No budgeted dollars: reflected in revenue calculation	No budgeted dollars: reflected in revenue calculation		

Exhibit DML-4

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
	<i>Actual</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>
Water							
Operating Expenses							
<i>Direct Operating Expenses</i>							
Administrative Division							
Executive Director	\$ 1,987,831	\$ 1,566,448	\$ 2,401,277	\$ 2,459,267	\$ 2,518,811	\$ 2,579,958	\$ 2,642,754
Customer Service	2,987,202	2,942,329	3,468,914	3,571,025	3,676,488	3,785,420	3,897,946
Management Information Systems	1,474,904	2,832,220	2,267,765	2,332,279	2,398,793	2,467,374	2,538,090
Finance	1,027,874	3,574,724	2,718,330	2,789,521	2,862,807	2,938,257	3,015,942
Procurement	202,178	404,687	330,982	343,396	356,290	369,683	383,595
Human Resources	685,066	1,108,321	1,135,239	1,174,356	1,214,909	1,256,952	1,300,542
Legal	1,600,192	2,679,788	1,669,575	1,710,224	1,751,976	1,794,866	1,838,927
Public Affairs	302,873	579,837	717,283	740,044	763,597	787,970	813,194
Operations Division							
Environmental Compliance	-	1,530,645	1,537,129	1,575,163	1,614,211	1,654,303	1,695,468
Ops Capital Assets	56,658	19,725	25,822	26,339	26,866	27,403	27,951
Warehouse	788,424	302,596	307,043	318,997	331,423	344,338	357,762
Water Treatment Plant	14,144,593	19,994,446	20,204,262	20,800,577	21,415,607	22,049,971	22,704,309
Water Quality (Lab)	1,607,006	3,949,740	3,847,559	3,958,761	4,073,309	4,191,305	4,312,858
Water Distribution	14,497,341	22,506,332	23,575,829	24,298,965	25,126,701	25,983,551	26,870,565
Sewer Operations	-	-	-	-	-	-	-
Engineering & Construction Division							
Engineering & Construction	7,818,667	9,728,874	11,845,743	12,175,912	12,516,275	12,867,174	13,228,966
<i>Subtotal: Direct Operating Expenses</i>	<i>\$ 49,180,809</i>	<i>\$ 73,720,710</i>	<i>\$ 76,052,754</i>	<i>\$ 78,274,828</i>	<i>\$ 80,648,062</i>	<i>\$ 83,098,523</i>	<i>\$ 85,628,868</i>
<i>Other Operating Expenses</i>							
Loss / (Gain) on ALCOSAN Billings	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Co-Op Agreement Op. Expenses - Water	2,075,000	4,150,000	4,150,000	4,150,000	4,150,000	4,150,000	4,150,000
Co-Op Agreement Op. Expenses - Sewer	-	-	-	-	-	-	-
Non-City Water Subsidy	5,260,476	4,800,000	4,800,000	4,800,000	4,800,000	4,800,000	4,800,000
<i>Subtotal: Other Operating Expenses</i>	<i>\$ 7,335,476</i>	<i>\$ 8,950,000</i>	<i>\$ 8,950,000</i>	<i>\$ 8,950,000</i>	<i>\$ 8,950,000</i>	<i>\$ 8,950,000</i>	<i>\$ 8,950,000</i>
<i>Subtotal: Operating Expenses</i>	<i>\$ 56,516,285</i>	<i>\$ 82,670,710</i>	<i>\$ 85,002,754</i>	<i>\$ 87,224,828</i>	<i>\$ 89,598,062</i>	<i>\$ 92,048,523</i>	<i>\$ 94,578,868</i>
Debt Service							
<i>Existing Debt</i>							
Senior Debt Service	\$ 25,713,092	\$ 24,022,710	\$ 25,673,301	\$ 25,702,063	\$ 25,579,444	\$ 25,540,177	\$ 25,204,741
Subordinate Debt Service	2,242,409	2,639,197	2,639,197	2,639,197	2,639,197	2,639,197	2,639,197
<i>Subtotal: Existing Debt</i>	<i>\$ 27,955,502</i>	<i>\$ 26,661,907</i>	<i>\$ 28,312,498</i>	<i>\$ 28,341,260</i>	<i>\$ 28,218,641</i>	<i>\$ 28,179,374</i>	<i>\$ 27,843,937</i>
<i>Proposed Debt</i>							
Revolving Line of Credit Interest	\$ 438,257	\$ 1,009,123	\$ 1,221,774	\$ 1,048,709	\$ 1,267,573	\$ 1,368,494	\$ 1,348,276
Revenue Bonds	-	-	7,245,984	16,931,195	23,760,834	37,146,358	49,611,976
SRF Loans	-	-	-	-	-	-	-
<i>Subtotal: Proposed Debt</i>	<i>\$ 438,257</i>	<i>\$ 1,009,123</i>	<i>\$ 8,467,758</i>	<i>\$ 17,979,904</i>	<i>\$ 25,028,407</i>	<i>\$ 38,514,852</i>	<i>\$ 50,960,252</i>
<i>Subtotal: Debt Service</i>	<i>\$ 28,393,759</i>	<i>\$ 27,671,030</i>	<i>\$ 36,780,256</i>	<i>\$ 46,321,164</i>	<i>\$ 53,247,048</i>	<i>\$ 66,694,226</i>	<i>\$ 78,804,190</i>
Capital Expenditures & Transfers							
Rate Funded Capital (PAYGO)	\$ -	\$ -	\$ 1,086,910	\$ 2,458,606	\$ 4,869,311	\$ 7,325,211	\$ 10,558,532
Other Transfers to Reserves	1,932,706	1,229,257	3,503,383	2,151,200	5,224,343	3,995,086	3,995,086
Reimbursements (Municipalities & Pennvest)	(793,929)	-	-	-	-	-	-
Remarketing & Liquidity Charges	811,603	-	-	-	-	-	-
<i>Subtotal: Capital Expenditures & Transfers</i>	<i>\$ 1,950,380</i>	<i>\$ 1,229,257</i>	<i>\$ 4,590,293</i>	<i>\$ 4,609,806</i>	<i>\$ 10,093,653</i>	<i>\$ 11,320,297</i>	<i>\$ 14,553,618</i>
Total: Water	\$ 86,860,424	\$ 111,570,997	\$ 126,373,303	\$ 138,155,798	\$ 152,938,764	\$ 170,063,046	\$ 187,936,675
% Change		28.45%	13.27%	9.32%	10.70%	11.20%	10.51%

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>
	<i>Actual</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>	<i>Forecast</i>
Wastewater Conveyance							
Operating Expenses							
<i>Direct Operating Expenses</i>							
Administrative Division							
Executive Director	\$ 783,485	\$ 617,401	\$ 946,441	\$ 969,297	\$ 992,766	\$ 1,016,866	\$ 1,041,617
Customer Service	3,804,608	3,766,330	4,370,754	4,501,616	4,636,832	4,776,559	4,920,959
Management Information Systems	581,320	1,116,293	893,818	919,246	945,462	972,492	1,000,364
Finance	405,127	1,408,944	1,071,404	1,099,464	1,128,348	1,158,086	1,188,705
Procurement	79,687	159,503	130,454	135,346	140,428	145,707	151,190
Human Resources	270,012	436,834	447,444	462,861	478,845	495,416	512,596
Legal	630,701	1,056,213	658,047	674,069	690,525	707,429	724,796
Public Affairs	119,374	228,537	282,710	291,682	300,965	310,571	320,513
Operations Division							
Environmental Compliance	-	2,842,627	2,854,668	2,925,302	2,997,820	3,072,276	3,148,726
Ops Capital Assets	22,331	7,774	10,178	10,381	10,589	10,801	11,017
Warehouse	310,750	119,265	121,018	125,730	130,627	135,717	141,008
Water Treatment Plant	-	-	-	-	-	-	-
Water Quality (Lab)	-	-	-	-	-	-	-
Water Distribution	-	-	-	-	-	-	-
Sewer Operations	10,234,288	18,660,666	16,518,454	17,035,306	17,568,688	18,119,139	18,687,217
Engineering & Construction Division							
Engineering & Construction	3,408,213	4,240,885	5,163,643	5,307,567	5,455,933	5,608,893	5,766,600
Subtotal: Direct Operating Expenses	\$ 20,649,895	\$ 34,661,273	\$ 33,469,034	\$ 34,457,867	\$ 35,477,828	\$ 36,529,953	\$ 37,615,309
<i>Other Operating Expenses</i>							
Loss / (Gain) on ALCOSAN Billings	\$ 8,759,535	\$ 3,457,699	\$ 3,699,738	\$ 3,958,720	\$ 4,235,830	\$ 4,447,622	\$ 4,670,003
Co-Op Agreement Op. Expenses - Water	-	-	-	-	-	-	-
Co-Op Agreement Op. Expenses - Sewer	1,500,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000
Non-City Water Subsidy	-	-	-	-	-	-	-
Subtotal: Other Operating Expenses	\$ 10,259,535	\$ 6,457,699	\$ 6,699,738	\$ 6,958,720	\$ 7,235,830	\$ 7,447,622	\$ 7,670,003
Subtotal: Operating Expenses	\$ 30,909,430	\$ 41,118,973	\$ 40,168,772	\$ 41,416,587	\$ 42,713,659	\$ 43,977,574	\$ 45,285,312
Debt Service							
<i>Existing Debt</i>							
Senior Debt Service	\$ 21,591,085	\$ 20,171,684	\$ 21,557,673	\$ 21,581,824	\$ 21,478,862	\$ 21,445,890	\$ 21,164,226
Subordinate Debt Service	1,882,934	2,216,113	2,216,113	2,216,113	2,216,113	2,216,113	2,216,113
Subtotal: Existing Debt	\$ 23,474,019	\$ 22,387,798	\$ 23,773,786	\$ 23,797,937	\$ 23,694,975	\$ 23,662,003	\$ 23,380,339
<i>Proposed Debt</i>							
Revolving Line of Credit Interest	\$ 172,735	\$ 257,814	\$ 464,347	\$ 657,475	\$ 554,659	\$ 499,703	\$ 567,155
Revenue Bonds	-	-	2,478,557	7,551,022	11,070,723	17,228,404	22,174,927
SRF Loans	-	-	-	-	-	-	-
Subtotal: Proposed Debt	\$ 172,735	\$ 257,814	\$ 2,942,904	\$ 8,208,497	\$ 11,625,381	\$ 17,728,107	\$ 22,742,082
Subtotal: Debt Service	\$ 23,646,754	\$ 22,645,611	\$ 26,716,690	\$ 32,006,434	\$ 35,320,356	\$ 41,390,110	\$ 46,122,421
Capital Expenditures & Transfers							
Rate Funded Capital (PAYGO)	\$ -	\$ -	\$ 413,090	\$ 1,541,394	\$ 2,130,689	\$ 2,674,789	\$ 4,441,468
Other Transfers to Reserves	1,211,804	770,743	2,196,617	1,348,800	3,275,657	2,504,914	2,504,914
Reimbursements (Municipalities & Pennvest)	-	-	-	-	-	-	-
Remarketing & Liquidity Charges	681,497	-	-	-	-	-	-
Subtotal: Capital Expenditures & Transfers	\$ 1,893,301	\$ 770,743	\$ 2,609,707	\$ 2,890,194	\$ 5,406,347	\$ 5,179,703	\$ 6,946,382
Total: Wastewater Conveyance	\$ 56,449,485	\$ 64,535,327	\$ 69,495,169	\$ 76,313,215	\$ 83,440,362	\$ 90,547,388	\$ 98,354,116
<i>% Change</i>		<i>14.32%</i>	<i>7.69%</i>	<i>9.81%</i>	<i>9.34%</i>	<i>8.52%</i>	<i>8.62%</i>

Pittsburgh Water and Sewer Authority
Breakdown of FPFTY Wastewater Conveyance Revenue Requirements

	<u>FPFTY</u> <i>Sewer Only</i>	<u>FPFTY</u> <i>Stormwater Only</i>	<u>FPFTY</u> <i>WW Conveyance</i>
Wastewater Conveyance			
<u>Operating Expenses</u>			
<i>Direct Operating Expenses</i>			
Administrative Division			
Executive Director	\$ 283,932	\$ 662,509	\$ 946,441
Customer Service	4,370,754	-	4,370,754
Management Information Systems	268,146	625,673	893,818
Finance	321,421	749,983	1,071,404
Procurement	39,136	91,318	130,454
Human Resources	134,233	313,211	447,444
Legal	197,414	460,633	658,047
Public Affairs	84,813	197,897	282,710
Operations Division			
Environmental Compliance	856,400	1,998,268	2,854,668
Ops Capital Assets	3,053	7,124	10,178
Warehouse	36,305	84,713	121,018
Water Treatment Plant	-	-	-
Water Quality (Lab)	-	-	-
Water Distribution	-	-	-
Sewer Operations	15,198,454	1,320,000	16,518,454
Engineering & Construction Division			
Engineering & Construction	1,927,038	3,236,606	5,163,643
<i>Subtotal: Direct Operating Expenses</i>	\$ 23,721,101	\$ 9,747,934	\$ 33,469,034
<i>Other Operating Expenses</i>			
Loss / (Gain) on ALCOSAN Billings	\$ 3,699,738	\$ -	\$ 3,699,738
Co-Op Agreement Op. Expenses - Water	-	-	-
Co-Op Agreement Op. Expenses - Sewer	1,500,000	1,500,000	3,000,000
Non-City Water Subsidy	-	-	-
<i>Subtotal: Other Operating Expenses</i>	\$ 5,199,738	\$ 1,500,000	\$ 6,699,738
<i>Subtotal: Operating Expenses</i>	\$ 28,920,839	\$ 11,247,934	\$ 40,168,772
<u>Debt Service</u>			
<i>Existing Debt</i>			
Senior Debt Service	\$ 6,898,455	\$ 14,659,217	\$ 21,557,673
Subordinate Debt Service	709,156	1,506,957	2,216,113
<i>Subtotal: Existing Debt</i>	\$ 7,607,611	\$ 16,166,174	\$ 23,773,786
<i>Proposed Debt</i>			
Revolving Line of Credit Interest	\$ 180,281	\$ 284,066	\$ 464,347
Revenue Bonds	899,294	1,579,264	2,478,557
SRF Loans	-	-	-
<i>Subtotal: Proposed Debt</i>	\$ 1,079,574	\$ 1,863,330	\$ 2,942,904
<i>Subtotal: Debt Service</i>	\$ 8,687,186	\$ 18,029,504	\$ 26,716,690
<u>Capital Expenditures & Transfers</u>			
Rate Funded Capital (PAYGO)	\$ 160,380	\$ 252,710	\$ 413,090
Other Transfers to Reserves	2,196,617	-	2,196,617
Reimbursements (Municipalities & Pennvest)	-	-	-
Remarketing & Liquidity Charges	-	-	-
<i>Subtotal: Capital Expenditures & Transfers</i>	\$ 2,356,998	\$ 252,710	\$ 2,609,707
Total: Wastewater Conveyance	\$ 39,965,022	\$ 29,530,147	\$ 69,495,169

Pittsburgh Water and Sewer Authority
Allocation Factors - Between Utilities

Allocations to Utilities (Revenue Requirements & Assets)				
<i>Code</i>	<i>Description</i>	<i>Water</i>	<i>Sewer</i>	<i>Stormwater</i>
A	Water Only	100.00%		
B	Wastewater Only		100.00%	
C	Stormwater Only			100.00%
D	Customer Service - Meters	50.53%	49.47%	
E	Customer Bills	42.97%	57.03%	0.00%
F	Operations Cost	71.73%	8.48%	19.79%
G	Engineering and Construction	69.64%	11.33%	19.03%
H	Environmental Compliance	35.00%	19.50%	45.50%
I	Customer Service - Composite	44.25%	55.75%	0.00%
J	Wastewater - Conveyance	0.00%	30.00%	70.00%
K	Existing Debt Service - Assets	54.36%	14.61%	31.04%
L	Placeholder			

Sewer / Stormwater Allocation Factor Detail (1)

	Sewer	Stormwater
Conveyance	30.00%	70.00%
Debt Service	32.00%	68.00%
Customer Service	63.00%	37.00%
General & Admin	94.00%	6.00%
Placeholder	50.00%	50.00%
Placeholder	50.00%	50.00%

(1) Allocation of costs between sewer and stormwater utilizes factors derived by Black & Veatch during the 2015 Stormwater Feasibility Study.

**Pittsburgh Water and Sewer Authority
Allocation Factor Detail**

Factor Derivations - Allocation to Utilities				
<i>Code(s)</i>	<i>Description</i>		<i>Calculations</i>	
D	Customer Service - Meters			
	- This factor uses water and sewer meters to allocate meter costs between utilities	Water Meters Water & Sewer Meters	<u>2017</u> 75,328 <u>73,746</u> 149,074	<u>Factor</u> 50.53% 49.47%
E	Customer Bills			
	- This factor uses water and sewer bills to allocate billing costs between utilities	Water Bills Sewer Bills	<u>2017</u> 906,348 <u>1,203,002</u> 2,109,350	<u>Factor</u> 42.97% 57.03%
F	Operations Costs			
	- This factor uses the allocation of the operations budget category as a composite allocation for allocating administrative costs to the utilities	Water Wastewater Stormwater	<u>2019 Costs</u> \$ 49,497,645 16,094,213 <u>3,410,105</u> \$ 69,001,962	<u>Factor</u> 71.73% 23.32% 4.94%
G	Engineering & Construction			
	- This factor uses the 2018-2022 CIP to allocate engineering and construction costs between utilities.	Water Wastewater Stormwater	<u>2018-2022 CIP (\$000)</u> \$ 763,250 124,164 <u>208,542</u> \$ 1,095,957	<u>Factor</u> 69.64% 11.33% 19.03%
H	Environmental Compliance			
	- This factor is based on PWSA Staff estimates of 35% of Environmental Compliance costs being water-related. The wastewater portion is allocated 30/70 to wastewater/stormwater based on Black & Veatch 2016 estimates of conveyance costs.	Water Wastewater Stormwater	<u>Factor</u> 35.00% 19.50% 45.50%	
I	Customer Service - Composite			
	- This factor is a composite allocation of the allocated Customer Service (911) budget between to allocate Customer Service assets between the utilities.	Water Wastewater Stormwater	<u>2019 Budget</u> \$ 3,468,914 4,370,754 <u>-</u> \$ 7,839,668	44.25% 55.75% 0.00%
K	Existing Debt Service - Assets			
	- Existing system debt service is allocated between utilities by using system fixed assets. Non-water assets are allocated 32/68 to wastewater/stormwater based on Black & Veatch 2016 estimates of conveyance costs.	Water Wastewater Stormwater	<u>Factor</u> 54.36% 14.61% 31.04%	

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

TESTIMONY OF

KATHERINE L. CLUPPER

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

DOCKET Nos. R-2018-3002645 and R-2018-3002647

Pittsburgh Water and Sewer Authority
Initial Tariff Filing and Rate Request

July 2, 2018

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

3 A. Katherine L. Clupper. I am currently a Managing Director and Partner with PFM
4 Financial Advisors, LLC (“PFM”). The business address is 1735 Market Street,
5 Philadelphia, Pennsylvania 19103.

6 **Q. PLEASE DESCRIBE PFM.**

7 A. PFM is a national independent financial advisory firm serving municipal and non-profit
8 issuers. PFM is a registered municipal advisor with the Municipal Securities Rulemaking
9 Board and the Securities Exchange Commission. PFM is the largest municipal advisor to
10 municipal utilities, including water, sewer, gas and power utilities located across the
11 country.

12 **Q. SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS.**

13 A. At PFM, I am the head of the municipal practice located in the Philadelphia office, which
14 provides financial advisory services to a range of issuers in the Mid-Atlantic region. I am
15 a member of the public utilities sector group at PFM. My background includes 30 years
16 in this industry, including working for investment banking firms as well as another
17 regional municipal advisor. PFM provides services related to entering into the capital
18 markets, developing and implementing rating agency strategies, developing credit
19 profiles for investor outreach, debt structuring and managing and transaction
20 management. I, and members of my group, have worked with similar water & sewer
21 clients over the years, including City of Baltimore Water & Sewer Enterprise, North Penn
22 Water Authority, Philadelphia Water Department, the City of Wilmington Sewer
23 Enterprise, New Jersey Trust and DC WASA. I have served as financial advisor to the
24 Pittsburgh Water & Sewer Authority (“PWSA” or “Authority”)) since 2013. Additional

1 information regarding PFM's experience in water & sewer financings and a
2 representative list of clients can be found in Appendix A.

3 **Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.**

4 A. I hold an undergraduate degree from Shippensburg University and a Master of Business
5 Administration from Temple University. I am a registered Municipal Advisor
6 Representative with a Series 50.

7 **Q. HAVE YOU EVER TESTIFIED BEFORE ANY REGULATORY AGENCIES OR**
8 **LEGAL PROCEEDINGS?**

9 A. No, I have not testified before any regulatory agency, but have provided similar
10 testimony for the Philadelphia Water Department Rate Board hearings.

11 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

12 A. We have been asked by PWSA to provide expert testimony relating to the rate case
13 pending with the Pennsylvania Public Utility Commission ("PUC"), specifically related
14 to the financial policies and goals of the PWSA in connection with the requested rate
15 increase pending with the PUC. This testimony will show that the requested rate increase
16 is critical to PWSA in maintaining its credit rating needed to successfully enter the bond
17 market and achieve a cost of capital that benefits rate payers. Additionally, PWSA has
18 several bank and swap agreements that have ratings-related cost increases and
19 termination triggers that make maintaining certain credit ratings even more critical.
20 Finally, credit ratings are a reflection of the financial strength of a system which are an
21 indicator of the financial sustainability and the ability to address the critical capital needs
22 of the system facing the Authority.

23 The financial metrics developed by PWSA will be discussed in comparison to
24 peer systems and industry rating criteria. I will discuss the importance of the metrics and

1 how they should be viewed as a minimum level, critical for the PWSA to continue
2 functioning at the current credit profile. The requested financial requirements are well
3 within the current industry standards. Also noted is the necessity of a municipal utility to
4 maintain a certain level of liquidity and debt service coverage in order to have available
5 internally generated funds required to fund critical capital needs and to have a cushion to
6 mitigate any unforeseen financial or operational emergencies. Publically owned utilities
7 have only two sources of funds to address operational and capital needs; revenues
8 generated from rates and fees and proceeds from debt issuance (which are then recovered
9 from ratepayers). This is different from investor owned utilities that can also rely on
10 investor equity.

11 In this testimony I have relied on my professional experience in working with
12 similar issuers and credits entering the capital markets as well as the experience of PFM's
13 other utility professionals. I have also examined materials, documents, and information
14 produced in this matter, including the testimony of other PWSA witnesses, PWSA bond
15 disclosure statements, PWSA financial statements, and rating agency publications related
16 to PWSA as well as industry and peer related reports.

17 **II. BACKGROUND FOR CONSIDERATION OF RATE REQUEST**

18 **Q. WHAT IS THE STRUCTURE OF THE AUTHORITY'S CURRENT DEBT**
19 **PROFILE?**

20 A. PWSA has currently outstanding \$676,277 million of bonds outstanding, comprised of
21 \$572,617 million (85%) issued under the Senior Lien and \$103,660 million (15%) issued
22 as Subordinate Bonds. Additionally there is approximately \$31 million outstanding of
23 Pennvest Loans, issued as a third lien, as well as a line of credit of \$80 million for
24 construction purposed of which \$47 million has been drawn as of June 18, 2018. Of the

1 outstanding debt, \$322,465 million (48%) is issued as variable rate bonds, hedged with
2 interest rate swap agreements (with the exception of \$2,085 million of the Senior Lien
3 which is unhedged). Of the variable rate debt, \$218,805 million was issued as publically
4 issued Floating Rate Notes with a mandatory tender date of December 1, 2020. A
5 mandatory tender requires that the Authority purchase the bonds on the tender date with
6 proceeds from a remarketing, which could be from another public offering or a private
7 bank loan. The remaining \$103,660 million is issued as privately placed floating rate
8 bank loans pursuant to three different bank agreements with Bank of America, N.A.
9 affiliate (Banc of American Preferred Funding Corporation) (“BofA”) and JPMorgan
10 Chase Bank, N.A. affiliate (DNT Asset Trust) (“JPM”). The hedged variable rate debt
11 has related interest rate swap agreements with Merrill Lynch Capital Services Inc.
12 (“BofA Swaps”) and JPMorgan Chase Bank, National Association (“JPM Swaps”). If
13 the Swap Agreements were terminated as of June 15, 2018, the Authority would owe the
14 swap providers \$73,539,332; including accrued interest the amount owed would be
15 \$76,789,131. This termination amount is impacted by prevailing interest rates and the
16 life of the outstanding swap amount. The Debt and Swap Portfolio Summary is attached
17 in Exhibit KLC-1.

18 In addition to the financial and other covenants required in the governing Trust
19 Indenture, the Authority has several bank agreements and swap agreements, all with
20 separate events of default and termination events. With the exception of the Series B of
21 2013, all of the outstanding bonds are secured with a Surety Policy with Assured
22 Guaranty Municipal Corp. (“AGM”) to meet the debt service reserve requirement (6.55%
23 of the DSRF obligation) of the Trust Indenture. This Surety Policy also has certain

1 agreements related to the interest rate swap agreements, also insured by AGM, with
2 regards to certain to termination events. The Series 1998 Series B Bonds are also
3 partially insured by National Public Finance Guaranty Corporation (“NPFGC”) who has
4 placed additional restrictions on interim borrowings against the Senior Lien. Many of
5 these transactions were entered into before the fiscal crisis and the related bank and bond
6 insurer credit downgrades and at that time were viewed as cost effective. Since that time,
7 the Authority has had to spend significant resources in replacing bank agreements,
8 restructuring swap agreements and reaching certain side agreements with the bond
9 insurers. Even with these changes the risks inherent to this debt portfolio are significant.

10 These risks include interest rate risk on the variable rate debt resulting from the
11 mismatch in the floating rate paid to the Authority from the swap providers and the
12 floating rate paid by the Authority to the bond holders. This mismatch is caused by the
13 recent income tax changes and the related increased cost provisions in the bank
14 documents. Additionally all of the bank agreements have increased pricing triggered due
15 to any future credit rating downgrades. The swap agreements have rating triggers related
16 to the bond insurer as well as the Authority that could result in a termination event. As a
17 result of the Authority’s debt being secured by Surety Policies, any refunding or
18 restructuring requires bond insurer approval, or the Authority would need to fund these
19 debt service reserve funds with cash.

20 **Q. PLEASE SUMMARIZE THE CREDIT AGENCIES VIEW OF THE**
21 **AUTHORITY’S DEBT STRUCTURE.**

22 **A.** In addition to the complicated nature of the debt portfolio, PWSA is also highly levered
23 compared to other systems. As mentioned by Moody’s, “the Authority’s total debt is
24 equal to 105% of fixed assets, well above similarly sized peers. The outstanding debt

1 amortizes slowly, with only 36% of the principal scheduled to be repaid in the next 10
2 years.” As a comparison, the Moody’s “A” rated 2016 median for US combined systems
3 is 47.9% and 31.3% median for all systems. This is compounded by the structure of
4 PWSA’s currently outstanding debt service which remains approximately \$50 million a
5 year until 2040 (as of June 1, 2018). This is a result of many years of structuring bond
6 financings with deferred principal in order minimize rate increases. This will further
7 increase the impact of any future bond financings as there will not be the necessary
8 ongoing principal retirement necessary to mitigate the impact of future borrowing.

9 **Q. PLEASE DISCUSS THE CURRENT GOVERNING BOND DOCUMENT.**

10 A. The main governing document is:

11 **Amended and Restated Indenture:** In 2017, the Authority refunded most of its
12 outstanding debt and restructured certain swap agreements for an overall present value
13 debt service benefit of \$13 million and to provide the opportunity to amend and restate
14 the Senior Lien Bond documents. The goal was to modernize certain provisions and
15 strengthen financial covenants, which should result in increased future liquidity and
16 financial sustainability. The most important change was to strengthen the debt service
17 coverage requirement from the previous covenant that allowed the Authority to use
18 unrestricted cash and investments to achieve the required 1.2 times coverage on the
19 senior lien to a more typical covenant that requires coverage to be achieved with current
20 revenues and transfers from a rate stabilization fund. Described below are some of the
21 more significant changes.

Recommendation	Past Provisions	Current
Rate Covenant (Begin January 1, 2019; calculation will be done in 2020 for fiscal year 2019.)	The Authority was previously required to satisfy one of the two coverage tests below: (1) Net Revenues shall not be less than: (a) all Current Expenses of the Authority; and (b) 120% of debt service requirements with respect to the Senior Bonds, Subordinate Bonds and other Authority Long-Term Indebtedness during the current Authority Fiscal Year (2) Net Revenues shall not be less than: (a) all Current Expenses of the Authority; and (b) 100% of debt service requirements with respect to the Senior Bonds, Subordinate Bonds and other Authority Long-Term Indebtedness during the current Authority Fiscal Year	The Authority is required to satisfy the three requirements below: (1) Net Revenues shall be sufficient in each Fiscal Year to pay Annual Senior Debt Service, Annual Subordinate Debt Service, all deposits to satisfy Reserve Requirements and any additional Authority Indebtedness in that Fiscal Year (2) Net Revenues shall not be less than 125% of Annual Senior Debt Service, plus 110% of aggregate Annual Debt Service in that Fiscal Year (3) Rate Covenant Net Revenues, excluding transfers from the Rate Stabilization Fund, shall equal not less than 100% of aggregate Annual Debt Service Rate Covenant Net Revenues include Net Revenues plus any transfers from the Rate Stabilization Fund to the Revenue Fund; less any transfers to the Rate Stabilization Fund to the Revenue Fund. To begin January 1, 2019
Rate Stabilization Fund	Not Included	Funds from the Revenue Fund can be transferred into the RSF and used in the calculation of Net Revenues for the purposes of the Rate Covenant.
Debt Service Reserve Fund	Maximum Annual Debt Service requirement for all bond outstanding	Ability to establish a common or separate debt service reserve fund.
Annual Debt Service	Limited definitions regarding calculation of debt service	Expanded the definition to include more debt options such as interim debt and tender indebtedness.

Additionally the amendments reorganized the Flow of Funds between the Senior and Subordinate lien in the Indenture. It should be noted that with regard to the City's Cooperation Payment, this expenses is specifically not included as an expense for purposes of calculating the rate covenant. The City's Cooperation Payment in the FPFTY will be \$7,150,000.

- i. Revenue Fund – All revenues received by the Authority must be deposited into the Revenue Fund.
- ii. Operating Fund – The Authority shall transfer from the Revenue Fund to the Operating Fund from time to time amounts needed to pay Current Expenses.

- 1 iii. Debt Service Fund – On the 20th day of each month before debt service is due,
2 the Authority shall transfer to: (1) senior debt service fund (including periodic
3 payments of swap agreements); (2) the senior debt service reserve fund, if
4 needed; (3) the subordinated debt service fund (including periodic payments
5 of swap agreements); (4) the subordinated debt service reserve fund, if
6 needed; (5) any payments owed to swap providers other than periodic
7 payments.
- 8 iv. Operating Reserve Fund – Amounts necessary to restore the operating reserve
9 requirement of 1/6th of current expenses of the most recent annual audited
10 financial statements. Such amounts shall be restored if drawn upon within 24
11 months of the withdrawal by depositing 1/24 of the operating reserve
12 requirement monthly.
- 13 v. City Cooperation Agreement – Amounts owed to the City pursuant to the
14 Agreement.
- 15 vi. Any funds remaining in the Revenue Fund after all of the previous required
16 payments have been made can be transferred to the Rate Stabilization Fund;
17 the Debt Service Fund; the Operating Fund to pay for construction or capital
18 projects.

19 Funds that would be considered in any liquidity metric would include balances in
20 the Operating Fund, Rate Stabilization Fund and the Operating Reserve Fund.

21 **Q. PLEASE DESCRIBE THE KEY FINANCIAL METRICS THAT WILL DRIVE**
22 **THE REVENUE REQUIREMENT AND THE RESULTING IMPACT ON THE**
23 **AUTHORITY’S CREDIT PROFILE.**

- 24 A. Currently the Authority is rated “A2” by Moody’s with a negative outlook. A negative
25 outlook indicates that there are significant credit pressures and can signal a downgrade if
26 certain actions are not taken. Moody’s specifically mentions that “the Authority
27 maintains pronounced risks associated with its debt profile in the face of already-narrow
28 coverage levels”. These risks can be mitigated with appropriate liquidity and debt service
29 coverage resulting from the proposed rate increase at the requested levels.

1 The Authority is rated “A” by S&P with a stable outlook. S&P also mentions the
2 complex nature of the Authority’s debt and makes it clear that contingent risks are
3 mitigated in part by the assumption of continued improvement in management,
4 operations and maintaining certain financial metrics.

5 Critical to the revenue requirement are financial policies that support the financial
6 sustainability of the Authority, insuring a minimum rating in the “A” category which will
7 provide affordable access to the bond market and other financial institutions. Financial
8 policies include minimum debt service coverage levels, minimum levels of liquidity or
9 unrestricted funds, and the ability to manage future debt capacity by funding a portion of
10 the capital program with internally generated funds or “pay-go”. Both Moody’s and S&P
11 are specific in their discussions that certain financial metrics must be achieved and
12 maintained in order to maintain the current credit profile.

13 The first key metric is debt service coverage, which as discussed previously is
14 required to be 1.25 times for the Senior Lien. The Authority must comply with this
15 covenant for the Fiscal Year ending December 31, 2019, which is why this rate increase
16 is so critical. The Authority is targeting debt service coverage to be 1.35 times (before the
17 City Cooperation payment), which is included in the current revenue requirement. It
18 should be noted that sector wide coverage is closer to 2 times (2016 Moody’s median for
19 combined systems). While peer and rating comparisons will be discussed further in this
20 testimony, this goal is still significantly below national trends. The goal of 1.35 times
21 should be viewed as a minimum goal and acknowledges the current structure of the
22 Authority’s debt and its historical reliance on cash and investments, not current revenues,
23 to achieve coverage. It is important to note that if this coverage is not allowed to be

1 achieved and trend upwards, there will be no ability to grow financial resources to fund
2 targeted pay-go levels and continue the over reliance on debt, further leveraging an
3 already over-levered system. In addition to providing pay-go resources, adequate debt
4 service coverage creates critical financial resources that are needed to address potential
5 economic and operational challenges.

6 Both Moody's and S&P are specific in their discussions that it is the expectation
7 that the Authority's debt service coverage goal is 1.3 times coverage or better. It is
8 extremely important to create policies that generate coverage in excess of the legal
9 requirement in order to protect against any unforeseen additional expenses or decreases in
10 expected revenues. Setting coverage at the legal requirement puts the Authority at
11 significant risk of violating the covenant. Furthermore, the ability to issue additional debt
12 under the bond documents requires certain certificates that the Authority is in compliance
13 with the rate covenant and has sufficient revenues to comply with the covenant taking
14 into account the additional debt service.

15 It should be noted that the legal debt service coverage requirement does not
16 include any payments to the City in the definition of "Current Expenses". While these
17 payments might be subordinate, they are still an obligation and need to be included in the
18 revenue requirement. The Authority has targeted debt service coverage with the City's
19 payment of 1.15 times. Any additional financial resources generated by coverage are
20 needed to support the growing capital needs as well as to insure adequate liquidity
21 necessary to mitigate any financial or operational risks, not used for additional
22 obligations.

1 The second metric that is critical is days cash on hand; unrestricted cash and
2 investments times 365 divided by operating and maintenance expenses. This measures
3 liquidity and is used by both rating agencies to measure financial resources available to
4 survive temporary revenue disruptions and unexpected expenses. This is critical to the
5 financial strength of a system and the Authority in the past has maintained reserves in
6 order to be in compliance with the rate covenant. (The current Rate Covenant is described
7 on page 5.) However in recent years, reserves have been spent to address unexpected
8 capital needs and collection disruptions. The current levels are simply not adequate and
9 put the Authority in a position of financial risk. Additionally, the Trust Indenture requires
10 deposits to the Operating Reserve Fund, this obligation will also continue to increase the
11 amount on deposit as operating expenses increase.

12 The target Days Cash on Hand is 65 days for the year 2019, which is still
13 significantly lower than peer systems as will be discussed in the next section. The goal is
14 to maintain and to increase this level while still maintaining affordable rate increases.
15 Days Cash on Hand should increase to over 100 days over the next five years (not
16 including the ALCOSAN expenses). The current revenue request will be critical to the
17 Authority being able to achieve this initial goal.

18 The third metric is the percentage of pay-go financing, or simply funding capital
19 needs with current revenues. Systems that have been able to fund significant portions of
20 their capital improvement plan with annual revenues are able to manage their debt
21 without significantly burdening future rate payers. PWSA is targeting a nominal amount
22 of \$1.5 million of the current capital needs to be funded with internally generated funds,
23 with the percentage trending up to 10% over the next five years. As a point of reference,

1 Fitch Investor Service specifically measures pay-go levels for similar systems and views
2 65% pay-go funding as strong, 55% as a midrange and 45% pay go funding as on the
3 weaker side in assessing operating risks. PWSA is on the weaker side, with the goal
4 taking into account that the capital program increases in the short term but levels out in
5 the long run. Systems that are able to sustain higher levels of pay-go financing also enjoy
6 health debt service coverage and liquidity.

7 PWSA's goal for sustaining and increasing the amount of its capital program
8 funded with internally generated funds is critical to addressing the amount of debt in
9 comparison to its assets and financial resources. It will be critical in maintaining its
10 current credit profile to stop borrowing 100% of its capital needs in the future.

11 **Q. PLEASE EXPLAIN THE FINANCIAL RESULTS IF THE PROPOSED RATES**
12 **ARE NOT APPROVED AND THE FINANCIAL METRICS CANNOT BE**
13 **IMPLEMENTED.**

14 A. As is outlined in Exhibit DML-1, which is a part of Ms. Lestitian's testimony, if the
15 current rates remain in place, the Authority will not be able to comply with its current
16 bond rate covenant. As described previously in order to comply with the legal
17 requirement, the Authority must generate revenues in the FPFTY in an amount that will
18 generate senior debt service coverage of at least 1.25 times. Balances in the Rate
19 Stabilization Fund ("RSF") may be counted as revenue, but without the rate increases, the
20 RSF will have a zero balance. The Authority's financial metrics require debt service
21 coverage of 1.35 times as a minimum target to provide a cushion in the event actual
22 collections are lower than anticipated or expenses are higher. Without the rate increase
23 the debt service coverage in FPFTY will be .95 times for senior debt service (1.25 times
24 legal covenant) and .79 for total debt service (1.1 times legal covenant). This would
25 cause the Authority to be in non-compliance with its bond documents.

1 If the Authority fails to comply with the rate covenant, a consultant shall be
2 promptly engaged to prepare a report to remedy the failure and to make
3 recommendations. The Authority has 180 days after the tested fiscal year to revise rates,
4 fees and charges or to petition the PUC to establish the necessary rates, fees and charges
5 to address the rate covenant failure. If after this time period, the Authority continues to
6 fail the rate covenant, then an Event of Default will have occurred. An event of default
7 results in certain remedies available to bond holders, including acceleration of principal.

8 Additionally the financial metrics target total debt service coverage, including the
9 City Cooperation Payment of 1.15 times. Even though the payment is subordinate to debt
10 service payments, it is still an obligation and will divert resources from pay-go financing
11 and funding of the Rate Stabilization Fund and needs to be considered.

12 As described in Exhibit DML-2, after accounting for the proposed rate increase,
13 debt service coverage for senior debt service is 1.47 times, debt service coverage for total
14 debt service is 1.23. and including the City Cooperation Payment, coverage is 1.10 times.
15 The median coverage for “A2” rated Moody’s credits is 1.5 times debt service coverage.
16 The request is certainly reasonable and necessary to the financial stability of the
17 Authority.

18 In addition to debt service coverage, the other critical metric is days cash on hand.
19 As discussed previously, the Authority has targeted 65 days for the FPFTY and as
20 indicated in Exhibit DML-1, without the rate increase days cash on hand fall to a negative
21 8.4 days cash on hand. This would result in the total depletion of the operating reserve
22 fund, all other available cash and no funding of the rate stabilization fund. With the
23 requested rate increase the FPFTY will have 74 days cash on hand, including the

balances in the Operating Reserve Fund. It should be noted that both rating agencies mention an appropriate level of days cash on hand for the Authority as closer to 100 days.

Q. DISCUSS THE AUTHORITY'S CREDIT PROFILE IN COMPARISON TO OTHER PEER UTILITIES.

A. The Authority's credit ratings of A2 and A are on the lower half of most of the US water and sewer systems, with 80% rated higher by Moody's and 50% are rated in the AA and AAA categories by S&P. Nationally water & sewer credits are generally well received by the investor community with rating agencies viewing the industry with a stable outlook. It is expected that the industry will remain stable, increasing rates as necessary while still balancing affordability concerns. Rating agencies have been reviewing and updating methodologies with a view towards transparency and a more quantitative approach. Both Moody's and S&P have published credit scorecards which identify certain rating factors, as well as assigning certain factor weighting. Both credit scorecards include some level of qualitative analysis or above and below the line notching. While the approach is slightly different, the factors considered both include debt service coverage and liquidity measures as critical components of any credit review.

Moody's – Moody's identifies broad factors for consideration and further provides sub factors in the scorecard. The broad categories include system characteristics (asset condition, service area and system size), financial strength (debt service coverage, day's cash on hand, debt to operating revenues), management (rate management, regulatory, compliance and capital plans) and legal provisions (rate covenant, debt service reserve requirements). In general the median coverage for Moody's rated credits is 2.1 for combined systems and 1.9 times for single systems. With those levels of

coverage, liquidity or days cash on hand remain strong at levels of 406 days for combined systems and 379 days cash on hand for water systems.

Key Indicator	PWSA	A2 Rated Medians	A1 Rated Medians
Asset Condition	41.0	29.6	25.2
Debt to Operating Revenues	4.0	2.96	2.15
Debt Service Coverage	.83	1.5	1.8
Days Cash on Hand	60	223	283

Above are Moody's key ratios from the most recent rating report (12/1/2017), and it should be noted that PWSA is generally below national medians. Increasing rates to provide cash flow available to fund an increasing amount of projects on a pay-go basis will help to mitigate this concern.

Standard & Poor's – S&P also has developed a credit calculator to provide a qualitative analysis of a systems credit profile. They measure credit through an enterprise risk profile (economic fundamentals, industry risk, market position and operational management assessment) and a financial risk profile (all in coverage, liquidity and reserves, debt and liabilities and financial management assessment). They also provide for notch adjustments for certain factors. When reviewing assessment scores for "A" rated water & sewer credits, debt service coverage averaged 1.4 times for S&P rated systems and liquidity measures averaged approximately 90 days cash on hand.

Below is a summary of the rating recent reports, outlining the challenges and viewpoint of the credit agencies.

1

Moody's Rated: A2/Negative Outlook (12/1/2017)	S&P Rated: A/Stable Outlook (12/1/2017)
<ul style="list-style-type: none"> Large size with considerable assets, serving 80% of the City of Pittsburgh Substantial capital needs, including required improvement of significantly aged assets and deferred maintenance. 	<ul style="list-style-type: none"> Pittsburgh's strength as the anchor and economic engine of western PA. Affordable rates, but will have pressures with the funded of further capital needs. Noted adequate liquidity at 1.3 times and higher historically
Challenges	
<ul style="list-style-type: none"> Substantial debt burden, narrowing coverage and liquidity Exposure to a large regional consent decree through ALCOSAN Unknown Rate Making process through the PUC Long term inadequate investment in infrastructure over several years. Implementation of significant larger CIP 	<ul style="list-style-type: none"> Large environmental mandates to address CSO and wastewater treatment through ALCOSAN Contingent risk with complicated debt structure Liquidity is currently trending below the 1.3 times coverage Unknown ruling by the PUC on the city payment and subsidizing cost of water to a portion of the City
Positive Credit Impact Items	
<ul style="list-style-type: none"> Considerable sized system, serving diverse service area of large city Significant rate increase recently implemented 	<ul style="list-style-type: none"> PUC oversight could be supportive of credit quality Large system Recent willingness to raise rates

2

3 **Conclusion:** General observation related to the Authority's financial profile is that the
4 financial metrics are on the weaker side and generally below the median rating categories
5 for the "A" rated category. It will be critical to maintain the minimum debt service
6 coverage and days cash on hand outlined in the Authority's adopted financial metrics.
7 The PUC is viewed as both a credit positive and negative depending upon the outcome of
8 the first rate request.

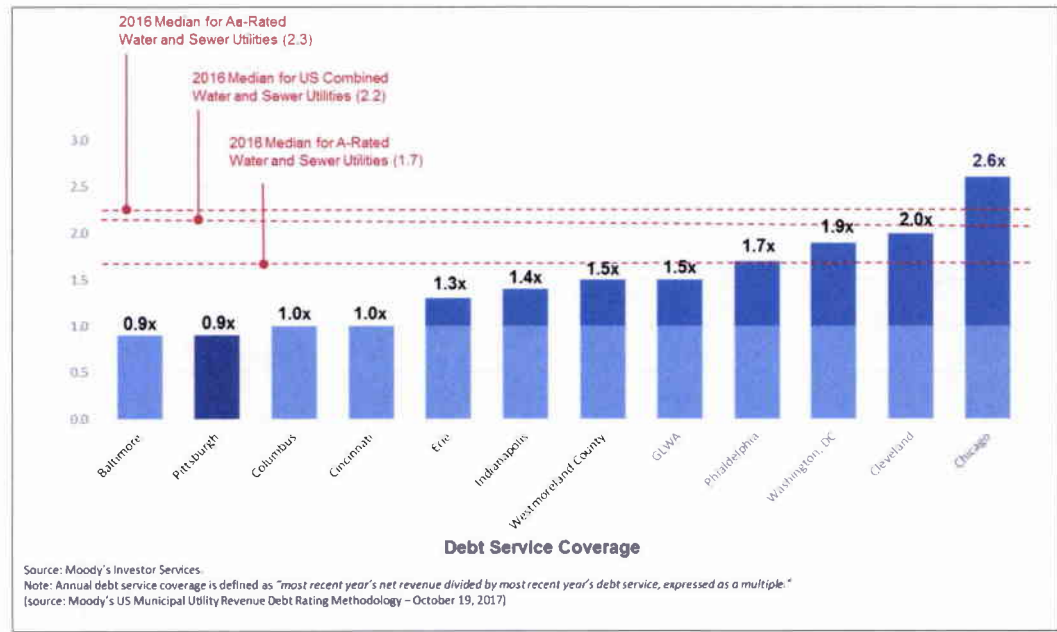
9 **Peer Utilities**

10 PWSA has selected certain peer systems to provide important benchmarking
11 critical to organizational best practices. While systems have their own characteristics

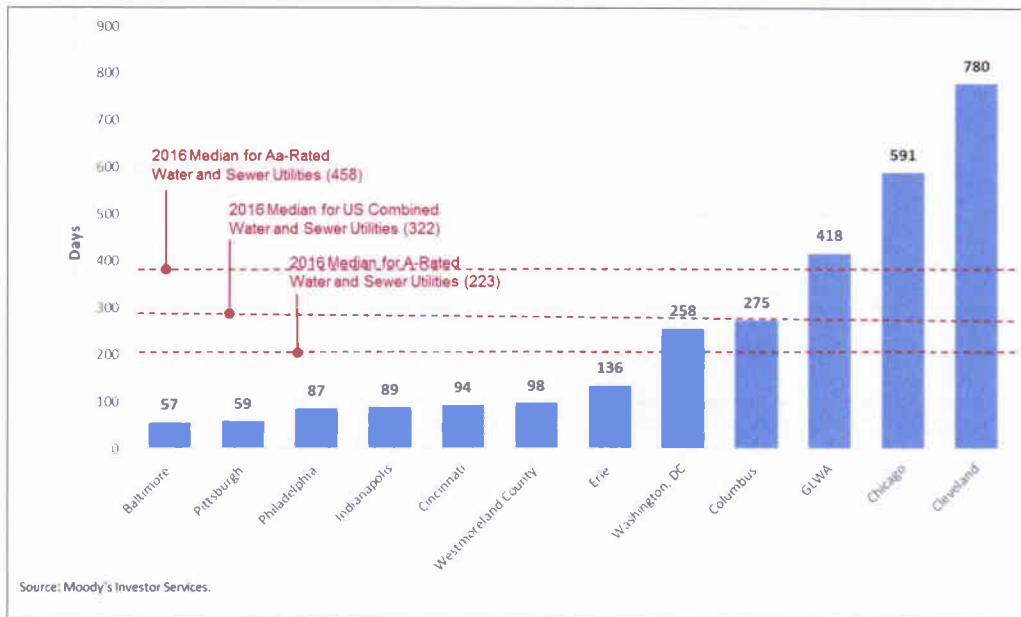
based on regions, size, and service area, the selected peers are of similar size, service areas of industrial urban centers and are located largely in the mid-Atlantic and Midwestern regions of the country. Peer comparisons and benchmarking performance indicators are a component of best practices and have been incorporated into the Authority's financial policies. Data gathered on Peer systems is provided by the Moody's Financial Ratio data base.

Below are charts which indicate that PWSA, as compared to its peers, remains on the weaker side of certain key financial ratios. It is important to note that viewing data for peer systems should be used to provide a general perspective, since obviously each system has its own characteristics. Please see Exhibit KLC-2 for additional financial data on the peer systems.

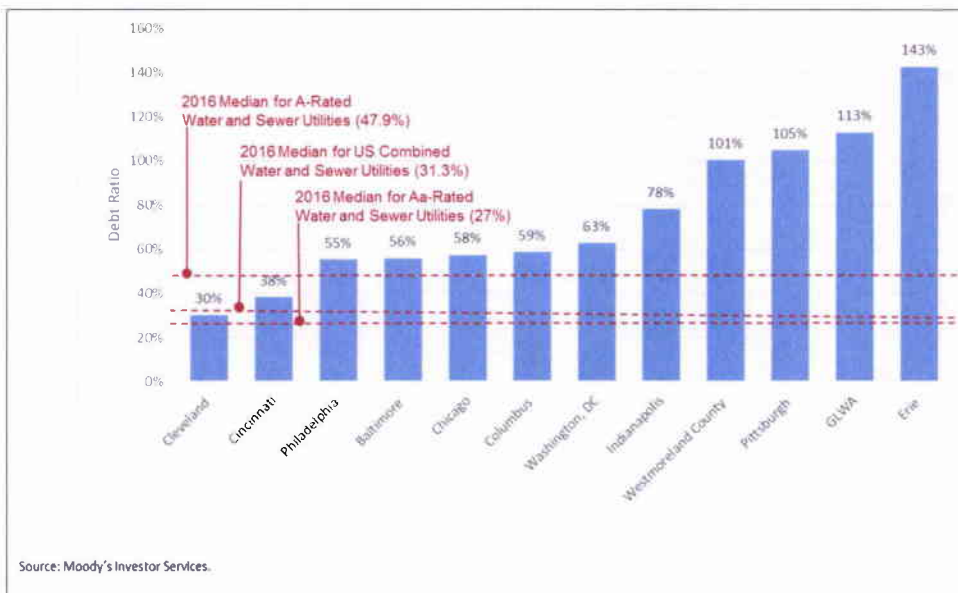
DEBT SERVICE COVERAGE (Most recent year's net revenue divided by the most recent year's debt service, expressed as a multiple)



- 1 **DAYS CASH ON HAND (Unrestricted cash and liquid investments times 365 divided by operating**
- 2 **and maintenance expenses, expressed in days)**



- 3
- 4 **DEBT RATIO (Net debt divided by most recent year's operating revenues, expressed as a multiple)**

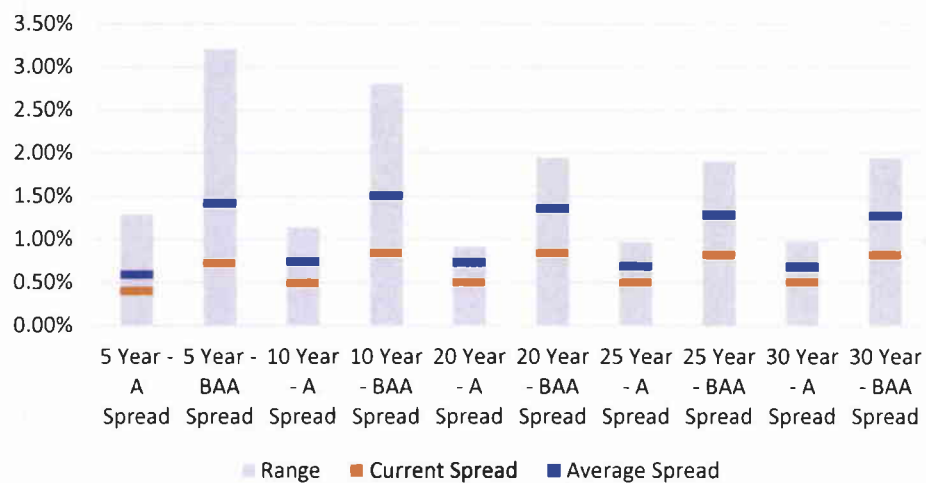


- 5

Q. DESCRIBE THE RISKS TO NOT APPROVING THE REQUESTED REVENUE INCREASE.

A. Cost of Capital. In addition to insuring that rate increases provide the necessary cash flow for liquidity and pay go, the Authority's rating has a direct impact on the cost of capital. This has an impact on the cost of annual debt service as well as the cost to the PWSA of alternative financing options such as letter of credits, bank loans, and implementing a commercial paper program. Higher rated credits enjoy a range of options in financing increasing Capital Improvement Programs and these short term, variable rate options can be even more advantageous in a rising rate environment. Below are current and historical credit spreads for various bond ratings.

Current and Historical Credit Spreads



Below is a historical representation of the range in interest rates for various credits.

Statistic	5 Year - A Spread	5 Year - BAA Spread	10 Year - A Spread	10 Year - BAA Spread	20 Year - A Spread	20 Year - BAA Spread	25 Year - A Spread	25 Year - BAA Spread	30 Year - A Spread	30 Year - BAA Spread
6/15/2018	0.40%	0.72%	0.49%	0.84%	0.50%	0.84%	0.50%	0.82%	0.50%	0.82%
Average	0.59%	1.41%	0.74%	1.50%	0.73%	1.36%	0.68%	1.28%	0.68%	1.27%
Spread to Avg.	-0.19%	-0.69%	-0.25%	-0.66%	-0.23%	-0.52%	-0.18%	-0.46%	-0.18%	-0.45%
Minimum	0.31%	0.59%	0.48%	0.73%	0.45%	0.75%	0.39%	0.69%	0.38%	0.65%

Spread to Min.	0.09%	0.13%	0.01%	0.11%	0.05%	0.09%	0.11%	0.13%	0.12%	0.17%
Maximum	1.60%	3.80%	1.60%	3.54%	1.27%	2.70%	1.25%	2.60%	1.26%	2.60%
Spread to Max.	-1.20%	-3.08%	-1.11%	-2.70%	-0.77%	-1.86%	-0.75%	-1.78%	-0.76%	-1.78%

1
2 Over the next five years, the Authority expects to issues \$1.53 billion in
3 additional debt. For every 50 basis point increase (or ½ of a percentage point), rate
4 payers should expect to pay an additional \$7.6 million in annual debt service on the total
5 debt amount. This increase adds up and can place additional stress on debt service
6 coverage requirements.

7 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

8 **A. Yes.**

Appendix A



PFM Firm Overview

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

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

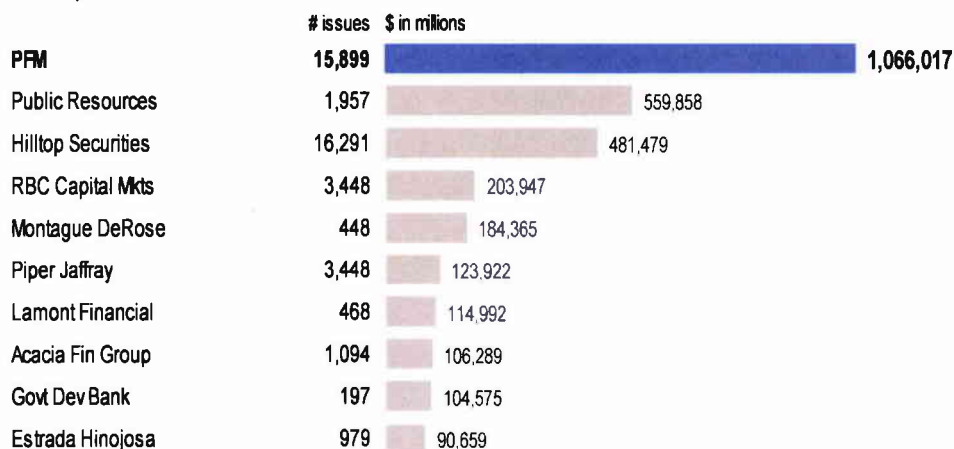
PFM Office Locations

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

Nationwide Experience

As seen in the chart below, the yearly volume of transactions for which the firm consistently serves as advisor provides us with comprehensive experience in the capital markets (as of December 31, 2017). We serve as advisor on more transactions than many of the largest investment banks, which provides us with comparable market knowledge and technical capabilities. As a firm that only serves issuers, we maintain our independence and align our goals solely with our clients.

1998 - 2017 Overall Long Term Municipal New Issues
Municipal Financial Advisory Ranking - Full Credit to Each Financial Advisor
Source: Ipreo





Wastewater and Utility Experience

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

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

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

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



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Katherine works with a range of issuers in the Mid-Atlantic region. She also assists in the development of non-profit and higher education clients in Pennsylvania, Maryland, New Jersey and Delaware.

Katherine brings 30 years of experience working for investment banking firms, for financial advisory firms, and as an issue manager in Philadelphia. She was the assistant to the director of finance for the City of Philadelphia where she worked for the city treasurer's office in debt management, acting as issue manager for approximately one billion dollars of securities. She has also worked for the Pennsylvania State Legislature. As an investment banker and a financial advisor for other firms, her responsibilities included business development in Pennsylvania, New Jersey, Delaware and Maryland, and working with a range of issuers providing financial advice in the area of debt management and capital financing. Katherine joined PFM in 2003.

She currently works with several large state and regional issuers such as the Pennsylvania Industrial Development Authority, City of Philadelphia, Pittsburgh Water and Sewer Authority, Commonwealth Financing Authority and the Pennsylvania Industrial Development Authority. Additionally, she provides financial advisory services to a variety of non-profit and higher education organization such as Temple University, Drexel University and several smaller non-profits and secondary schools. Katherine has assisted her clients in successfully entering into the public markets, implementing best practices in managing their debt portfolio, analyzing and developing credit and long term asset/liability strategies. She has provided her clients with advice addressing transaction management, financial strategic planning, credit analysis and implementation of best practices.

Ms. Clupper has an MBA in finance from Temple University and currently serves on the board of directors of the Urban Affairs Coalition and the Committee of 70. She is also a member of the Forum of Executive Women.

Exhibit KLC-1

Pittsburgh Water and Sewer Authority
Debt Summary
Schedule KCL-1

Pittsburgh Water & Sewer Authority - Rate of Return
As of June 1, 2018

	A	B	C	D	E	H	I	J	K	L	M	N	O
	Date of Issue	Date of Maturity	Amount Issued	Amount Outstanding	Amount Retired	Coupon Rate/ Bank Index	Fixed Swap Rate (Paid)	Variable Swap Rate	Net Rate (VRDB)(H+I-J)	Discount at Issuance	Premium at Issuance	Issuance Expenses	Net Proceeds
Bonds and Loans Payable													
<u>Senior Bonds:</u>													
1998 Series B ¹	Mar-1998	2027-2030	\$ 32,400	\$ 55,837	\$ 70,655	5.18%	N/A	N/A	N/A	-	-	-	\$ 32,400
2013 Series A	Dec-2013	9/1/2015-2033	130,215	93,825	36,390	0.75%-5.00%	N/A	N/A	N/A	-	10,903	798	140,320
2013 Series B	Dec-2013	9/1/2015-2040	86,695	38,760	47,935	3.00-5.25%	N/A	N/A	N/A	-	3,926	553	90,068
2017 Series A	Dec-2017	9/1/2018-2032	159,795	159,795	-	3.00-5.00%	N/A	N/A	N/A	-	23,374	1,778	181,391
2017 Series B	Dec-2017	9/1/2018	5,595	5,595	-	1.89%	N/A	N/A	N/A	-	-	31	5,564
2017 Series C (JPM Swap) ^{2,3}	Dec-2017	9/1/2040	72,748	72,748	-	70% LIBOR + .64%	3.7835%	70% LIBOR	4.4235%	-	-	693	72,054
2017 Series C (MLCS Swap) ^{2,3}	Dec-2017	9/1/2040	72,748	72,748	-	70% LIBOR + .64%	3.7700%	70% LIBOR	4.4100%	-	-	693	72,054
2017 Series C (JPM Swap) ^{2,3}	Dec-2017	9/1/2040	71,225	71,225	-	70% LIBOR + .64%	3.8255%	70% LIBOR	4.4655%	-	-	679	70,546
2017 Series C (Unhedged) ²	Dec-2017	9/1/2040	2,085	2,085	-	70% LIBOR + .64%	N/A	N/A	2.0600%	-	-	20	2,065
<u>Subordinate Debt</u>													
2008 Series C-1A ^{2,4,5}	Jun-2008	9/1/2035	10,000	10,000	-	(70% LIBOR + .70%)*MFR	3.5000%	70% LIBOR	4.6566%	-	-	273	9,727
2008 Series C-1B ^{2,4,5}	Jun-2008	9/1/2035	10,000	10,000	-	(70% LIBOR + .70%)*MFR	3.5000%	70% LIBOR	4.6566%	-	-	273	9,727
2008 Series C-1C ^{2,4,5}	Jun-2008	9/1/2035	5,000	5,000	-	(70% LIBOR + .70%)*MFR	3.5000%	70% LIBOR	4.6566%	-	-	136	4,864
2008 Series C-1D ^{2,4,5}	Jun-2008	9/1/2035	26,870	26,840	70	(70% LIBOR + .69%)*MFR	3.5000%	70% LIBOR	4.6445%	-	-	733	26,137
2008 Series C-2 ^{3,4}	Jun-2008	9/1/2038	51,885	51,820	65	(70% LIBOR + .75%)*MFR	3.5000%	70% LIBOR	4.7174%	-	-	1,415	50,470
<u>Subordinate/Subordinate Debt</u>													
State Loans (PENNVEST)	Various	Various	34,000	29,136	4,864	1.00-3.25%	N/A	N/A	N/A	-	-	-	34,000
Capital Line of Credit	July-2016	7/1/2020	80,000	61,368	18,632	70% LIBOR + .975%	N/A	N/A	2.3950%	-	-	-	61,368
Capital Lease	Dec-2015	12/1/2025	7,445	1,489	5,956	0.00%	N/A	N/A	N/A	-	-	-	7,445

¹ Column C is the Initial Stated Amount (Capital Appreciation Bonds); Column D is based on accreted value as of 9/1/2018 and Column E is total amount paid as of 9/1/2018.

² Column N represents a proportional breakdown of cost of issuance per Official Statements

³ Column C represents the portion of the Series C of 2017 which is connected to certain swap agreements or is unhedged.

⁴ Subordinate Bonds Series 2008C-1A-D and C-2 have related swaps that are proportionately allocated to each Sub-Series; 40% Bank of America and 60% JP Morgan; Related Bank Loans are Series C-1 A,B,C,D (BoFA) and Series C-2 (JPM)

⁵ Due to tax reform, the Marginal Rate Factor was increased from 1 to 1.2154 which has increased the interest rate for the Subordinated Debt

⁶ One Month LIBOR is assumed to be 2.029% (6/6/2016); 70% of one month LIBOR is 1.42% for the purposes of this summary

Pittsburgh Water and Sewer Authority
Swap Report as of June 15, 2018

Swap Portfolio Summary

Related Bonds	Counterparty	Initial Notional	Current Notional	Effective Date	Termination Date	Pay	Receive	Net Present Value (NPV)	NPV plus Accrued Interest	Insurer
2008 B-1 / 2017 C ¹	JPM	\$72,747,500	\$72,747,500	6/12/2008	9/1/2039	4.038% till 12/28/2017, then 3.7835%	SIFMA till 12/28/2017, then 70%1moL	(\$18,019,057)	(\$18,774,936)	Assured
2008 B-2 / 2017 C ¹	MLCS	\$72,747,500	\$72,747,500	6/12/2008	9/1/2039	4.038% till 12/28/2017, then 3.77%	SIFMA till 12/28/2017, then 70%1moL	(\$17,877,546)	(\$18,630,588)	Assured
2008 C ²	JPM	\$62,277,000	\$62,196,000	6/12/2008	9/1/2035	3.500%	70%1moL	(\$10,693,845)	(\$11,289,151)	Assured
2008 C ²	MLCS	\$41,518,000	\$41,464,000	6/12/2008	9/1/2035	3.500%	70%1moL	(\$7,129,230)	(\$7,526,101)	Assured
2008 D / 2017 C ¹	JPM	\$71,225,000	\$71,225,000	6/12/2008	9/1/2040	4.103% till 12/28/2017, then 3.8255%	SIFMA till 12/28/2017, then 70%1moL	(\$19,819,654)	(\$20,568,355)	Assured
		\$320,515,000	\$320,380,000					(\$73,539,332)	(\$76,789,131)	

Counterparty Ratings

Counterparty Name	Guarantor	Moody's	S&P	Fitch	Notes on Changes in Ratings
JPMorgan Chase Bank, N.A.	NA	Aa3	A+	AA-	
Merrill Lynch Capital Services, Inc.	Bank of America Corp	A3	A-	A	

Insurer Ratings

Counterparty Name	Moody's	S&P	Fitch	Notes on Changes in Ratings
Assured Guaranty Municipal Corp	A2	AA	NR	

All values are shown at mid-market from PWSA's perspective.

¹ The floating rate on the 2008 B-1/B-2/D swaps was converted from SIFMA to 70% of one-month LIBOR effective 12/28/2017 in conjunction with the respective refunding with the 2017C bonds. As a result, the fixed rate on the swaps were amended lower with each of the swap counterparties.

² The floating rate on the 2008 C swaps was converted from SIFMA to 70% of one-month LIBOR on 11/3/14 in conjunction with the reissuance and restructuring of certain subseries of the 2008C bonds. As a result, the fixed rate on the swaps was amended from 3.998% to 3.50%.

Pittsburgh Water and Sewer Authority
Swap Report as of June 15, 2018

Summary by Counterparty

Counterparty	Initial Notional	Current Notional	NPV	NPV+AI	Number of Swaps
JPM	\$206,249,500	\$206,168,500	(\$48,532,556)	(\$50,632,442)	3
MLCS	\$114,265,500	\$114,211,500	(\$25,006,776)	(\$26,156,689)	2
	\$320,515,000	\$320,380,000	(\$73,539,332)	(\$76,789,131)	5

All values are shown at mid-market from PWSA's perspective.

Exhibit KLC-2

Schedule KLC-2

Peer Comparisons - Ratings

	City	Issuer	Ratings		
			Moody's	S&P	Fitch
	Baltimore	Baltimore Water Enterprise, MD	Aa3	AA	NR
	Chicago	Chicago, IL Water Fund	Baa1	A	NR
		Chicago, IL Sewer Fund	Baa2	A	NR
	Cincinnati	Greater Cincinnati Water Works, OH	Aaa	AAA	NR
		Metropolitan Sewer District of Greater Cincinnati, OH	Aa2	AA+	NR
	Cleveland	Cleveland Water Enterprise, OH	Aa1	AA+	NR
		Northeast Ohio Regional Sewer District, OH	Aa1	AA+	NR
	Detroit	Great Lakes Water Authority Water Enterprise, MI	A3	A-	A
	Memphis	Memphis Water Enterprise, TN	Aa1	AAA	NR
	Philadelphia	City of Philadelphia Water and Wastewater, PA	A1	A+	A+
	Pittsburgh	Pittsburgh Water and Sewer Authority, PA	A2	A	NR
	Tampa Bay	Tampa Bay Water, FL	Aa1	AA+	AA+
	Washington DC	District of Columbia Water & Sewer Authority, DC	Aa1	AAA	NR

Comparables

Moody's Financial Ratio Analysis	Tampa Bay Water	Memphis (City of) Water Enterprise	Cleveland (City of) Water Enterprise	Northeast Ohio Regional Sewer District	District of Columbia Water & Sewer Authority	Baltimore (City of) Water Enterprise	Atlanta (City of) Water & Wstwr Enterprise	Louisville & Jefferson County Metro. Sewer District	Pittsburgh Water and Sewer Authority	Allegheny County Sanitary Authority	Great Lakes Water Authority Water Enterprise	Westmoreland County Municipal Authority
Year	2017	2016	2016	2016	2017	2017	2017	2017	2016	2017	2016	2017
Current Senior Most Rating	Aa1	Aa1	Aa1	Aa1	Aa1	Aa3	Aa2	Aa3	A2	A1	A3	A1
Financial Data : Balance Sheet Data												
Total Current Cash, Cash Equivalents and Investments (\$000)	57,212	22,208	340,292	296,131	212,467	18,845	831,796	52,544	21,620	119,248	167,293	15,068
Total Revenue Bonds (\$000)	N/A	43,870	584,525	N/A	N/A	912,410	2,740,300	1,865,260	N/A	572,730	N/A	N/A
Total Long Term Debt (\$000)	956,758	43,870	720,290	1,617,836	3,224,567	912,410	2,924,317	2,093,573	743,863	572,730	2,730,988	536,835
Financial Data : Income Statement Data												
Total Operating Revenues (\$000)	156,150	99,847	310,107	313,037	624,447	163,563	486,285	259,634	180,727	170,182	385,425	94,420
Gross Revenues (\$000)	158,414	100,586	316,099	323,187	628,187	165,734	621,905	273,907	181,110	171,279	400,640	98,078
Total O&M Expenses (\$000)	68,155	76,518	159,056	119,035	299,474	118,923	222,664	87,205	131,936	70,178	145,821	56,075
Net Revenues (\$000)	90,259	24,068	157,043	204,152	328,713	46,811	399,241	186,702	49,174	101,101	254,819	42,003
Total Annual Senior Lien Debt Service (\$000)	84,470	1,260	67,874	63,428	62,526	33,795	203,944	121,076	50,754	N/A	128,178	27,982
Total Annual Debt Service (\$000)	84,470	1,260	78,588	112,987	169,346	50,674	213,856	137,857	53,174	45,749	171,139	27,982
Financial Data : Key Financial Ratios												
Operating ratio (%)	43.6	76.6	51.3	38	48	72.7	45.8	33.6	73	41.2	37.8	59.4
Debt Ratio (%)	62.2	12.8	29.9	52.3	62.8	56	45.6	70.2	105.1	65.6	113.1	100.7
Total Annual Senior Lien DSC (x)	1.1	19.1	2.3	3.2	5.3	1.4	2	1.5	1	N/A	2	1.5
Total Annual Debt Service Coverage (x)	1.1	19.1	2	1.8	1.9	0.9	1.9	1.4	0.9	2.2	1.5	1.5

Source: Moody's Investor Service



**BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

DIRECT TESTIMONY OF

JULIE QUIGLEY

**ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY**

Docket Nos. R-2018-3002645 and R-2018-3002647

**Pittsburgh Water and Sewer Authority
Initial Tariff Filing and Rate Requests**

July 2, 2018

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1 **I. Introduction**

2 **Q. PLEASE STATE YOUR NAME AND CURRENT POSITION WITH PWSA.**

3 A. My name is Julie Quigley, and I am the Director of Administration for The Pittsburgh
4 Water and Sewer Authority (“PWSA” or “Authority”).

5 **Q. HOW LONG HAVE YOU HELD THIS POSITION?**

6 A. I have held this current position for eight months. Previously, I was an employee of
7 PWSA for 22 years. I left for a job opportunity in the private sector from 2011 through
8 2017.

9 **Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES?**

10 A. In my current position, I am responsible for oversight and management of the Customer
11 Service and Information Technology departments; including day to day operations,
12 departmental initiatives, and innovative partnerships with third party providers.

13 **Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.**

14 A. I obtained a Bachelor of Arts degree at Duquesne University, and I have 28 years of
15 utility billing experience. My initial role at PWSA was entry level while in college.
16 When I left employment in 2011, I was PWSA’s Customer Services Manager. In the
17 private sector, I processed electronic Earned Income Tax (“EIT”) employer filings. I
18 then designed, developed, launched, and managed monthly/quarterly sewage, stormwater,
19 and refuse billing and collection for 24 municipalities with less than 10 employees.

20 **Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?**

21 A. No.

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

23 A. I will detail the programs that PWSA very recently implemented to assist low income
24 Residential customers and will discuss the efforts undertaken by PWSA to revise its
25 existing customer service processes (including billing and collections) to achieve

1 compliance with the rules and regulations of the Public Utility Commission (“PUC” or
2 “Commission”). In the last part of my testimony, I explain the process undertaken by
3 PWSA to develop the proposed water and wastewater tariffs in a format consistent with
4 traditional PUC-regulated utility tariffs and highlight some specific areas related to this
5 process. PWSA’s proposed Initial Water Tariff is contained in Exhibit JAQ-1, which can
6 be found in Tab 1 of Volume IV. PWSA’s proposed Initial Wastewater Tariff is
7 contained in Exhibit JAQ-3, which can be found in Tab 3 of Volume IV. Disposition
8 Tables showing how the sections of PWSA’s existing Rules and Regulations (aka
9 Official Prior Tariff) have been incorporated into the new proposed initial tariffs are set
10 forth on Exhibit JAQ-2 (water) and Exhibit JAQ-3 (wastewater), which can be found at
11 Tabs 2 and 4 of Volume IV.

12 **II. Programs Benefiting Low Income Customers**

13 **Q. PLEASE DESCRIBE THE STEPS THAT PWSA HAS TAKEN IN THE LAST** 14 **SEVERAL YEARS TO IMPROVE THE QUALITY OF SERVICE PROVIDED** 15 **TO LOW INCOME CUSTOMERS.**

16 **A.** Low income Residential customers previously had no Authority-sponsored financial
17 relief, with the most negative impact felt when faced with termination of their water
18 service for non-payment. On October 26, 2017, the PWSA Board of Directors passed a
19 Winter Shut Off Moratorium resolution and instructed staff to produce a full Customer
20 Assistance Program solution. On November 8, 2017, the PWSA Board passed the Bill
21 Discount Program resolution and authorized a management agreement with Dollar
22 Energy Fund. On January 26, 2018, when funds became available as a result of a
23 settlement, the PWSA Board designated the resulting funds to be utilized for a Cash
24 Assistance Program.

1 **Q. PLEASE DESCRIBE THE CURRENT CUSTOMER ASSISTANCE PROGRAMS**
2 **THAT ARE AVAILABLE.**

3 A. The current PWSA Customer Assistance Program is comprised of:

4 **1) Winter Shut Off Moratorium** - December 1st through March 31st for
5 customers who are at or below 250% of the Federal Poverty Level; 1,695 customers took
6 advantage of the 2017-2018 Winter Shut Off Moratorium.

7 **2) Bill Discount Program** - 50% reduction of fixed monthly water and sewer
8 conveyance charges for customers at or below 150% of the Federal Poverty Level; 2,007
9 customers have enrolled in the Bill Discount Program thus far in 2018.

10 **3) Hardship Program** – Cash grants up to \$300 per year for customers at or
11 below 150% of the Federal Poverty Level; 80 customers have applied for grants via the
12 Hardship Program in 2018.

13 **4) Private Lead Line Replacement Community Environmental Project** –
14 Private side lead line replacements for customers who are at or below 250% of the
15 Federal Poverty Level; over 300 customers have benefited from this program in 2018.

16 **Q. DOES PWSA PLAN TO CONTINUE THESE PROGRAMS UNDER THE**
17 **JURISDICTION OF THE PUC?**

18 A. Yes. PWSA is committed to assisting low income Residential customers and believes
19 that this package of programs is reasonable and appropriate to continue in PWSA's new
20 PUC Tariff. The Bill Discount Program is Rider BDP in the Water Tariff¹ and Rider
21 BDP in the Wastewater Tariff.² The other programs, which do not directly impact the
22 rate(s) paid by low income customers are not memorialized in the proposed PUC Tariffs.

¹ See Exhibit JAQ-1 located in Tab 1 of Volume IV.

² See Exhibit JAQ-3, located in Tab 3 of Volume IV.

1 Since the programs are relatively new, PWSA believes that that it would be best to
2 maintain the current programs without change, so that their effectiveness can be
3 accurately assessed. In future proceedings, PWSA is looking forward to working with
4 the Commission and the Parties on a going forward basis to evaluate and make needed
5 improvements in the existing programs.

6 **III. Aligning Customer Service Processes With PUC Requirements**

7 **Q. PLEASE DESCRIBE WHAT STEPS PWSA HAS TAKEN TO ALIGN ITS**
8 **CUSTOMER SERVICE PROCESSES WITH PUC REQUIREMENTS**
9 **REGARDING BILLING, COLLECTIONS AND INQUIRIES.**

10 A. As part of coming under the jurisdiction of the PUC, PWSA desires to become a highly
11 responsive and trusted public utility that is recognized for excellence and valued by the
12 customers that it serves. Very early on, we realized that an important part of achieving
13 this goal is to learn about and understand the Commission's expectations and
14 requirements regarding customer service issues. I and my team have received significant
15 guidance and assistance from staff of the Bureau of Consumer Affairs ("BCS"), who first
16 came to visit PWSA on December 6-7, 2017. We have been working with them since
17 that time to learn what is required and to update our customer processes consistent with
18 PUC requirements and expectations.

19 **Q. PLEASE PROVIDE MORE DETAILS ABOUT HOW THIS PROCESS HAS**
20 **UNFOLDED.**

21 A. Beginning with the initial meeting, BCS staff took Customer Service personnel through
22 every line item within 52 Pa. Code Chapter 56 and explained what is intended and
23 expected. As we became better educated about PUC expectations through this
24 knowledge sharing, PWSA created a new Compliance group in Customer Service, which
25 involved the drafting of new job descriptions, interviewing, and training. We also held

multiple training sessions with PWSA's Customer Service, Field Operations, and Engineering departments to ensure that they understood the PUC's expectations and the changes needed to achieve compliance. Under regulation, customers facing a threat to their service due to non-payment must be offered payment arrangements with no down-payment and stretched to up to 60 months, and customers with a Protection from Abuse Order (PFA) or Court Order have special protections to maintain service. PWSA has ensured that all Customer Service Representatives have been trained on these new processes, and management staff is regularly monitoring and providing additional training. Also due to PUC regulation, Customer Service worked with BCS' assistance to revise all collection notices for common language, and new notices such as the 3-day termination of service and shut off posting were created and put into use. Furthermore, the Water Exoneration Hearing Board and associated appeal process were disbanded, as they were replaced by the PA PUC Complaint process.

Q. HAS PWSA ALSO UPDATED ITS RULES AND REGULATIONS TO REFLECT ITS EFFORT TO COMPLY WITH CHAPTER 56 REGULATIONS?

A. Yes. PWSA voluntarily agreed to use the Commission's procedures to process customer disputes on and after April 1, 2018 in accordance with: (1) Pa Code Chapters 1, 3, and 5; and, (2) 52 Pa Code §§ 56.140-56.181. PWSA also agreed to use the Commission's termination rules set forth at 52 Pa. Code §§ 56.81-56.131. To memorialize this intent, PWSA undertook the effort to revise the applicable sections of its written "Rules and Regulations." These proposed revisions were approved by the PWSA Board on March 23, 2018 and filed on March 30, 2018 with the Commission as part of the documents constituting PWSA's Official Prior Tariff.

1 **Q. HAVE THESE NEW PROCESSES SERVED A POSITIVE ROLE IN PWSA'S**
2 **CURRENT CUSTOMER INTERACTIONS?**

3 A. Yes. In Customer Service, the goal is a one call resolution. After every interaction, the
4 customer is asked, "Are you satisfied with the information provided to you?" If the
5 customer response is negative, the new Complaint process is launched with the following
6 stages: Inquiry, Dispute, Informal Complaint, and Formal Complaint. Having these
7 processes in place has been useful for double checking that we are addressing the
8 customer concerns that are brought to our attention. This dedicated process also allows
9 the PWSA staff members addressing these concerns to acquire valuable experience in
10 how to reach a mutually satisfactory result. I believe that the working relationship
11 established between PWSA and BCS staff, and the results that have already been
12 achieved, have been very positive.

13 **Q. DO YOU HAVE ANY INFORMATION ABOUT HOW PWSA'S EFFORTS HAVE**
14 **BEEN REFLECTED IN CUSTOMER PERCEPTION OF THE SERVICE IT**
15 **PROVIDES?**

16 A. Each month, PWSA publishes testimony from satisfied customers in our Currents
17 newsletter, which is available on our web site, www.pgh2o.com. PWSA also realized a
18 37% reduction in Disputes and a 14% reduction in Informal Complaints between the
19 months of April and May 2018, and, to date, PWSA has had only three formal complaints
20 filed with the PUC. Ultimately, though, customer satisfaction is difficult to quantify.
21 One can perform after-call surveys; however, one cannot guarantee that those who were
22 satisfied with their service will participate. In fact, customers that I speak with invariably
23 preface their compliments with, "I know that you rarely hear any good news from
24 customers, but...." PWSA, however, is fully committed to the goal of becoming a highly
25 responsive and trusted public utility that is recognized for excellence and valued by the

customers it serves and, therefore, will continue to strive to learn about where it can improve existing processes to best satisfy its customers.

IV. Proposed Initial Tariffs

Q. PLEASE EXPLAIN WHAT CONSTITUTES PWSA’S “PRIOR TARIFF.”

A. PWSA’s rates and service rules are not set forth in a traditional PUC tariff format because PWSA has never been regulated by the PUC prior to the passage of Act 65. Rather, PWSA has maintained written “Rules and Regulations” which consist of the following six chapters:

- Chapter 1: Conditions of Service, Definitions
- Chapter 2: Customer Rights and Obligations
- Chapter 3: Rates and Charges, Abatement, Billing and Collection
- Chapter 4: Development Within the Authority’s Service Area
- Chapter 5: Water
- Chapter 6: Sewers

Pursuant to Act 65, the term “prior tariff” means “the tariff, rate schedule and riders incorporated into the tariff, including the terms and conditions or other documents setting forth the rates and terms and conditions of service provided by an authority on the date the commission assumes jurisdiction over the authority.”³ Act 65 further provides that PWSA’s Prior Tariff has the force and effect of law, and will continue, until the effective date of a Commission order approving rules in a new tariff.⁴ In its Final Implementation Order, the PUC directed PWSA to file “the documents that will serve as the official

³ 66 Pa.C.S. § 3203(c)(emphasis added).

⁴ 66 Pa.C.S. § 3203(a).

PWSA Prior Tariff” no later than April 1, 2018.⁵ In accordance with this directive, PWSA filed its then-existing Rules and Regulations on March 30, 2018.

Q. SUBSEQUENT TO THE MARCH 30 FILING, DID PWSA IDENTIFY AN ERROR IN THE RATES PROVIDED?

A. Yes. As PWSA was preparing for this proceeding, it was discovered that the minimum consumption charges for the non-fire-fighting use of Hydrants (located in Section 305.2(3)(c)(i)) and Fire systems (located in Section 305.3.2) set forth in the March 30 Filing were out-of-date and did not reflect the actual rates that were approved by the PWSA Board at its November 8, 2017 meeting and put into place effective January 1, 2018. To correct this error, revised pages 3-6 and 3-7 were filed on June 22, 2018.⁶

Q. DID THE REVISED PAGES CHANGE ANY OF PWSA’S RATES THAT WERE IN EFFECT ON APRIL 1, 2018?

A. No. The revised pages were submitted to state the correct minimum charges for Hydrants and Fire systems (when used for purposes other than fighting fires) that were approved by the PWSA Board on November 8, 2017 and put into place effective January 1, 2018. The rates for these charges set forth in the March 30 Filing did not accurately state the charges that were in effect on April 1, 2018.

⁵ *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water And Sewer Authority*, Docket Nos. M-2018-264082 and M-2016-2640803, Final Implementation Order entered March 15, 2018 (“FIO”) at 9-10, 44, and Ordering Paragraph 2.

⁶ At the request of PUC staff, a verified statement from me was filed on June 26, 2016 to further support the June 22, 2018 filing.

1 **Q. BASED ON THIS, PLEASE DESCRIBE WHAT CONSTITUTES PWSA'S PRIOR**
2 **TARIFF FOR PURPOSES OF THIS PROCEEDING.**

3 A. PWSA's Prior Tariff consists of the March 30, 2018 filing as corrected by the June 22,
4 2018 filing and is contained in Exhibit JAQ-5, which can be found in Tab 5 of Volume
5 IV of this filing.

6 **Q. PLEASE DESCRIBE THE RULES UNDER PWSA'S PROPOSED INITIAL PUC**
7 **TARIFFS.**

8 A. PWSA is proposing new tariffs to replace its prior rules for water, wastewater and
9 stormwater service so that the format more closely follows the Commission's traditional
10 tariff format. As I noted earlier, the proposed initial tariffs for water and wastewater are
11 in Volume IV.

12 **Q. DO THE PROPOSED INITIAL TARIFFS INCORPORATE CHAPTERS 1, 3, 5**
13 **AND 56 ISSUES WHERE APPROPRIATE?**

14 A. Yes. As I discussed previously, one of PWSA early priorities was to learn about and
15 incorporate the Commission's Chapters 1, 3 and 5 complaint handling processes as well
16 as the standards and billing practices for residential customers contained in Chapter 56.
17 PWSA updated its then-existing Rules and Regulations to incorporate these processes.
18 Those revised Rules and Regulations were filed with the Commission on March 30, 2018
19 as part of PWSA's Official Prior Tariff. The proposed Initial Tariffs incorporate, where
20 appropriate, the revisions that we have already made to PWSA's Official Prior Tariff (aka
21 PWSA's Rules and Regulations) to incorporate Chapters 1, 3, 5 and 56 processes. In this
22 process of developing the Initial Tariffs, we did not identify any new changes that were
23 needed to be in compliance with Chapters 1, 3, 5 or 56 of the Commission's regulations.

1 *A. Process to Develop Proposed Initial Tariffs*

2 **Q. PLEASE EXPLAIN THE PROCESS THAT WAS USED TO DEVELOP THE**
3 **PROPOSED INITIAL WATER TARIFF.**

4 A. We started with the PUC's model water tariff and compared the provisions in the model
5 with PWSA's existing Rules and Regulations. For those provisions in the model water
6 tariff that were consistent with PWSA's existing operations, we next analyzed the
7 appropriate language to propose in PWSA's Initial Water Tariff. In some instances, we
8 concluded that the PUC "model" language was appropriate. In other instances, we
9 determined that PWSA's language would be better from either an operational standpoint
10 or in terms of providing more clarity for customers (i.e. our existing language provided
11 more detail consistent with the concept in the model tariff). Decisions on each of these
12 sections were made after a careful review of the purpose of the model tariff language and
13 PWSA's existing Rules and Regulations with the intent of adapting the language we
14 believe best accommodates the circumstances of PWSA's operations and customers.
15 Where PWSA has elected to maintain its existing Rules and Regulations, which are
16 consistent with the intent of the model tariffs but may be stated differently, PWSA is
17 proposing to do so because its language and operating processes are embedded in
18 PWSA's training, procedures and systems. For each of these, PWSA has concluded that
19 abandoning its existing language simply for the purpose of matching the model tariff
20 language would create unnecessary confusion.

21 **Q. PLEASE EXPLAIN THE PROCESS THAT WAS USED TO DEVELOP THE**
22 **PROPOSED INITIAL WASTEWATER TARIFF.**

23 A. Once we completed the process of developing the proposed Initial Water Tariff, we
24 turned to the wastewater tariff. For this process, we again started with the PUC model
25 tariff along with the draft PWSA proposed Initial Water Tariff. For this effort, we

1 focused again on analyzing the provisions of the PUC's model wastewater tariff and
2 PWSA's existing operations. We also worked to create symmetry, where possible, with
3 the proposed Initial Water Tariff. Therefore, where appropriate, the language we
4 proposed for the Initial Water Tariff, which is appropriate to include in the proposed
5 Initial Wastewater Tariff, is replicated. This was done to ensure consistency across both
6 tariffs for ease of both our operations and customers.

7 **Q. WERE DISPOSITION TABLES PREPARED TO SHOW WHERE PROVISIONS**
8 **OF THE OFFICIAL PRIOR TARIFF ARE LOCATED IN THE PROPOSED**
9 **INITIAL TARIFFS?**

10 A. Yes. Exhibits JAQ-2 (water) and JAQ-4 (wastewater) identify all of the sections
11 contained in the proposed initial tariffs and where, if applicable, the similar section is
12 located in our existing Rules and Regulations (aka the Prior Tariff). These exhibits also
13 identify those issues that are not contained in PWSA's existing Rules and Regulations but
14 are included in the proposed initial tariffs.

15 ***B. Stormwater Provisions***

16 **Q. HOW DOES PWSA PROPOSE TO HANDLE TARIFF PROVISIONS RELATED**
17 **TO STORMWATER SERVICE?**

18 A. As explained more fully in the testimony of Mr. Weimar (PWSA St. No. 1) and Ms.
19 Lestitian (PWSA St. No. 2), PWSA is moving toward developing and implementing a
20 separate stormwater service consistent with the Commission's decision to exercise
21 jurisdiction over stormwater service.⁷ As an initial step in this process, we have included
22 PWSA's existing stormwater Rules and Regulations in Part IV of the proposed Initial
23 Wastewater Tariff (there is no PUC model stormwater tariff). Those stormwater-related

⁷ In its Final Implementation Order, the Commission directed PWSA to file a tariff and compliance plan to implement a separate stormwater tariff no later than its next wastewater base rate filing following this proceeding. FIO at 31.

1 rules will subsequently be moved to the separate Stormwater Tariff when that is
2 proposed.

3 ***C. Differences Between Model Tariffs and PWSA Rules & Regulations***

4 **Q. PLEASE EXPLAIN PWSA’S VIEW OF DIFFERENCES BETWEEN THE**
5 **MODEL TARIFFS AND PWSA’S EXISTING RULES AND REGULATIONS.**

6 A. As noted above, PWSA largely adopted the language of the model tariffs in its proposed
7 initial tariffs. In some instances, PWSA elected to propose to continue to use its existing
8 language describing a particular rule, which may not exactly track the language in the
9 model tariff but still has the effect of adopting the substance and intent of the model
10 tariff. For other areas, we analyzed on a case-by-case basis every area in the model
11 tariffs where PWSA initially concluded that it could not adopt the model tariff language
12 or rely on existing PWSA language to satisfy the intent of the model language, because
13 the model tariff does not track existing PWSA practices or rules. We broke these
14 differences down into three categories: (1) model tariff sections where PWSA appears to
15 have discretion because the model tariff language is not rooted in statutory or regulatory
16 requirements; (2) model tariff sections based on regulatory requirements which PWSA
17 cannot accommodate at this time; and, (3) non-existent model tariff sections.

18 **Q. PLEASE IDENTIFY THOSE ISSUES FOR WHICH PWSA ELECTED TO**
19 **EXERCISE DISCRETION REGARDING ITS PROPOSED INITIAL TARIFFS.**

20 A. There are several issues that fall within this category. First, both model tariffs include a
21 “customer charge” which is a fixed charge that does not account for any particular
22 volume of water used by the customer. PWSA’s “Minimum Charge” is set to include a
23 volume of water (the minimum gallons or Consumption Block). As further explained by
24 Harold Smith (PWSA St. No. 5), PWSA is not proposing at this time to unbundle its
25 fixed costs from consumption charges to develop a new fixed fee. Therefore, PWSA

1 proposes to utilize its present “Minimum Charge” structure and has included its definition
2 of this charge in both initial tariffs.

3 A second issue involves not including the State Tax Adjustment Surcharge
4 (“STAS”) in PWSA’s Initial Tariffs since PWSA is not subject to (and is not recovering)
5 the taxes listed in the model provision.

6 The third issue involves PWSA’s ownership of water service lines. For
7 residential water service lines 1-inch in diameter and smaller, PWSA’s existing rules set
8 forth ownership consistent with the model tariff. However, PWSA’s ownership rules for
9 residential water service lines larger than 1-inch and all non-residential service lines
10 differ in that the property owner has ownership to the water main. PWSA proposes to
11 maintain its existing ownership rules as it does not interpret the assumption of
12 jurisdiction by the PUC as requiring a change to these ownership rules.

13 A forth issue regarding PWSA’s proposed Initial Water Tariff is its proposal to
14 bill non-fire consumption of water from hydrants at a unique rate rather than at the
15 “regular” rate for water consumption. The use of a unique rate is consistent with the
16 infrequent use of hydrants for non-fire purposes, as compared to the more frequent use of
17 water for other purposes.

18 A final issue regarding PWSA’s proposed Initial Water tariff is to continue to use
19 hydrant permits to make water available for construction purposes. The model tariff uses
20 a separate “construction rate” for such water. It was not practical for this filing to create
21 a new rate related to this purpose.

1 **Q. DO SOME OF THE DIFFERENCES BETWEEN THE MODEL TARIFF AND**
2 **PWSA’S PROPOSED INITIAL TARIFFS IMPLICATE PUC REGULATIONS?**

3 A. Yes. While the differences described above appear to leave open to PWSA the choice to
4 continue existing practices, the model tariff provisions related to line/main extensions (52
5 Pa. Code §§ 65.21 and 65.7(b)) and pressures (52 Pa.Code § 65.6) are based on
6 Commission regulations. The Commission stated in the Final Implementation Order that
7 it expects PWSA’s Compliance Plan to “detail how PWSA will reach ultimate end-state
8 compliance with the Public Utility Code and Commission regulations.”⁸ Based on this as
9 well as PWSA’s overall understanding of the Commission’s Final Implementation Order,
10 PWSA is not filing a separate petition for waiver of these regulations but, if needed for
11 purposes of approving its proposed initial tariffs in this proceeding, PWSA specifically
12 requests a waiver of these Commission’s regulations.

13 **Q. HOW DO THE COMMISSION’S REGULATIONS REGARDING LINE**
14 **EXTENSIONS AND PROVIDING METERS (AS SET FORTH IN THE MODEL**
15 **TARIFF) RELATE TO THE LINE EXTENSION/FEE PROVISIONS OF THE**
16 **MUNICIPALITY AUTHORITIES ACT (“MAA”).**

17 A. Section 65.21 of the Commission’s regulations require public utilities to make line
18 extensions available and specifically detail how to calculate the amount a customer may
19 be required to pay for the line extension and the basis upon which to determine the
20 utility’s investment for the line extension. Section 65.7(b) of the Commission’s
21 regulations provide that, unless otherwise authorized by the Commission, a public utility
22 must provide, install at its own expense and continue to own, maintain and operate all
23 meters. These requirements are not consistent with the Municipality Authorities Act
24 (“MAA”), the statute under which PWSA was created. The fees that municipal

⁸ FIO at 33.

1 authorities are permitted to charge property owners, which includes both residential and
2 commercial properties, desiring to connect to the municipal system are specifically
3 identified with detailed formulas about how such fees are to be calculated (rooted in
4 actual costs).⁹ The fees authorized by the MAA include: (1) connection fee; (2) customer
5 facilities fee; and, (3) tapping fee. The MAA also specifically states that “no authority
6 shall have the power to impose a connection fee, customer facilities fee, tapping fee or
7 similar fee except as provided specifically under this section.”¹⁰ The PUC’s regulations
8 conflict with the MAA because: (1) the line extension rules only apply to residential lines
9 and include a formula for calculating the advance payment fee that is not consistent with
10 the MAA; and, (2) the requirement that a public utility install water meters at its own
11 expense directly contradicts the authorization under the MAA to collect a customer
12 facilities fee for meter installation. PWSA’s existing Rules and Regulations are
13 consistent with the requirements of the MAA. PWSA is not proposing any revisions to
14 these existing fees at this time because: (1) the fees are collected in compliance with the
15 provisions of the MAA; (2) the MAA limits PWSA’s fee authority to those fees in
16 compliance with its provisions; (3) Section 65.7(b) of the Commission’s regulations
17 specifically recognize the ability of the Commission to authorize a public utility to
18 receive payment from a meter; and, (4) PWSA has not had the opportunity to evaluate
19 how revising its fee structure on this issue would impact operations and revenue
20 structure.

⁹ 53 Pa.C.S. § 5807(d)(24).

¹⁰ 52 Pa. C.S. § 5807(d)(24)(iii)(emphasis added).

1 **Q. PLEASE EXPLAIN WHY PWSA IS NOT ABLE TO ACCOMMODATE THE**
2 **COMMISSION REQUIREMENTS IN SECTION 65.6 RELATED TO NORMAL**
3 **OPERATING PRESSURE.**

4 A. Section 65.6 of the Commission's regulations set forth specific operating pressures that
5 must be maintained at the main. At this time, PWSA does not measure or track pressures
6 in a manner that would comply with the minimum and maximum pressure requirements
7 of this section and, therefore, proposes to maintain service at historic pressures at the
8 main. This issue, and how PWSA may be able to comply with the Commission's
9 regulation in the future, are continuing to be reviewed by PWSA and we anticipate
10 addressing it in the metering plan that will be filed as part of our September 2018
11 compliance plan. Any approved changes resulting from that filing can be included in
12 future tariff revisions. Therefore, for now, PWSA proposes to maintain current processes
13 on this issue.

14 **Q. IS THERE A FINAL ISSUE PWSA PROPOSES TO ADDRESS THAT IS NOT**
15 **CONTAINED WITHIN THE MODEL TARIFF?**

16 A. Yes. As a municipal authority, PWSA has the authority to pursue municipal liens on
17 property where water and/or wastewater charges remain unpaid.¹¹ Since the PUC does
18 not have jurisdiction regarding liens, PWSA is not proposing to include its applicable
19 Rules and Regulations regarding liens in its initial tariffs. PWSA will, however, set forth
20 its requirements, consistent with the empowering statute, related to liens in a document
21 entitled "PWSA Supplemental Service Conditions." The document will be available to
22 customers on PWSA's website and is referenced in appropriate sections of PWSA's
23 proposed initial tariffs. For clarity, PWSA will continue to file liens against properties

¹¹ 52 P.S. §§ 7101-7112.

1 where arrearages have developed. PWSA's policy is to pursue liens only after all other
2 collection attempts have failed and, in most cases, after service has been terminated.

3 **V. Conclusion**

4 **Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?**

5 A. Yes.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

HAROLD J. SMITH, VICE PRESIDENT

**RAFTELIS FINANCIAL CONSULTANTS,
INC.**

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

DOCKET Nos. R-2018-3002645 and R-2018-3002647

Pittsburgh Water and Sewer Authority
Initial Tariff Filings and Rate Requests

July 2, 2018

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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

3 A. My name is Harold J. Smith and my business address is 227 West Trade Street, Charlotte,
4 North Carolina, 28202.

5 **Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY.**

6 A. I am a Vice President of Raftelis Financial Consultants, Inc. (Raftelis), a consulting firm
7 specializing in the areas of water and wastewater finance and pricing. Raftelis was
8 established in 1993 in Charlotte, North Carolina, by George A. Raftelis to provide
9 financial and management consulting services to public and private sector clients.
10 Raftelis is a national leader in the development of water and wastewater rates.

11 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK**
12 **EXPERIENCE.**

13 A. I obtained a Master of Business Administration from Wake Forest University in 1997 and
14 a Bachelor of Science in Natural Resources from the University of the South in 1987. As
15 an employee of Raftelis Financial Consultants, I have been involved in numerous projects
16 for public utilities including a number of studies involving a wide range of technical
17 specialties including water utility cost of service and rate structure studies and water
18 utility financial planning studies.

19 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY REGULATORY**
20 **AGENCIES ON UTILITY RATE RELATED MATTERS?**

21 A. Yes. I provided testimony before the Rhode Island Public Utilities Commission (RIPUC)
22 in Providence Water Supply Board's eight most recent filings before the Rhode Island
23 Public Utility Commission (RIPUC) (Docket Nos. 3832, 4061, 4070, 4080, 4287, 4406,
24 4571, and 4618) and in Newport Water's eight most recent filings (RIPUC Docket Nos.

1 3578, 3675, 3818, 4025, 4128, 4243, 4355 and 4595). I have also provided testimony on
2 water, sewer and stormwater rate related matters before the Tennessee Regulatory
3 Authority as well as in court proceedings in Arizona, Connecticut, Indiana, Maryland and
4 Maine.

5 **Q. DO YOU BELONG TO ANY PROFESSIONAL ORGANIZATIONS OR**
6 **COMMITTEES?**

7 A. Yes. I am a member of the American Water Works Association where I served as
8 chairman of the Competitive Practices Committee and I am a member of the New
9 England Water Works Association.

10 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN PROCEEDINGS BEFORE THE**
11 **PENNSYLVANIA PUBLIC UTILITY COMMISSION (PAPUC) ON BEHALF OF**
12 **PWSA?**

13 A. No, I have not.

14 **II. PURPOSE OF TESTIMONY**

15 **Q. PLEASE DESCRIBE YOUR ROLE IN THIS PROCEEDING?**

16 A. I was tasked by PWSA to perform cost allocations and develop cost based rates and
17 charges for both water and wastewater conveyance service. The results of my analyses
18 are included in the schedules incorporated herein with my testimony.

19 **Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.**

20 A. I am sponsoring PWSA's class cost of service studies ("CCOSS") and rate designs for
21 both the water and wastewater conveyance tariffs. The purpose of the CCOSS' is to
22 allocate PWSA's costs of providing service to each rate class. The rate design analysis
23 results in water and wastewater conveyance rates that help ensure that PWSA's costs are
24 recovered from each class in a fair and equitable manner and in a way that reflects the
25 demands that each class place on the systems. My testimony will first address the

1 CCOSS and rate design analysis that supports the proposed water tariff and will then
2 address the CCOSS and rate design analysis that supports the proposed sewer tariff.

3 **Q. HAVE YOU PERFORMED SIMILAR ANALYSES FOR PWSA IN THE PAST?**

4 A. Yes, Raftelis performed a water and sewer rate study for PWSA in 2016 and again in
5 2017; however, these analyses were not in support of a filing before the Pennsylvania
6 Public Utility Commission.

7 **Q. HOW DOES YOUR TESTIMONY RELATE TO THAT OF OTHER PWSA**
8 **WITNESSES?**

9 A. The testimony of Ms. Lestitian and Ms. Clupper supports PWSA's revenue requirements
10 for both water and sewer service. My testimony uses PWSA's revenue requirements for
11 the Fully Projected Future Test Year ("FPFTY") as a starting point. It also relies on the
12 inputs and assumptions that went into the determination of the FPFTY.

13 **Q. PLEASE PROVIDE A BRIEF DESCRIPTION OF THE EXHIBITS THAT YOU**
14 **ARE SPONSORING.**

15
16 A. My testimony includes two separate sets of exhibits, one set for water rates and another
17 set for wastewater conveyance rates. They are as follows:

18 1. Water Cost of Service Allocation and Rate Design Methodology Exhibits:

- 19 a. **HJS-1W FPFTY Water Revenue Requirements:** This schedule shows the water
20 revenue requirements that must be recovered from the various water rates and
21 charges assessed by PWSA.
22 b. **HJS-2W Assignment to Functional Categories:** This schedule shows the way in
23 which the FPFTY revenue requirements are allocated to different functional
24 categories.
25 c. **HJS-3W Allocation to Base/Extra Capacity Categories:** This schedule shows
26 the way in which the FPFTY revenue requirements are allocated to different cost
27 of service categories.

- d. **HJS-4W Allocation Factor Summary:** This schedule provides a summary of the factors used to assign costs to functional categories and to allocate costs to the cost of services categories and to customer classes.
- e. **HJS-5W Allocation Factor Detail:** This shows the derivation of the allocation factors presented in Schedule HJS-4W.
- f. **HJS-6W Water Units of Service:** Projected water consumption and peaking factors for each customer are shown on this schedule.
- g. **HJS-7W Water Unit Cost of Service:** This schedule shows the calculation of the unit costs of providing service to meet the various and extra capacity demands place on the water system as well as the unit cost of the various components of the Minimum Charge.
- h. **HJS-8W Cost Distribution to Customer Classes:** The allocation of categorized costs to customer classes based on their demand characteristics is shown on this schedule.
- i. **HJS-9W Minimum Charge Calculation:** This schedule demonstrates the calculation of the Minimum Charges.
- j. **HJS-10W Proposed Rates:** This schedule shows the proposed water Minimum Charges and Volume Charges for each customer class, Fire System Charges, and the percent change that the proposed charges represent over existing rates.
- k. **HJS-11W FPFTY CCOSS Comparison – Water:** This schedule shows the allocation of water rate revenue as indicated by the CCOSS as well as revenue by class for the FPFTY under existing rates and proposed rates.
- l. **HJS-12W Comparison of Revenues by Customer Class:** This schedule provides a comparison of revenue generated from each customer class under both the existing and proposed rates. Also shown is the percent difference between revenues under existing and proposed rates. This schedule also provides a comparison of revenue by class with the indicated class cost of service.

- 1 m. **HJS-13W Typical Bill Comparison:** This schedule provides a comparison of
2 typical monthly bills under the existing and proposed rates for typical customers
3 from each customer class.
- 4 n. **HJS-14W Revenue Proof:** This schedule provides a summary of the revenue
5 requirements and revenue to be recovered under the proposed rates.
- 6 o. **HJS-15W Projected Units of Service:** This schedule summarizes consumption
7 data for each of PWSA's customer classes for the HTY, FTY, FPFTY and the
8 previous two fiscal years.

9

10 2. Sewer Cost of Service Allocation and Rate Design Methodology Exhibits:

- 11 a. **HJS-1WW FPFTY Sewer Revenue Requirements:** This schedule shows the
12 wastewater conveyance revenue requirements that must be recovered from the
13 various rates and charges assessed by PWSA.
- 14 b. **HJS-2WW Assignment to Functional Categories:** This schedule shows the way
15 in which the FPFTY revenue requirements are allocated to different functional
16 categories.
- 17 c. **HJS-3WW Allocation to Cost Categories:** This schedule shows the way in which
18 the FPFTY revenue requirements are allocated to different cost of service
19 categories.
- 20 d. **HJS-4WW Allocation Factor Summary:** This schedule provides a summary of
21 the factors used to assign costs to functional categories and to allocate costs to the
22 cost of services categories and to customer classes.
- 23 e. **HJS-5WW Allocation Factor Detail:** This shows the derivation of the allocation
24 factors presented in Schedule HJS-4WW.
- 25 f. **HJS-6WW Sewer Units of Service:** Projected wastewater flow for each customer
26 class are shown on this schedule.
- 27 g. **HJS-7WW Water Unit Cost of Service:** This schedule shows the calculation of
28 the unit costs of providing service to meet the demands placed on the wastewater
29 conveyance system as well as the unit cost of the various components of the
30 Minimum Charge.

- 1 h. **HJS-8WW Cost Distribution to Customer Classes:** The allocation of
2 categorized costs to customer classes based on their demand characteristics is
3 shown on this schedule.
- 4 i. **HJS-9WW Minimum Charge Calculation:** This schedule demonstrates the
5 calculation of the retail Minimum Charges.
- 6 j. **HJS-10WW Proposed Rates:** This schedule shows the proposed wastewater
7 conveyance Minimum Charges and Volume Charges for each customer class and
8 the percent change that the proposed charges represent over existing rates.
- 9 k. **HJS-11WW FPPTY CCOSS Comparison – Wastewater Conveyance:** This
10 schedule shows the allocation of wastewater conveyance rate revenue as indicated
11 by the CCOSS as well as revenue by class for the FPPTY under existing rates and
12 proposed rates.
- 13 l. **HJS-12WW Comparison of Revenues by Customer Class:** This schedule
14 provides a comparison of revenue generated from each customer class under both
15 the existing and proposed rates. Also shown is the percent difference between
16 revenues under existing and proposed rates.
- 17 m. **HJS-13WW Typical Bill Comparison:** This schedule provides a comparison of
18 typical monthly bills under the existing and proposed rates for typical customers
19 from each customer class.
- 20 n. **HJS-14WW Revenue Proof:** This schedule provides a summary of the revenue
21 requirements and revenue to be recovered under the proposed rates.
- 22 o. **HJS-15WW Projected Units of Service:** This schedule summarizes consumption
23 data for each of PWSA's customer classes for the HTY, FTY, FPPTY and the
24 previous two fiscal years.

25
26
27 **III. WATER COST ALLOCATION**

28 **Q. HOW ARE WATER REVENUE REQUIREMENTS ALLOCATED TO COST**
29 **CATEGORIES AND CUSTOMER CLASSES?**

30 A. Costs are allocated in a manner consistent with the methodology described in the
31 American Water Works Association (AWWA) Manual M-1 "Principles of Water Rates,

1 Fees and Charges^{7th} Ed. using the Base/Extra Capacity cost allocation methodology
2 which is a three step process that involves first assigning costs to functional categories,
3 then assigning the costs from each functional category to Base/Extra Capacity cost
4 categories based on system demand characteristics and then allocating the Base/Extra
5 Capacity cost categories to customer classes based on customer class demand patterns.

6 **Q. HOW ARE PWSA'S OPERATING AND MAINTENANCE COSTS ASSIGNED**
7 **TO FUNCTIONAL CATEGORIES?**

8 A. The process of assigning costs to functional categories allows costs to be recovered from
9 customer classes based on the way that PWSA utilizes the resources within each function
10 to meet the demands of each customer class. The functions to which costs are assigned
11 are:

- 12 • Supply
- 13 • Treatment
- 14 • Storage
- 15 • Transmission/Distribution
- 16 • Meters
- 17 • Billing
- 18 • Fire Protection
- 19 • Administrative Support

20
21 As shown on HJS-1W, the FPPTY water operating and maintenance (O&M)
22 expenses are accounted for in a manner consistent with PWSA's O&M budget. With the
23 exception of Customer Service and Engineering & Construction, all of the budget divisions
24 relate directly to one functional category. As shown on HJS-2W, costs that are incurred in
25 support of only one function are assigned directly to that function, while costs that are
26 incurred in support of two or more functions are assigned to functions using allocation

1 factors that reflect the way a particular budget division supports each function. The
2 allocation factors used to assign costs to functional categories are listed and described on
3 Schedules HJS 4W and 5W. This schedule also shows allocation factors used to allocate
4 costs to Base/Extra Capacity cost categories as described later.

5 **Q. HOW ARE CUSTOMER SERVICE COSTS ASSIGNED TO FUNCTIONAL**
6 **CATEGORIES?**

7 A. Since the Customer Service division supports both the Meters and Billing functions,
8 customer Service costs are assigned to functional categories using factor W-I. This factor
9 was developed based on an analysis of each of the cost line items in the division's budget
10 as shown on Schedule HJS-5W.

11 **Q. HOW ARE ENGINEERING & CONSTRUCTION COSTS ASSIGNED TO**
12 **FUNCTIONAL CATEGORIES?**

13 A. The Engineering & Construction division is responsible for planning and executing
14 PWSA's capital projects; therefore, the division's costs are allocated using factor W-J
15 which is based on the composition of the utility's Capital Improvement Plan ("CIP") as
16 shown on HJS-5W. Since most of PWSA's FPFTY capital budget is earmarked for
17 projects to improve, repair and replace PWSA's transmission and distribution system, the
18 majority of the Engineering & Construction divisions costs are assigned to the
19 Transmission & Distribution functional category as shown on Schedule HJS-5W.

20 **Q. HOW ARE CAPITAL COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?**

21 A. PWSA's capital costs consist of three components: (1) Pay-Go for cash funded capital
22 projects; (2) debt service; and (3) contributions to reserves. To properly assign these
23 costs to Base/Extra Capacity cost categories they must first be assigned to functional
24 categories. With the exception of debt service, all water capital costs are assigned to

1 functions based on the make-up of the fixed assets that currently comprise the PWSA
2 water system. This process involved assigning each of PWSA's fixed assets to the
3 appropriate functional category and determining the percentage of the total value of the
4 assets that is assigned to each function. These percentages are then applied to the capital
5 costs to determine the appropriate distribution of capital costs across the functional
6 categories. Schedule HJS-2W shows the break-down of fixed assets by functional
7 categories and the resulting allocation of water capital costs to functional categories.

8 **Q. HOW IS DEBT SERVICE ASSIGNED TO FUNCTIONAL CATEGORIES?**

9 A. As shown on HJS-2W, seventy five percent (75%) of the FPFTY debt service
10 requirements are assigned to functional categories in the same manner as the other capital
11 costs with the other twenty five percent (25%) being assigned directly to the Readiness-
12 to-Serve component of the minimum charge.

13 **Q. WHAT IS THE NEXT STEP IN THE COST ALLOCATION PROCESS?**

14 A. Once costs have been assigned to functional categories, the next step is to allocate the
15 functionalized costs to Base/Extra Capacity cost categories.

16 **Q. HOW ARE PWSA'S COSTS ALLOCATED TO THE DIFFERENT BASE/EXTRA**
17 **CAPACITY COST CATEGORIES?**

18 A. O&M and capital costs are assigned to one or more of six Base/Extra Capacity costs
19 categories based on how costs are incurred to meet the demands of the water system as a
20 whole. The assignment of costs to the Base/Extra Capacity categories is shown on
21 Schedule HJS-3W, Allocation to Base/Extra Capacity Categories.

22 The six cost categories consist of:

- 23 • Base – Base costs are those costs that are incurred to meet the average or “base”
24 demands of the system.

- Max Day – Max Day costs are those costs that are incurred to meet peak daily demands of the system.
- Max Hour – Max Hour costs are those costs that are incurred to meet peak hourly demands of the system.
- Meters – Meter costs are the costs associated with installing, maintaining, repairing and replacing water meters.
- Billing – Billing costs are those costs associated with the determining each customers consumption and then billing them for that consumption.
- Readiness-to-Serve – Readiness-to-Serve costs are the fixed costs associated with the utility's investment in facilities to provide capacity that must be recovered regardless of the amount of water that is sold in a given period.
- Fire Protection – Fire protection costs are the costs associated with providing and maintaining the hydrants and associated infrastructure throughout the system and ensuring that the system is capable of meeting fire flow demands when needed.

Costs are assigned to cost categories using the allocation factors listed and described on Schedules HJS 4W and 5W. Most of the allocation factors are developed using system wide demand data and others are developed based on other analyses.

Q. PLEASE DESCRIBE HOW EACH OF THE ALLOCATION FACTORS SHOWN ON SCHEDULE HJS 4W WAS DEVELOPED.

A. The Base allocator (W-AA) simply assigns all of the costs to the Base cost category in recognition that these costs are incurred solely to meet the average demands placed on the system.

The Maximum Day allocation factor (W-BB) recognizes the way in which costs are incurred to meet the peak day demands placed on the system by all of the customer classes. This factor also allocates a small portion of costs to which it is applied to Fire protection in recognition of the potential peak demand that fire protection could place on

1 the system. This allocation factor is based on plant production data and is developed by
2 dividing average day plant production by peak day plant production.

3 The Peak Hour allocation factor (W-CC) was developed in the same way as the
4 Maximum Day allocation factor except that average day plant production is divided by
5 the peak hour plant production. Similar to factor W-BB, this factor also allocates a small
6 portion of costs to Fire Protection in recognition of the potential peak demands that fire
7 protection places on the system.

8 The Customer-Meters allocation factor (W-DD) simply allocates all meter related
9 costs to the meter component of the Minimum Charge.

10 The Customer-Billing allocation factor (W-EE) allocates all billing related costs
11 to the billing component of the Minimum Charge.

12 The Fire Protection allocation factor (W-FF) assigns all costs to which it is
13 applied to allocate to the Fire Protection category in recognition that these costs are
14 incurred to meet the potential demands placed on the system by the public fire protection
15 system and private fire connections.

16 The Administrative Support allocation factor (W-GG) is used to allocate costs
17 that do not readily fall into a specific functional category. This allocation factor is based
18 on the percentages of overall costs that are allocated to each Base/Extra Capacity cost
19 categories once all other allocations have been performed.

20 The Readiness-to-Serve allocation factor (W-HH) assigns all costs to which it is
21 applied to allocate to the Readiness-to-Serve component of the Minimum Charge.

22 **Q. PLEASE DESCRIBE HOW THE COSTS ARE ALLOCATED TO THE BASE**
23 **EXTRA CAPACITY COST CATEGORIES**

1 A. In the cost allocation model, allocation factors are applied to costs in each functional
2 category such that costs are allocated in a way that reflects the type of demand being met
3 by the function to which the costs have been assigned. For instance, the costs in the
4 Treatment function are allocated using the Allocation Factor W-BB which allocates costs
5 in a way that reflects that the treatment facilities are operated in a way to meet average
6 day demand as well as peak demands. Allocation Factor W-BB allocates costs to Base
7 and Max Day based on the relationship between the system peak day and the system
8 average day demand.

9 **Q. PLEASE DESCRIBE SOME OF THE OTHER PRIMARY ALLOCATION**
10 **FACTORS THAT ARE USED TO ALLOCATE COSTS TO BASE/EXTRA**
11 **CAPACITY CATEGORIES.**

12 A. In addition to Allocation Factor W-BB, which is used to allocate almost 25% of the water
13 revenue requirements, the two factors used to allocate the majority of the revenue
14 requirements are Allocation Factors W-CC and W-GG.

- 15 • Allocation Factor W-CC is used to allocate costs associated with facilities used to
16 meet average day, maximum day and peak hour demands, primarily costs associated
17 with the transmission and distribution system.
- 18 • Allocation Factor W-GG is a composite allocator based on the distribution of non-
19 Administrative Support costs allocated to each of the cost categories and is used to
20 allocate Administrative Support costs.

21 **Q. WHAT IS THE NEXT STEP IN THE COST ALLOCATION PROCESS?**

22 A. The next step in the allocation of water costs is the distribution of costs to each customer
23 class in a manner that reflects the way each class demand s service

24 **Q. HOW ARE THE REVENUE REQUIREMENTS ALLOCATED TO EACH OF**
25 **PWSA'S CUSTOMER CLASSES?**

1 A. As demonstrated on Schedule HJS-7W, the revenue requirements from each cost
2 category are used to determine the unit cost of providing service to meet both average
3 day and peak demands. For example, approximately \$67.6 million in water revenue
4 requirements were allocated to the Base cost category. This amount is reduced by
5 approximately \$4.4 million to reflect revenue from wholesale customers and other
6 miscellaneous revenue, resulting in approximately \$63.2 million in Base revenue
7 requirements to be recovered through retail rates. This amount is divided by the FPFTY
8 projected water sales volume required to meet the retail classes' average day demand
9 (approximately 8 million kgal) to arrive at the unit cost to meet average day demand of
10 \$7.92 per kgal. This unit cost is then multiplied by each class' projected annual water
11 sales volume required to meet average day demand to arrive at the amount of Base costs
12 to be recovered from each class. For example, the Residential class is projected to
13 purchase approximately 2.8 million kgal to meet its average day demands. This amount
14 is multiplied by the unit cost of \$7.92 to arrive at the total Base costs to be recovered
15 from the Residential class. This process is repeated for each of the Base/Extra Capacity
16 cost categories and customer classes to arrive at the total costs to be recovered from each
17 class.

18 **Q. HOW ARE PROJECTED AVERAGE DAY AND EXTRA CAPACITY DEMANDS**
19 **DETERMINED FOR EACH CUSTOMER CLASS?**

20 A. Typically, demand projections would be based on at least three years of historical billing data.
21 However, since PWSA was experiencing billing issues in 2015 and 2016, customer billing
22 data from 2017 was used as the sole basis for all demand projections used in the CCOSS.
23 FPFTY demand by class was set equal to the annual demand exhibited by each class in
24 2017. For the purpose of allocating costs and calculating rates, each class' annual

1 demand was adjusted to reflect that only 95.6% of PWSA's metered and billed
2 consumption results in revenue for the utility due to some bills being uncollectable. The
3 average day demand for each class was then determined by dividing each class' projected
4 annual demand by 365 days. In order to determine the units of service for allocating
5 base/extra capacity costs between customer classes, peaking factors were developed that
6 recognize the level of demand placed on the system by each customer class. Since PWSA
7 was experiencing billing issues in 2015 and 2016, customer billing data from 2017 was
8 used to establish peaking factors by customer class. Monthly customer usage by customer
9 class and billing cycle was analyzed. Since PWSA bills customers on an average 30-day
10 cycle, certain cycles had to be removed due to multiple billings occurring in the same
11 month. In addition, unreasonable and irregular billing cycles and outliers were removed.
12 These outliers were likely due to estimated meter reads or other billing errors. The
13 normalized dataset which remained was a better representation of the usage patterns for
14 each customer class.

15 Using the normalized dataset, the Maximum Month to Average Day factors for
16 each class were calculated, as shown on HJS-6W. These factors were then adjusted by a
17 system Maximum Day to Maximum Month factor (1.34) which was derived using PWSA
18 water treatment plant production data for 2017. Multiplying those two factors together
19 provided Maximum Day peaking factors for each class. In order to estimate peak hour
20 factors, we utilized an estimated Maximum Hour to Maximum Day factor which was
21 1.33 for industrial and 1.66 for all other customer classes. This factor was utilized to
22 recognize that industrial customers have stable usage patterns and typically exhibit lower
23 peak usage. Multiplying the estimated Maximum Hour to Maximum Day factor by the

Maximum Day factor provided the Maximum Hour peaking factor. FPFTY demands and historical demand data are shown on HJS-15W.

Q. ARE COSTS ALLOCATED TO THE WHOLESALE CUSTOMERS?

A. No, the wholesale rates are determined based on existing contractual relationships between PWSA and each wholesale customer. As mentioned previously, the revenue from wholesale customers is used to offset the costs that need to be recovered from PWSA's retail customers with wholesale revenues reflecting any rate increases that are allowed by contract.

IV. WATER RATE DESIGN

Q. PLEASE DESCRIBE PWSA'S EXISTING WATER RATE STRUCTURE.

A. PWSA's current rate structure for retail customers consists of a monthly Minimum Charge that varies by meter size and a Volume Charge that varies by customer class. The Minimum Charge is used to recover PWSA's customer costs as well as some of PWSA's costs associated with providing capacity to meet customer demand. Additionally, the Minimum Charge recovers the cost of a water usage allowance that also varies by meter size.

The Volume Charge is designed to recover PWSA's costs that vary based on customer demand as well as the portion of PWSA's fixed costs that are not recovered through the Minimum Charge. The volumetric rate per thousand gallons (kgal) of water consumed varies by customer class based on the way in which each class demands service. The water customer classes are:

- Residential,
- Residential CAP,

- 1 • Commercial,
- 2 • Industrial,
- 3 • Health or Education, and
- 4 • Fire
- 5

6 PWSA does not assess public fire protection charges, but does assess a monthly
7 Fire System Charge to customers with fire suppression systems connected to the PWSA
8 water system.

9 PWSA also assess a number of miscellaneous charges for various services and
10 activities that it performs periodically at the request of its customers. PWSA is not
11 seeking adjustments to any of these miscellaneous charges and, as such, they are not
12 addressed in my testimony.

13 **Q. ARE YOU PROPOSING TO MAKE CHANGES TO THE EXISTING RATE**
14 **STRUCTURE?**

15 A. No, we are not. The existing structure is consistent with standard industry practice for
16 municipal utilities and should recover costs in a fair and equitable manner. Additionally,
17 given the circumstances surrounding this filing, it was not feasible to make significant
18 changes to the existing structure. Instead, we focused our efforts on ensuring that the
19 proposed rates reflect the cost of providing service to each class.

20 **Q. TO WHAT CIRCUMSTANCES ARE YOU REFERRING?**

21 A. A number of things have complicated the preparation of the rate filing. First, this is
22 PWSA's first filing before the PUC and, pursuant to the Act that placed PWSA under
23 PUC jurisdiction, the Authority was only given 90 days in which to prepare the filing.
24 Most rate filings I have participated in in other jurisdictions have required at least six
25 months to prepare and those were for utilities that file rate cases on a regular basis.

1 Given the short time frame, it was not feasible to perform the analysis that would be
2 required to support significant changes in the rate structure.

3 **Q. HAD PWSA BEEN ALLOWED MORE TIME TO PREPARE THEIR RATE**
4 **FILING, WOULD IT HAVE PROPOSED CHANGES TO THE RATE**
5 **STRUCTURE?**

6 A. Had PWSA been allowed more time to prepare its rate filing it might have proposed the
7 elimination of the usage allowance included in the Minimum Charge. However,
8 eliminating this component of the existing rate structure results in a significant decrease
9 in fixed revenue from the Minimum Charge which, given the decline in consumption,
10 could have an adverse impact on PWSA's standing in the capital markets. Adjusting the
11 Minimum Charge such that Minimum Charge revenue without the usage allowance is
12 equal to revenue with the usage allowance results in significant adverse impacts for low
13 volume users. The short time frame given for preparation of the rate filing, as well as the
14 recent loss of key PWSA personnel, made it practically impossible to identify and
15 analyze rate structure changes that may have helped mitigate the adverse impacts of
16 restructuring the minimum charge.

17
18 **Q. HOW ARE THE MINIMUM CHARGES CALCULATED?**

19 A. As shown on Schedule HJS-9W the Minimum Charges are comprised of four
20 components, the Meter component; the Billing component, the Readiness-to-Serve
21 component and the Usage component.

22 **Q. HOW IS EACH OF THESE COMPONENTS CALCULATED?**

23 A. The Meter component is calculated by dividing all costs allocated to the Meter category
24 by the number of 5/8" equivalent meters in the system to determine a cost per 5/8"

1 equivalent meter. The meter size specific service charges are determined by then
2 multiplying the cost per 5/8" equivalent meter by the appropriate AWWA meter
3 equivalency ratio (shown on HJS-5W) to determine the appropriate charge for each meter
4 size.

5 The Billing component is calculated by dividing the costs allocated to the Billing
6 category by the total number of bills prepared each year to determine a unit cost per bill.

7 The Readiness-to-Serve component is calculated by dividing all of the costs
8 allocated to the Readiness-to-Serve category by the number of 5/8" equivalent meters in
9 the system to determine a cost per 5/8" equivalent meter. The meter size specific
10 Readiness-to-Serve charges are determined by then multiplying the cost per 5/8"
11 equivalent meter by the appropriate AWWA meter equivalency ratio to determine the
12 appropriate charge for each meter size.

13 The Usage component is used to recover the costs of providing the volume
14 allowance included in the Minimum Charge. It is calculated, as shown on Schedule HJS-
15 9W, by multiplying the allowance for each meter size by the retail volumetric unit cost.
16 For example, accounts with a 3/4" meter receive a 2 kgal/month allowance. Therefore, the
17 Usage component for a 3/4" meter is equal to 2 kgal times the volumetric unit cost of
18 \$11.87, or \$23.74.

19 Once each of the four components of the Minimum Charge are calculated for each
20 meter size, they are added together to arrive at the Minimum Charge for each meter size.
21 For example, the proposed Minimum Charge for an account with a 3/4" meter is
22 \$45.79/month. This charge is comprised of a metering component of \$5.87, plus a billing
23 component of \$3.58, plus a Readiness-to-Serve component of \$12.61, plus a usage

1 component of \$23.74. The resulting amount is then rounded up to the nearest cent. This
2 process is demonstrated on HJS-9W and the proposed Minimum Charges are shown on
3 HJS-10W. HJS-10W also provides a comparison of the proposed Minimum Charges to
4 the existing Minimum Charges.

5 **Q. HOW ARE VOLUME CHARGES CALCULATED?**

6 A. Volumetric charges are calculated by dividing the total of the base and extra capacity
7 costs allocated to each customer class, net of revenues provided by the usage component
8 of the minimum charge, by the projected FPFTY consumption of that customer class as
9 demonstrated on HJS-9W. For example, the rate for the commercial class is determined
10 by dividing the total base and extra capacity costs allocated to the commercial class, net
11 of the revenues provided by the usage component of the minimum charge, by projected
12 commercial class consumption in the FPFTY to arrive at the consumption rate. The
13 resulting value, rounded up to the nearest cent, is the proposed rate for the commercial
14 class. HJS-10W shows the proposed Volume Charges as well as a comparison of the
15 proposed charges to the existing charges.

16 **Q. DOES PWSA ASSESS FIRE PROTECTION CHARGES?**

17 A. Monthly fixed Fire System charges are assessed to customers that have private fire
18 suppression systems connected to the PWSA system. PWSA also assesses a Volumetric
19 Charge for all water used by fire system customers for purposes other than fire fighting.

20 **Q. HOW ARE THE FIXED FIRE SYSTEM CHARGES CALCULATED?**

21 A. Like the Minimum Charges, Fire System Charges are comprised of four components, the
22 Meter component; the Billing component; the Readiness-to-Serve component; and the
23 Fire component. The Billing and Readiness-to-Serve components are calculated in the

1 same manner as for the Minimum Charge except that different equivalency ratios are
2 used to determine the meter size specific charges for meters larger than 5/8". The Fire
3 component is calculated by dividing the costs allocated to the Fire Protection cost
4 category by the number of 5/8" meter equivalents represented by the projected number of
5 fire suppression connections during the FPFTY. The Fire System Charge for each group
6 of meter sizes is the sum of the four components for each group of meter sizes.

7 **Q. PLEASE EXPLAIN WHY DIFFERENT METER EQUIVALENCY RATIOS ARE**
8 **USED TO DETERMINE THE FIRE SYSTEM CHARGES?**

9 A. The fire charge meter equivalency ratios used in this cost of service analysis were the
10 ratios in use when Raftelis first developed water rates for PWSA in 2016. The exact
11 origin of these ratios are not known, but we continued to use these ratios in the interest of
12 rate stability.

13 **Q. HOW ARE THE PROPOSED VOLUMETRIC FIRE SYSTEM CHARGES**
14 **CALCULATED?**

15 A. The volumetric Fire System Charges are calculated in the same manner as the other
16 Volumetric Charges, by dividing the base and extra capacity costs allocated to fire
17 protection by the projected demand for water from fire systems that is not used for
18 fighting fires.

19 **Q. DO THE PROPOSED CHARGES GENERATE REVENUE BY CLASS THAT IS**
20 **CONSISTENT WITH EACH CLASS' COST OF SERVICE AS INDICATED BY**
21 **THE CCROSS?**

22 A. As shown in HJS-11W and HJS-12W, with the exception of the Residential and Health or
23 Education classes, the projected revenue by class under the proposed rates is consistent
24 with the class cost of service as indicated by the CCROSS.

1 **Q. WHY IS REVENUE UNDER PROPOSED RATES FOR THE RESIDENTIAL**
2 **AND HEALTH OR EDUCATION CLASSES NOT CONSISTENT WITH THE**
3 **INDICATED COST OF SERVICE?**

4 A. These inconsistencies are the result of a long standing PWSA policy of setting the Health
5 or Education rate at a level in excess of the indicated cost of service and using the excess
6 revenue to subsidize the Residential Volume Charge. In recognition of the fact that this
7 practice is inconsistent with cost of service principles we have dramatically reduced the
8 subsidy, but could not eliminate it completely without causing potential “rate shock” for
9 the Residential class. We plan to fully eliminate this subsidy in our next rate filing.

10 **Q. HAVE YOU PROVIDED INFORMATION ON WHAT THE CUSTOMER**
11 **IMPACTS ARE PROJECTED TO BE?**

12 A. Yes, Schedule HJS-13W shows example monthly bills under existing and proposed rates
13 and the percentage impacts that are likely to occur for typical customers in each class.
14 For a typical residential customer using 3 kgal per month, their monthly water bill would
15 increase from \$42.07 to \$49.83 which represents a 18.4% increase.

16 **Q. WHAT CONSIDERATION HAS BEEN GIVEN AS TO WHETHER THE**
17 **REVENUES FROM THE RATES AND CHARGES ARE SUFFICIENT TO**
18 **COVER REVENUE REQUIREMENTS FOR PWSA?**

19 A. Schedule HJS-14W serves as a revenue proof to determine revenue sufficiency of the
20 proposed rates and charges. The revenues that would be generated under the proposed
21 rates and charges are shown. As shown on this schedule, revenue generated by the
22 proposed rates and charges exceeds the water system revenue requirements by
23 approximately \$32,000. This difference is attributable to the rounding of rates and
24 charges to the nearest cent.

25
26 **V. WASTEWATER CONVEYANCE COST ALLOCATION**

**Q. HOW ARE WASTEWATER CONVEYANCE REVENUE REQUIREMENTS
ALLOCATED TO COST CATEGORIES AND CUSTOMER CLASSES?**

A. Wastewater conveyance costs are allocated according to standard industry practice as described in the Water Environment Federation's (WEF) Manual of Practice No. 27, "Financing and Charges for Wastewater Systems". Similar to the allocation methodology used for determining PWSA's water rates, the allocation process involves three steps: 1) assigning costs to functional categories; 2) assigning the costs from each functional category to cost categories; and 3) allocating the costs from each cost category to customer classes.

**Q. HOW ARE PWSA'S OPERATING AND MAINTENANCE COSTS ASSIGNED
TO FUNCTIONAL CATEGORIES?**

A. The process of assigning costs to functional categories allows costs to be recovered from customer classes based on the way that PWSA utilizes the resources within each function to meet the demands of each customer class. The functions to which costs are assigned are:

- Conveyance & Collection
- Meters
- Billing
- Administrative Support

Similar to the water expenses, the FPPTY operating and maintenance (O&M) expenses are accounted for in a manner consistent with PWSA's O&M budget. The wastewater conveyance revenue requirements are shown on HJS-1WW. With the exception of Customer Service and Engineering & Construction, all of the budget divisions relate directly to one functional category. As shown in Schedule HJS-2WW, costs that are incurred in support of only one function are assigned directly to that

function, while costs that are incurred in support of two or more functions are assigned to functions using allocation factors that reflect the way a particular budget division supports each function. The allocation factors used to assign costs to functional categories are listed and described on Schedules HJS 4WW and 5WW.

Q. HOW ARE CUSTOMER SERVICE COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. Since the Customer Service division supports both the Meters and Billing functions, Customer Service costs are assigned to functional categories using factor WW-E. This factor was developed based on an analysis of each of the cost line items in the division's budget as shown on Schedule HJS-5WW.

Q. HOW ARE ENGINEERING & CONSTRUCTION COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. The Engineering & Construction division is responsible for planning and executing PWSA's capital projects; therefore, as was the case with the water expenses, the division's costs are allocated based on the composition of the utility's CIP. Unlike the water CIP, all of the wastewater conveyance projects are related to the improvement, repair, replacement and expansion of the wastewater conveyance and collection system; therefore, all of the Engineering & Construction expenses are allocated to Conveyance & Collection as shown on Schedule HJS-2WW.

Q. HOW ARE CAPITAL COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. PWSA's capital costs consist of three components: (1) Pay-Go for cash funded capital projects and; (2) debt service; and (3) contributions to reserves. To properly assign these costs to cost categories they must first be assigned to functional categories. All capital costs are assigned to functions based on the make-up of the fixed assets that currently

1 comprise the PWSA wastewater conveyance system. This process involved assigning
2 each of PWSA's fixed assets to the appropriate functional category and determining the
3 percentage of the total value of the assets that is assigned to each function. These
4 percentages are then applied to the capital costs to determine the appropriate distribution
5 of capital costs across the functional categories. Schedule HJS-2W shows the break-
6 down of fixed assets by functional categories.

7 **Q. WHAT IS THE NEXT STEP IN THE COST ALLOCATION PROCESS?**

8 A. Once costs have been assigned to functional categories, the next step is to allocate the
9 functionalized costs to cost categories.

10 **Q. HOW ARE PWSA'S COSTS ALLOCATED TO THE DIFFERENT COST**
11 **CATEGORIES?**

12 A. O&M and capital costs are assigned to one or more of four cost categories based on how
13 costs are incurred to meet the demands of the wastewater conveyance system as a whole.
14 The assignment of costs to the cost categories is shown on Schedule HJS-3WW,
15 Allocation to Cost Categories. Since all of the wastewater collected and conveyed by the
16 PWSA wastewater conveyance system is treated at the ALCOSAN wastewater treatment
17 facilities, the process of assigning costs to cost categories is greatly simplified because no
18 costs need to be allocated to any of the treatment related categories addressed in WEF
19 Manual No. 27.

20 The four cost categories consist of:

- 21 • Volume – Volume costs are those costs that are a function of the amount of
22 wastewater that is collected and conveyed by the system
- 23 • Meters – Meter costs are the costs associated with installing, maintaining,
24 repairing and replacing water meters. While the water meters are not used to

1 measure wastewater flow, the water flow measured by the meters serves as a
2 proxy for the volume of wastewater discharged by each customer and therefor
3 the meters serve a vital role in the process of assessing wastewater
4 conveyance charges to PWSA's customers.

- 5 • Billing – Billing costs are those costs associated with billing PWSA
6 wastewater conveyance customers for wastewater collection and conveyance.
- 7 • Readiness-to-Serve – Readiness-to-serve costs are the fixed costs associated
8 with the utility's investment in facilities to provide capacity that must be
9 recovered regardless of the amount of wastewater that is discharged into the
10 system.

11 Costs are assigned to cost categories using the allocation factors listed and
12 described on Schedules HJS 4WW and 5WW. Most of the allocation factors are
13 developed using system wide demand data and others are developed based on other
14 analyses.

15 **Q. PLEASE DESCRIBE HOW EACH OF THE ALLOCATION FACTORS SHOWN**
16 **ON SCHEDULE HJS 4WW WAS DEVELOPED.**

17 A. The Volume allocator (WW-AA) assigns all of the costs to which it is applied to the
18 Volume cost category in recognition that these costs are driven by the volume of
19 wastewater collected and conveyed by the wastewater conveyance system.

20 The Customer-Meters allocation factor (WW-BB) allocates all meter related costs
21 to the meter component of the Minimum Charge.

22 The Customer-Billing allocation factor (WW-CC) allocates all billing related
23 costs to the billing component of the Minimum Charge.

1 The Administrative Support allocation factor (WW-DD) is used to allocate costs
2 that do not readily fall into a specific functional category. This allocation factor is based
3 on the percentages of overall costs that are allocated to each of the other cost categories
4 once all other allocations have been performed.

5 The Readiness-to-Serve allocation factor (WW-EE) is used to allocate to the
6 readiness to serve component of the Minimum Charge. Note that this allocation factor is
7 not currently used to allocate any of the wastewater conveyance system costs; however, it
8 is available for use in determining rates if needed.

9 **Q. PLEASE DESCRIBE HOW THE COSTS ARE ALLOCATED TO THE COST**
10 **CATEGORIES**

11 **A.** In the cost allocation model, allocation factors are applied to costs in each functional
12 category such that costs are allocated in a way that reflects the type of demand being met
13 by the function to which the costs have been assigned. For instance, the costs in the
14 Collection & Conveyance function are allocated using the Allocation Factor WW-AA
15 which allocates costs in a way that recognizes that all of the costs in this function are
16 dependent upon the volume of wastewater collected and conveyed by the wastewater
17 conveyance system. Over seventy-two percent (72%) of PWSA's wastewater
18 conveyance costs are allocated using the WW-AA allocation factor.

19
20 **VI. SEWER RATE DESIGN**

21 **Q. PLEASE DESCRIBE PWSA'S EXISTING WASTEWATER CONVEYANCE**
22 **RATE STRUCTURE.**

23 **A.** PWSA's current wastewater conveyance rate structure for retail customers consists of a
24 monthly Minimum Charge that varies by meter size and a Volume Charge that varies by

customer class. The Minimum Charge is used to recover PWSA's customer costs and the cost of a sewer usage allowance that also varies by meter size.

The Volume Charge is designed to recover PWSA's costs that vary based on customer demand as well as the portion of PWSA's fixed costs that are not recovered through the Minimum Charge. The volumetric rate per kgal of wastewater discharged varies by customer class based on the way in which each class demands service. The water customer classes are:

- Residential
- Residential CAP
- Commercial
- Industrial
- Health or Education

Q. IS PWSA PROPOSING TO MAKE ANY CHANGES TO THE EXISTING WASTEWATER CONVEYANCE RATE STRUCTURE?

A. No. As described in my testimony relating to the water rate structure, it was not feasible to perform the analysis necessary to support changes to the existing wastewater conveyance rate structure.

Q. HOW ARE THE MINIMUM CHARGES CALCULATED?

A. As shown on Schedule HJS-9WW the Minimum Charges are comprised of four components, the Meter component; the Billing component, the Readiness-to-Serve component and the Usage component.

Q. HOW IS EACH OF THESE COMPONENTS CALCULATED?

A. The Meter component is calculated by dividing all costs allocated to the Meter category by the number of 5/8" equivalent meters in the system to determine a cost per 5/8" equivalent meter. The meter size specific service charges are determined by then

1 multiplying the cost per 5/8" equivalent meter by the appropriate AWWA meter
2 equivalency ratio to determine the appropriate charge for each meter size.

3 The Billing component is calculated by dividing the costs allocated to the Billing
4 category by the total number of bills prepared each year to determine a unit cost per bill.

5 The Readiness-to-Serve component is calculated by dividing all of the costs
6 allocated to the Readiness-to-Serve category by the number of 5/8" equivalent meters in
7 the system to determine a cost per 5/8" equivalent meter. The meter size specific
8 Readiness-to-Serve charges are determined by then multiplying the cost per 5/8"
9 equivalent meter by the appropriate AWWA meter equivalency ratio to determine the
10 appropriate charge for each meter size. As mentioned previously, none of PWSA's
11 wastewater conveyance costs are currently recovered through the Readiness-to-Serve
12 component.

13 The Usage component is used to recover the costs of providing the volume
14 allowance included in the Minimum Charge. It is calculated, as shown on Schedule HJS-
15 9WW, by multiplying the allowance for each meter size by the retail volumetric unit cost.
16 For example, accounts with a 3/4" meter receive a 2 kgal/month allowance. Therefore, the
17 Usage component for a 3/4" meter is equal to 2 kgal times the volumetric unit cost of
18 \$6.89, or \$13.78.

19 Once each of the four components of the Sewer Minimum Charge are calculated
20 for each meter size, they are added together to arrive at the Sewer Minimum Charge for
21 each meter size. For example, the proposed Sewer Minimum Charge for an account with
22 a 3/4" meter is \$18.65/month. This charge is comprised of a metering component of
23 \$1.44, plus a billing component of \$3.43, plus a Readiness-to-Serve component of \$0.00,

1 plus a usage component of \$13.78. The resulting amount is then rounded up to the
2 nearest cent.

3 **Q. HOW ARE THE COSTS ALLOCATED TO EACH OF PWSA'S CUSTOMER**
4 **CLASSES?**

5
6 A. As demonstrated on Schedule HJS-7WW, the revenue requirements from each cost
7 category are used to determine the unit cost of providing wastewater collection and
8 conveyance service. For example, approximately \$63.8 million in wastewater
9 conveyance revenue requirements were allocated to the Volume cost category. This
10 amount is reduced by approximately \$2.7 million to reflect revenue from wholesale
11 customers and other miscellaneous revenue, resulting in approximately \$61.1 million in
12 Volume revenue requirements to be recovered through retail rates. This amount is
13 divided by the FPFTY projected billable flows (approximately 8.1 million kgal) to arrive
14 at the unit cost of \$7.538 per kgal. As shown on HJS-8WW, this unit cost is then
15 multiplied by each class' projected billable wastewater flows to arrive at the amount of
16 Volume costs to be recovered from each class. For example, the Residential class is
17 projected to discharge approximately 2.8 million kgal. This amount is multiplied by the
18 unit cost of \$7.538 to arrive at the total Volume costs to be recovered from the
19 Residential class. This process is repeated for each of the customer classes to arrive at
20 the total costs to be recovered from each class.

21 **Q. HOW ARE SEWER VOLUME CHARGES CALCULATED?**

22 A. As shown on HJS-9WW, wastewater conveyance Volume Charges are calculated by
23 dividing the net volumetric revenue requirements for each class by the projected volume
24 of wastewater discharged by each class. Net volumetric revenue requirements are

1 determined by first subtracting the revenue generated from Sewer Minimum Charges by
2 each class from the total revenue requirements allocated to each class. The result is the
3 costs that must be recovered from each class through the Volume Charge. For example,
4 the rate for the Residential class is determined by dividing the net volumetric revenue
5 requirements allocated to the Residential class (\$13.3M) by the projected wastewater
6 volume discharged by the Residential class (2.0M kgal) to arrive at the volumetric rate of
7 \$6.55 per kgal. The resulting rates and charges are shown on HJS-10WW.

8 **Q. DO THE PROPOSED CHARGES GENERATE REVENUE BY CLASS THAT IS**
9 **CONSISTENT WITH EACH CLASS' COST OF SERVICE AS INDICATED BY**
10 **THE CCROSS?**

11 A. As shown in HJS-11WW and HJS-12WW, the projected revenue by class under the
12 proposed rates is consistent with the class cost of service as indicated by the CCROSS.

13
14 **Q. HAVE YOU PROVIDED INFORMATION ON WHAT THE CUSTOMER**
15 **IMPACTS ARE PROJECTED TO BE?**

16 A. Yes, HJS-13WW shows bills under existing and proposed rates and the percentage
17 impacts that are likely to occur for typical residential, commercial, and industrial
18 customers. For a typical residential customer using 3 kgal per month, their monthly
19 wastewater conveyance bill increases from \$21.55 to \$24.40 which represents a 13.2%
20 increase.

21 **Q. WHAT CONSIDERATION HAS BEEN GIVEN AS TO WHETHER THE**
22 **REVENUES FROM THE WASTEWATER CONVEYANCE RATES AND**
23 **CHARGES ARE SUFFICIENT TO COVER WASTEWATER CONVEYANCE**
24 **REVENUE REQUIREMENTS FOR PWSA?**

25 A. HJS-13WW serves as a revenue proof to determine revenue sufficiency of the proposed
26 rates and charges. The revenues that would be generated under the proposed rate
27 structure are shown.

1 **Q. ACCORDING TO THE RATE MODEL, ARE THE RATES AND CHARGES**
2 **CALCULATED SUFFICIENT TO MEET REVENUE REQUIREMENTS?**

3 A. Yes, as shown in HJS-13WW, the revenues projected to be recovered from the proposed
4 rates are approximately \$26,000 greater than the revenue requirements for the FPFTY,
5 with the difference being attributable to rounding of the proposed rates.

6 **Q. MR. SMITH, DOES THAT CONCLUDE YOUR TESTIMONY?**

7 A. Yes it does.