

**BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION**

**VOLUME II**

**TESTIMONY AND EXHIBITS**

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

**Docket Nos.**

**R-2023-3039920 (WATER)**

**R-2023-3039921 (WASTEWATER)**

**R-2023-3039919 (STORMWATER)**

**Pittsburgh Water and Sewer Authority  
2023 Rate Filing**

**Docket Nos.**

**R-2023-3039920 (Water)  
R-2023-3039921 (Wastewater)  
R-2023-3039919 (Stormwater)**

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BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**WILLIAM J. PICKERING**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Overview of Filing

Description of PWSA and Process of Transition

Organizational Structure, Management Quality Updates

Accomplishments Since Last Rate Case

May 9, 2023

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**TABLE OF EXHIBITS**

WJP-1	Rate Case Tables
WJP-2	2019 Cooperation Agreement

1 **I. INTRODUCTION**

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

3 A. My name is William J. Pickering. My position with The Pittsburgh Water & Sewer  
4 Authority (“PWSA” or “Authority”) is Chief Executive Officer.

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

6 A. I assumed the position of Executive Director for PWSA on June 1, 2020. On November  
7 13, 2020, my title changed to Chief Executive Officer, through modifications made by  
8 the Board to the Bylaws.

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 related  
14 stormwater system; developing and implementing a capital improvement and  
15 maintenance plan; directing water Customer Assistance Program efforts; and interacting  
16 with customers, elected officials, consumer groups, governmental entities and the media.

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

18 A. Prior to joining PWSA in fall 2016, I was Manager of Communications and Government  
19 Relations at DC Water. There, I managed the communications program and spearheaded  
20 DC Water’s interactions with the federal, District and neighboring local governments. I  
21 have also held several positions in the local and federal government. I have a Bachelor of  
22 Science in Political Science from Santa Clara University and received my Certificate in  
23 Public Management from George Washington University.

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

2 A. Yes. In PWSA’s 2021 base rate proceeding, I submitted direct testimony on April 13,  
 3 2021 and rebuttal testimony on July 29, 2021.<sup>1</sup> Also, in PWSA’s 2020 rate case, I  
 4 submitted rebuttal testimony and adopted the direct testimony of Robert A. Weimar,  
 5 PWSA’s former Executive Director, in that rate proceeding.<sup>2</sup>

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

7 A. The purpose of my testimony is to offer a high-level synopsis of this rate filing while  
 8 introducing the other PWSA witnesses presenting testimony and explaining the scope of  
 9 their testimony. I will also provide an overview about PWSA to include its continuing  
 10 transition process to Commission jurisdiction and the current status of various projects  
 11 and initiatives that have occurred since PWSA’s 2021 rate case filing.

12 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

13 A. Yes. I am sponsoring PWSA Exhibit WJP-1, which includes the Rate Case Tables; and  
 14 PWSA Exhibit WJP-2, which is the 2019 Cooperation Agreement.

15 **Q. WHO ARE THE OTHER WITNESSES PROVIDING TESTIMONY ON BEHALF**  
 16 **OF PWSA?**

17 A. The other witnesses providing testimony on behalf of PWSA are:

Witness	St. No.	Topics
Edward Barca	2	Support for Proposed Rate Increase, Support for DSIC Cap Increase, <i>Pro Forma</i> Financial Results, Rate Structure Changes & New Charges, Calculation of Revenue Requirements, Development of Operating Budget & Capital Needs
William J. McFaddin	3	Valve Maintenance, Meter Replacement, Flushing Distribution System

<sup>1</sup> Docket Nos. R-2021-3024773, R-2021-3024774 and R-2021-3024779.

<sup>2</sup> Docket Nos. R-2020-3017951, R-2020-3017970 and P-2020-3019019.

Witness	St. No.	Topics
Barry King	4	Capital Projects, Wastewater Laterals, Minimum Warranty
Tony Igwe	5	Stormwater
Julie A. Mechling	6	Customer Service and Collections Updates, Rate Mitigation Efforts, Prior Settlement Commitments, Water, Wastewater and Storm Water Tariffs
Harold J. Smith	7	Allocation of Total System Revenue Requirements, Water Cost Allocation and Rate Design, Wastewater Cost Allocation and Rate Design, Stormwater Cost Allocation and Rate Design, Gradualism Adjustment
Keith Readling	8	Stormwater Program Revenue Requirements, Identifying Impervious Area, Stormwater Fee Structure, Stormwater Fee Billing, Stormwater Credit Program
Christine Fay	9	Support for Proposed Rate Increase, Financial Policies and Goals, Capital Markets Consideration, Peer Review of Financial Metrics

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I also wish to note, although she is not providing direct testimony in support of the rate case filing, on April 19, 2022, PWSA announced that Monica Walaan, Esquire, had joined the organization as Chief Legal Officer. In this role, Ms. Walaan oversees the legal affairs of PWSA and serves as an advisor to counsel, support and guide the organization on a comprehensive range of legal and strategic issues. As part of PWSA’s robust focus on environmental compliance and ethics, Ms. Walaan also serves as an important internal resource to help guide PWSA employees in acting with the highest ethical standards.

**Q. DO YOU HAVE ANY GENERAL OBSERVATIONS ABOUT PWSA’S PROPOSED RATE INCREASE?**

A. Yes. At the outset, I wish to emphasize that PWSA understands that this request for rate relief is larger than it has submitted in the past. The Authority did not make the decision lightly to seek rate relief at the level of \$146 million, over a three-year period. While I



1 expect that this amount seems like an extraordinary request, the reason is that PWSA is  
2 making extraordinary strides in every area of our operations to be the water, wastewater  
3 and stormwater utility of the future. The many accomplishments of PWSA in recent  
4 years, some of which I will highlight, demonstrate that PWSA has devoted itself to  
5 making the most of the prior rate relief approved by the Commission. The combination  
6 of PWSA's commitments to excellence, and the steady revenue stream afforded by the  
7 Commission's approvals, have placed PWSA on a trajectory toward becoming "best in  
8 class" in terms of providing excellent customer service, implementing a robust  
9 construction program, replacing lead service lines throughout Pittsburgh and continuing  
10 to excel in all areas of its operations. Of particular note, PWSA has completed a number  
11 of construction projects designed to provide more reliable service to customers, meet  
12 stricter water quality standards and improve water quality and stormwater management.

13 A compelling example that demonstrates the commitment to excellence  
14 throughout PWSA's organization is the Strategic Planning Project on which the  
15 Authority embarked on March 29, 2022 to guide its priorities over the next five years.  
16 The first phase of this project was to define our Mission, Vision and Core Values, which  
17 are listed below:

- 18 • PWSA's Mission is: To support its region by protecting public health and the  
19 environment through the delivery of safe and reliable water services with a  
20 commitment to future generations.
- 21 • PWSA's Vision is: To transform Pittsburgh's water system while being recognized  
22 by its customers as a trusted service provider and a steadfast steward of a vital  
23 public asset.
- 24 • PWSA's Core Values are:
  - 25 (a) **Stewardship:** As a public utility, PWSA is responsible for serving as mindful  
26 stewards of its water system and continuing to provide essential and  
27 dependable water services now and for generations to come. Right now,  
28 PWSA is making decisions that will impact Pittsburgh for the next 100 years.

- 1 (b) **Ethics & Integrity:** PWSA acts ethically and with integrity in all instances,  
2 both as individuals and as an organization. This means modeling honesty,  
3 transparency and professionalism in everything we do.
- 4 (c) **Accountability:** PWSA is held accountable, both individually in everyday  
5 roles and as one organization. Only by doing what PWSA promised can  
6 PWSA rebuild trust with the community.
- 7 (d) **Safety:** PWSA ensures a safe working environment for employees, the safety  
8 of its infrastructure assets and the safety of the millions of gallons of water  
9 delivered to customers every day.
- 10 (e) **Equity:** PWSA strives to deliver quality and affordable water services to  
11 every community in its service area and to create a workplace that reflects the  
12 diversity of those communities.

13 While PWSA has made significant achievements, we need to continue these  
14 efforts so that we are a utility of the future that delivers the highest possible quality of  
15 services to our customers. In this vein, it is fitting to point out that in March 2020, less  
16 than two years after assuming jurisdiction over the Authority, the Commission found that  
17 PWSA had presented a plan for compliance that would adequately ensure and maintain  
18 the provision of adequate, efficient, safe, reliable and reasonable service. In reaching this  
19 finding, the Commission recognized that “PWSA’s transition to Commission jurisdiction  
20 is a vast and complex undertaking requiring prioritization and allocation of resources and  
21 the redevelopment of operations.”<sup>3</sup> It is against this backdrop that PWSA urges the  
22 Commission to view the current request for rate relief.

23 **Q. IS PWSA PROPOSING SPECIFIC MEASURES TO MODERATE THE IMPACT**  
24 **OF THE RATE INCREASE ON CUSTOMERS?**

25 A. Yes. Since PWSA recognizes that the rate increases it is seeking over the next three-year  
26 period are significant, we have also considered the impact on future affordability and are

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<sup>3</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage I*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater); and *Petition of Pittsburgh Water and Sewer Authority for Approval of its Long-Term Infrastructure Improvement Plan*, Docket Nos. P-2018-3005037 (water) and P-2018-3005039 (wastewater) (Order entered March 26, 2020), at 23.

1 offering several proposals in an effort to mitigate these impacts as part of this rate  
 2 request. These mitigation measures include: (1) a request for a three-year multi-year  
 3 increase; (2) a proposed two-year transition period for the removal of the minimum  
 4 allowance; (3) introduction of two new charges, to include one to timely and accurately  
 5 recover the actual costs of our low income programs; (4) new stormwater rate mitigation  
 6 measures; (5) removal of the COVID-19 policy to recover the costs of third party  
 7 payment processing fees from all ratepayers; and (6) additional enhancements for our  
 8 low-income customer assistance programs. More details about each of these measures  
 9 are explained in the testimony of PWSA witness Julie Mechling.

10 **Q. PLEASE HIGHLIGHT EXAMPLES OF THE POSITIVE STRIDES THAT PWSA**  
 11 **MADE IN 2022 AND HAS CONTINUED TO MAKE IN 2023.**

12 A. Certainly. I will highlight examples of the many positive strides that PWSA made in  
 13 2022 and has made in 2023. Since the last rate case in 2021, PWSA has continued to  
 14 enhance the quality and effectiveness of its customer service, provide responsible and  
 15 responsive operations service, improve infrastructure reliability, and maintain regulatory  
 16 compliance. These accomplishments have been made throughout the Authority’s system  
 17 and fall into each category of its operations.

18 *Lead Levels and Lead Service Line Replacement*

19 On January 24, 2023, the Authority announced that the most recent round of  
 20 testing shows that the lead levels continue to be well below the state and federal action  
 21 levels, which has been the case since water quality came back into compliance in the  
 22 summer of 2020. In April 2019, we began adding orthophosphate to reduce lead levels  
 23 in drinking water while continuing to replace thousands of lead service lines.

24 Orthophosphate is a food-grade additive that forms a protective layer inside of lead

1 service lines, creating an anti-corrosive barrier between the lead pipes and the water  
2 flowing through them. It is approved by the EPA and successfully used in water systems  
3 across the world. Combined with PWSA’s aggressive lead service line replacement, the  
4 use of orthophosphate has resulted in the compliance levels now achieved by the  
5 Authority.

6 Earlier this year, PWSA celebrated the removal of its 10,000<sup>th</sup> public lead service  
7 line. Since 2016, PWSA has replaced approximately 59 miles of lead lines, including  
8 6,900 private lead lines. PWSA has invested over \$100 million in the removal of lead  
9 lines throughout its water service area because it is one of the most proactive ways to  
10 reduce lead exposure and provide Pittsburgh residents with safe, high-quality drinking  
11 water. As a result, PWSA is committed to this program and will continue to aggressively  
12 replace lead service lines with the goal of replacing all of them by 2026. For its work on  
13 the Community Lead Response in 2022, PWSA received an award from the U.S.  
14 Environmental Protection Agency (“EPA”) through the Aquarius Recognition Program,  
15 which annually issues awards to exceptional projects in five different categories.<sup>4</sup> The  
16 award received by PWSA was in the category of “Excellence in Environmental and  
17 Public Health Protection,” and was made possible through a nomination from the  
18 Pennsylvania Infrastructure Investment Authority (“PENNVEST”), which recognizes  
19 PWSA’s commitment to public health and drinking water safety at the national level.

#### 20 Water System

21 Another notable accomplishment improving PWSA’s water service was the  
22 completion of the Highland II Reservoir and Cover Replacement project in 2022, which

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<sup>4</sup> See [Aquarius Recognition Program](#).

1 was the largest project of its type in North America that year. Through this project,  
2 PWSA reinstated the 125 million-gallon covered reservoir after replacing the liner and  
3 cover, which ensured the reliability and security of the reservoir and will play a key role  
4 in the Authority's Water Reliability Plan. The project involved draining the reservoir,  
5 removing the previous materials, and installing a new liner, floating cover, and  
6 supplemental equipment like rainwater removal pumps. This work will add 25 more  
7 years of service to the structure and improve its reliability as other Water Reliability Plan  
8 projects take place. For this project, the American Society of Civil Engineers ("ASCE")  
9 presented an Award of Merit to PWSA, and gave individual awards for specific  
10 accomplishments to three PWSA employees, including Barry King who is providing  
11 direct testimony in this proceeding on PWSA's Capital Improvement Plan. This  
12 recognition from within the industry reflects how PWSA has evolved as an organization  
13 in recent years, focusing on modernizing infrastructure, maintaining water quality, and  
14 growing talent from within.

15 Another significant project that has been completed is the Rising Main 3  
16 Rehabilitation, which revitalized a large diameter pipe that moves water from the  
17 Bruecken Pump Station into the Highland II Reservoir. This project is also part of  
18 PWSA's Water Reliability Plan and was the first of several once-in-a-generation projects  
19 that will renew key components of our water production and distribution systems. The  
20 rehabilitation of Rising Main 3 has improved the reliability of the water system and  
21 hydraulic performance needed to distribute water throughout the system. Work is already  
22 underway on the next phase of this project, Rising Main 4 Rehabilitation and  
23 Replacement, which PWSA began constructing in 2022.

1        Wastewater System

2                In 2022, PWSA completed the rehabilitation of the 100+ year old M-29 combined  
3 sewer outfall and replaced the endwall on the Monongahela River. These project  
4 improvements will extend the useful life of the outfall, reduce river flow entering the  
5 combined sewer system, and begin to mitigate backups into the lower Four Mile Run  
6 neighborhoods.

7                Another impressive measure regarding our sewer system is that in August 2022,  
8 PWSA completed an extensive infrastructure upgrade on Centre Avenue, between  
9 Morewood Avenue and Devonshire Street, in the Shadyside neighborhood. This  
10 four-month-long project replaced an aging sewer main and water main, as well as any  
11 lead service lines found during the work. The \$2 million investment ensures reliable  
12 sewer service for customers on the block while also relocating and completing upgrades  
13 to the water main and replacing any lead service lines found during the work. This  
14 project was part of PWSA's Sewer Under Structures Program, which addresses aging  
15 sewers that are obstructed by structures like other utilities or buildings.

16                Notably, in April of this year, PWSA received a \$59.1 million low-interest loan  
17 from PENNVEST for a sewer rehabilitation project. This funding supports PWSA's  
18 2023-2025 Small and Large Sewer Rehabilitation programs, which will evaluate and  
19 rehabilitate approximately 56 miles of aging sewer mains throughout the city. With this  
20 funding, the Authority can more quickly complete needed work on our sewer system,  
21 with some sewers being more than a century old and in need of repair, while improving  
22 services that are essential to everyone in Pittsburgh.

23  
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1        Stormwater System

2            As of April 2023, PWSA has constructed (or partnered with) twenty-six  
3 stormwater infrastructure projects in the City of Pittsburgh. In addition, nine projects are  
4 currently in various stages of planning and design. PWSA has also released the final  
5 draft of a Stormwater Strategic Plan that will set the stage for how stormwater is  
6 managed in the service area. This Plan builds off past planning efforts by using climate  
7 data, previous regional studies, community input, and best practices of our peer utilities  
8 to provide recommendations that consider equity, the environment, priority sites and  
9 water quality. Important components of the Plan include increasing transparency of  
10 PWSA’s strategy and enhancing coordination with other entities in the City for more  
11 coordinated and effective management of stormwater. PWSA intends to use the Plan,  
12 which is currently open for community feedback, to eventually design and implement  
13 specific projects that meet a determined level of service to manage stormwater quantity at  
14 a rate PWSA customers can afford.

15            These accomplishments are a natural extension of numerous projects that have  
16 been completed. For example, in August 2020, PWSA completed construction on two  
17 new green infrastructure projects to help manage stormwater within Four Mile Run,  
18 which consists of building two engineered drainage channels in Schenley Park along  
19 Overlook Drive and next to the Bridle Trail. Without these improvements, stormwater is  
20 mostly unmanaged, flowing off the steep hillside from Overlook Drive to the Bridle Trail  
21 below and further downhill, where it causes the combined sewer system to overflow into,  
22 and flood, downstream neighborhoods and properties. The channels will create a path  
23 where water can flow. These two “Early Action Projects” were part of the larger Four  
24 Mile Run Stormwater Project that has a total project cost of approximately \$28 million

1 and encompasses Schenley Park and several City of Pittsburgh neighborhoods, including  
2 Greenfield, Hazelwood, Oakland, Squirrel Hill, and the Run.

3 Customer Service

4 Customer service continues to be major area of focus for PWSA, particularly in  
5 providing excellent customer service and in administering programs that are designed to  
6 assist our most vulnerable low-income customers who face challenges in paying their  
7 utility bills. PWSA witness Julie Mechling provides additional details about the many  
8 measures that the Authority is taking to become a trusted public utility that is recognized  
9 for excellence and valued by the customers it serves. She also discusses the  
10 enhancements that PWSA has made to its low-income customer programs to improve the  
11 availability of assistance to customers in need. In my testimony, I am highlighting only a  
12 few initiatives in each area.

13 Through the use of technology and the streamlining of day-to-day operations,  
14 PWSA has significantly improved customer access since 2021. On August 8, 2022,  
15 PWSA's enterprise resource system SAP and its accompanying Customer Advantage  
16 portal went live. This is an entirely new system that has enhanced customer access. The  
17 Customer Advantage portal gives customers important tools to monitor and manage their  
18 accounts. PWSA has also improved its call handling response times, resulting in  
19 personnel handling 31,104 more customer calls in 2022 than in 2021. In addition to more  
20 timely responding to customers, and responding to a greater number of customers, PWSA  
21 has also embarked on a campaign designed to evaluate the quality of information that is  
22 being conveyed to consumers, and improve those experiences, as necessary.

23 As to financial assistance that is available to qualifying low-income residential  
24 customers, PWSA offers the following programs: (1) the Bill Discount Program



1 (“BDP”), (2) the Hardship Grant Program, (3) Winter Moratorium, and (4) the Lead  
2 Service Line Replacement Reimbursement Program. It is noteworthy that in 2022,  
3 PWSA’s enhanced Customer Assistance Programs offered more discounts to more  
4 customers than ever before with a simplified and accessible process for enrollment. As a  
5 result of these enhancements, enrollment in the BDP increased, with approximately 6,000  
6 customers currently receiving assistance under this program. Among the highlights of  
7 these new benefits, the BDP included an additional 50% discount on water usage charges  
8 for very low-income customers and all customers enrolled in the Program automatically  
9 receive an 85% discount on the stormwater charge. PWSA also expanded the Hardship  
10 Grant Program to include sewage-only customers, and all confirmed low-income  
11 customers are now automatically enrolled in the Winter Shutoff Moratorium. Further,  
12 reconnection fees for all customers continued to be waived in 2022.

### 13 Environmental Compliance

14 PWSA has also made tremendous progress in the area of environmental  
15 compliance, as it has continued to expand its Environmental Compliance program across  
16 its system, with a program manager providing day-to-day oversight. A team of  
17 specialists brings expertise in areas of air quality, stormwater, spill prevention,  
18 wastewater discharge, and waste management. As part of this program, PWSA has  
19 expanded its training and project coordination efforts across the organization. Currently,  
20 PWSA is implementing an Environmental Management Information System to track and  
21 coordinate regulatory compliance activity. I also wish to note that PWSA has fulfilled its  
22 commitments under a 2020 settlement with the Pennsylvania Office of Attorney General  
23 (“OAG”) relating to environmental compliance, which obligated PWSA to hire an

1 external and independent corporate monitor to provide reports to the OAG, PWSA and  
2 the Pennsylvania Department of Environmental Protection (“DEP”).

3 **II. OVERVIEW OF NEED FOR RATE INCREASE AND UNIQUE PROPOSALS**  
4 **INCLUDED WITH THIS FILING**

5 **Q. PLEASE PROVIDE AN OVERVIEW OF THIS FILING.**

6 A. Consistent with the significant progress PWSA has made in recent years, the Authority  
7 remains focused on rebuilding and upgrading Pittsburgh’s water systems and is taking  
8 every reasonable step to operate efficiently and keep its costs down. Nonetheless, the  
9 Authority’s operating and capital expenses continue to increase. As explained in the  
10 direct testimony of Mr. Barca, PWSA seeks a multi-year total overall rate revenue  
11 increase of \$146.1 million, which is inclusive of the proposed Distribution System  
12 Improvement Charge cap increase from 5% to 7.5%. This includes a \$46.8 million or  
13 22.5% increase in the FPFTY (FY 2024), \$45.4 million or 17.8% in FY 2025, and \$53.9  
14 million or 17.9% in FY 2026.

15 The drivers for this increase are as follows: 1) capital costs; 2) inflationary  
16 operating budget costs, specifically for essential items such as energy, employee benefits,  
17 and chemical costs; 3) costs related to the Wet Weather Consent Decree with the United  
18 States Environmental Protection Agency (“US EPA”); 4) environmental compliance; 5)  
19 decreased consumption; and 6) funds to meet new financial obligations and improve  
20 financial metrics that impact PWSA’s bond rating. In addition, PWSA’s extensive  
21 Capital Improvement Plan (“CIP”) discussed in Mr. King’s testimony includes the  
22 refurbishment and replacement of a significant portion of PWSA’s water supply system,  
23 which simply cannot be accomplished without additional rate relief. While grant funding  
24 enables PWSA to stay on track, accelerating our plans to be a leader in the industry in

1 serving our customers requires additional money. Also, addressing regulatory  
2 compliance issues and responding to unexpected situations that arise due to the age of the  
3 system are directly contributing to increases in operating costs. As Mr. Barca explains in  
4 his testimony, the rate increase that PWSA is seeking is the minimum amount that is  
5 needed to continue operations while meeting the required financial metrics.

6 As noted above, PWSA is proposing to implement this increase over a three-year  
7 period. An important reason for this proposal is that such an outcome would give PWSA  
8 a level of financial security needed to continue performing our work, as well as better  
9 access to the capital markets. A multiyear rate request also provides more transparency  
10 for customers over the three-year period as to the increases that will be implemented. In  
11 addition, preparing for and litigating rate cases involves a significant cost that is borne by  
12 our ratepayers as we are a cash flow municipal authority. If PWSA is able to secure  
13 approval for our three-year rate increase, we will be able to allocate the costs that would  
14 normally be allocated to the rate cases to our operations and capital projects. I also note  
15 that the efforts of PWSA staff in preparing for and litigating rate cases are in addition to  
16 our regular operational duties. Without the added pressure of litigating a rate case for the  
17 next three years, PWSA staff can more fully concentrate our efforts on operating and  
18 improving our system for the benefit of our customers.

19 Also being proposed are two new adjustment charges: the Infrastructure  
20 Improvement Charge (“IIC”) and the Customer Assistance Charge (“CAC”). The IIC  
21 would permit PWSA to recover debt service on PENNVEST loans and loans authorized  
22 by Water Infrastructure Finance and Innovation Act (“WIFIA”). WIFIA is the Federal  
23 government equivalent of PENNVEST. The IIC will expedite PWSA’s ability to obtain

1 additional low-cost funding through PENNVEST and WIFIA by having a stable revenue  
2 source to ensure the required debt covenants and additional bonds tests can be met, in  
3 addition to having funds available to pay annual debt service.

4 The CAC is being proposed because, while PWSA values the benefits that its  
5 customer service assistance program provides to vulnerable ratepayers, the administration  
6 of customer assistance program has become increasingly expensive. The Customer  
7 Assistance Charge would recover 1) the discounts provided to customers pursuant to the  
8 Bill Discount Program, 2) the operating costs for the PGH2O Cares team, 3) the costs of  
9 PWSA's Hardship Fund, and 4) past due arrearages forgiven pursuant to PWSA's  
10 Arrearage Forgiveness Program. The CAC will ensure that PWSA collects the funds it  
11 needs to provide these programs.

12 PWSA is also proposing to begin phasing out the minimum water and wastewater  
13 charges starting in 2024 and completely removed in 2025. The rate design mechanics of  
14 these proposals are fully described in the testimony of Mr. Smith. This proposal  
15 includes additional features intended to mitigate the rate impact for our customers as  
16 described more fully in the testimony of Ms. Mechling. PWSA is also proposing to  
17 allocate \$432,640 to its Hardship Grant program and \$720,000 for the Arrearage  
18 Forgiveness program to support the grants and credits provided to eligible customers.

19 **Q. PLEASE EXPLAIN THE RATE CASE TABLES YOU ARE PRESENTING AS AN**  
20 **EXHIBIT WITH THIS TESTIMONY.**

21 A. PWSA Exhibit WJP-1 includes the Rate Case Tables. Support for the figures in this  
22 Exhibit is provided in the testimony of the following PWSA Witnesses: Edward Barca,  
23 Harold Smith, and Keith Readling.

1 **Q. PLEASE EXPLAIN THE ORIGIN AND PURPOSE OF THE RATE CASE**  
2 **TABLES.**

3 A. The Rate Case Tables were developed in collaboration with the parties in PWSA's prior  
4 rate case as directed by the Administrative Law Judges ("ALJs"). Because the  
5 Commission's existing template for this information was developed for traditionally  
6 regulated utilities, the ALJs granted PWSA leave to develop Rate Case Tables consistent  
7 with the cash flow method for calculating the revenue requirement. Pursuant to this  
8 directive, PWSA developed an initial version of the Rate Case Tables and then worked  
9 collaboratively with the parties to further adjust and refine the initial version. PWSA  
10 received helpful feedback from the parties during this process and the final, agreed-to  
11 version of the Rate Case Tables were shared with the ALJs on July 24, 2020 and again in  
12 the 2021 rate case, which would be helpful to the parties in the event of a fully litigated  
13 proceeding. PWSA Exhibit WJP-1 presents PWSA's proposals in this case using this  
14 template.

15 **Q. ARE THERE ANY SPECIFIC PROPOSALS INCLUDED WITH THIS FILING**  
16 **THAT YOU WOULD LIKE TO POINT OUT?**

17 A. Yes. While PWSA's financial needs are compelling in view of the importance of fully  
18 funding its CIP and enhancing the quality of its services, we are also cognizant of the  
19 financial challenges that many of our customers have faced, and are continuing to face.  
20 For that reason, PWSA is proposing a multiyear plan that is implemented over the course  
21 of three years, 2024, 2025 and 2026. As testified by Ms. Mechling, PWSA has also  
22 proposed enhancements to its customer assistance program. For instance, to promote  
23 enrollment in its programs, PWSA is proposing to reach more potentially eligible  
24 customers by expanding the eligibility from 150% of FPL to 200% of FPL. In addition,  
25 to increase the impact of its Hardship Grant program, PWSA proposes to allocate two,

1 separate \$300 annual grants; one to be distributed to eligible water customers and one to  
2 be distributed to eligible wastewater customers. An additional proposal would make a bill  
3 customer available to eligible low-income customers in 2025 to offset the transition to a  
4 new rate structure, which removes the minimum allowance. Thus, while the Authority  
5 needs to make this request due to increases in operating expenses and to fund the  
6 numerous essential projects in the CIP that are key to enhancing the quality of utility  
7 services that PWSA provides, we have sought through these other proposals to balance  
8 our financial needs against the challenges faced by customers in paying higher rates.

9 **Q. IS THERE A MAJOR FACTOR DRIVING THE NEED FOR THIS RATE**  
10 **INCREASE?**

11 A. As explained by Mr. Barca, inflation is one of the biggest drivers for this rate request. It  
12 has impacted all facets of the organization, from day-to-day operating expenses to  
13 contractor bids for capital improvement projects. This is further compounded by the fact  
14 that PWSA was drastically increasing operations to address deferred maintenance prior to  
15 the rise of inflation. PWSA is now at a point where additional revenues must be  
16 implemented or risk the financial stability of the organization.

17 **Q. PLEASE DESCRIBE OTHER IMPORTANT FACTORS FOR THE**  
18 **COMMISSION TO CONSIDER.**

19 It is important to recognize the mandatory nature of many projects included in  
20 PWSA's CIP due to the Consent Orders and Agreements ("COAs") issued by DEP,  
21 which is included with Mr. King's testimony as PWSA Exhibit BK-1. These obligations  
22 are addressed in detail by Mr. King's testimony. As most of what is in the CIP is  
23 mandated by regulators, it is imperative that the funding be available to support them.  
24 As Mr. King notes, PWSA's total approved budget in the 2023-2027 CIP for the

1 construction projects that are necessary to comply with the 2019 COA is approximately  
 2 \$377 million. However, the total budget for these projects, including what has been  
 3 completed to date and what will be completed post-2027 is approximately \$450 million.  
 4 Under recent amendments to the 2019 COA described by Mr. King and shown in PWSA  
 5 Exhibits BK-3 and BK-4, if PWSA does not comply in a timely manner with any term or  
 6 provision, it will be required to pay a one-time civil penalty of \$20,000.00, in addition to  
 7 \$1,000.00 per day for each violation, and is also subject to the imposition of additional  
 8 penalties. These penalties significantly contrast with the \$100.00 per day for each  
 9 violation that was in the original 2019 COA. As Mr. Barca explains, if PWSA is not  
 10 permitted to raise its rates as proposed in this proceeding, it will be unable to fulfill these  
 11 obligations. The result is that PWSA would be subject to the payment of these penalties,  
 12 and since PWSA does not have shareholders, our ratepayers would have to bear this  
 13 burden.

14  
 15 **III. DESCRIPTION OF PWSA AND THE PROCESS OF TRANSITIONING TO**  
 16 **COMMISSION JURISDICTION**

17 **Q. PLEASE DESCRIBE PWSA.**

18 A. Created by the City of Pittsburgh in 1984 pursuant to the Municipality Authorities Act,<sup>5</sup>  
 19 PWSA operates the largest combined water and sewer authority in Pennsylvania  
 20 producing an average of 70 million gallons of treated water daily and providing service to  
 21 more than 300,000 residents as well as up to 520,000 people during working hours in  
 22 total throughout the City of Pittsburgh and surrounding communities. PWSA's  
 23 employees have expertise in engineering, operations, maintenance, water quality,

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<sup>5</sup> 52 Pa.C.S. §§ 5601-5632.

1 customer service, safety, green infrastructure and many other disciplines. PWSA is  
 2 committed to continuing to enhance its operations to provide service in a safe, sustainable  
 3 and customer-friendly manner at just and reasonable rates.

4 **Q. WHAT INFRASTRUCTURE DOES PWSA MANAGE?**

5 A. Currently, PWSA is responsible for the day-to-day management, operation, maintenance,  
 6 and improvement of virtually the entire City water supply, distribution, and wastewater  
 7 collection systems. Below is an overview of these systems.

- 8 • The **water** supply and distribution system consists of a 117 million gallon per  
 9 day conventional flocculation, sedimentation and rapid sand process  
 10 treatment plant which was placed in service in 1969, 964 miles of water mains  
 11 plus more than 81,000 service lines, more than 25,900 line valves, more than  
 12 7,300 fire hydrants, one raw water pump station, ten finished water pump  
 13 stations, one microfiltration plant, four reservoirs, and ten storage tanks. The  
 14 total storage capacity of the reservoirs and tanks is approximately 455 million  
 15 gallons. With consideration given to the pressure requirements of the  
 16 distribution system, and storage capacities in each of the 15 pressure zones,  
 17 the Authority stores enough finished water to provide (with water use  
 18 restrictions) a 3 day uninterrupted supply to all customers should it  
 19 temporarily be unable to treat additional water from the Allegheny River.
- 20 • The **wastewater** collection and conveyance system consists of approximately  
 21 1,220 miles of sanitary, storm and combined sewer lines, 29,000 manholes,  
 22 approximately 30,000 stormwater catch basins and inlets, 38 combined sewer  
 23 overflow outfalls, 185 storm outfalls and four pump stations which are  
 24 designed to carry both storm and sanitary flows. About 75% of the system is  
 25 serviced by combined sewers (both wastewater and stormwater are collected  
 26 in one pipe) and the remaining 25% are designed as separate sewage and  
 27 stormwater piped systems. The average age of the sewer lines is between 60  
 28 and 70 years old, with some portions reaching nearly 150 years in age. The  
 29 wastewater collection and conveyance system discharges to a regional system  
 30 that conveys sewer flows through trunk sewers to deliver to a wastewater  
 31 treatment which services eighty-three cities, towns and boroughs in Allegheny  
 32 County. The regional system is owned and operated by the Allegheny County  
 33 Sanitary Authority (“ALCOSAN”)<sup>6</sup> which maintains interceptors along the

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<sup>6</sup> ALCOSAN is a municipal authority (created by the City of Pittsburgh to comply with the Pennsylvania Clean Streams Law enacted in 1937) that serves as the regional sewage treatment facility. 35 Penn. Cons. Stat. §§ 691.1–691.1001. ALCOSAN provides wastewater treatment for 83 communities, including the City of Pittsburgh and maintains the facility pursuant to its National Pollutant Discharge Elimination



1 rivers to deliver sewage to its Woods Run Wastewater treatment plant prior to  
 2 discharge in the Ohio River. Because the current combined sewer systems  
 3 contribute to the Allegheny Region’s Combined Sewer Overflow volume,  
 4 state and federal water quality regulations apply, including a regional Consent  
 5 Decree involving ALCOSAN and the Pennsylvania Department of  
 6 Environmental Protection mandating a \$2 billion Combined Sewer Overflow  
 7 reduction program.<sup>7</sup>

8 **Q. HOW DOES STORMWATER FIT WITHIN THE WATER/WASTEWATER**  
 9 **CONVEYANCE SYSTEM?**

10 A. Stormwater issues arise in two contexts: (1) the combined wastewater system Combined  
 11 Sewer Overflows (“CSOs”); and, (2) the municipal separate storm sewer system (known  
 12 as “MS4s”).<sup>8</sup> The federal Environmental Protection Agency (“EPA”) develops and  
 13 implements federal stormwater regulations to require compliance with water quality  
 14 standards, which are implemented by EPA and the DEP. Regarding the sewer system,  
 15 75% of the wastewater conveyance infrastructure is designed as a “combined” sewer  
 16 system to capture both wastewater and stormwater in one pipe network. In addition to  
 17 the combined system, one quarter of the current infrastructure managed by PWSA  
 18 includes separate sewer and stormwater systems, which require compliance with  
 19 stormwater management regulations (*i.e.*, MS4) and are subject to National Pollutant  
 20 Discharge Elimination System (“NPDES”) Permits issued by DEP pursuant to EPA  
 21 requirements.

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System (“NPDES”) permit. PWSA does not own any sewage treatment facilities or provide consumers sewage treatment services. ALCOSAN is not regulated by the Commission.

<sup>7</sup> ALCOSAN entered into a modified consent decree agreement with the Department of Environmental Protection, which approved a comprehensive, \$2 billion, long-term plan to significantly reduce the overflow of diluted, untreated wastewater into the region’s rivers. Details of ALCOSAN’s Clean Water Plan are available at: <https://www.alcosan.org/our-plan/plan-documents>

<sup>8</sup> MS4 refers to a conveyance that is owned by a public entity that discharges to waters, is designed or used to collect or convey stormwater, is not a combined sewer system and is not part of a sewage treatment plan.

1 **Q. PLEASE EXPLAIN HOW PWSA IS WORKING TO ADDRESS STORMWATER**  
2 **ISSUES.**

3 A. As Mr. Igwe explains in his direct testimony, PWSA approaches stormwater management  
4 throughout Pittsburgh in an effort to lower the volume of combined system overflows.  
5 PWSA’s forthcoming stormwater master plan will look comprehensively at stormwater  
6 issues and overlaps both categories of stormwater (i.e. addressing the combined system  
7 and the separate stormwater system). It also outlines how Pittsburgh intends to use green  
8 infrastructure solutions to manage stormwater. The primary goals of PWSA’s  
9 stormwater program are to reduce CSO volume; implement a stormwater asset  
10 management program; define a publicly accepted level of stormwater management  
11 capacity; achieve regulatory compliance; develop partnership with government and other  
12 agencies to access eligible funds for flood protection and water quality projects; and  
13 establish an affordable stormwater utility fee structure.

14 **Q. WHAT IS THE RELATIONSHIP BETWEEN PWSA AND THE CITY OF**  
15 **PITTSBURGH?**

16 A. The water/wastewater conveyance infrastructure operated by PWSA is currently owned  
17 by the City of Pittsburgh (“City”). PWSA first assumed responsibility for the system  
18 operation and maintenance from the City pursuant to an agreement effective January 1,  
19 1995 between the City and PWSA (the “1995 Cooperation Agreement”). Consistent with  
20 a Memorandum of Lease dated July 27, 1995, PWSA is on the path to becoming the  
21 official owner of the City’s assets and, on September 1, 2025, this transfer will be  
22 effectuated. Under a newly negotiated City Cooperation Agreement (the “2019  
23 Cooperation Agreement”), which has the force and effect of law under Act 70 of 2020,<sup>9</sup>

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<sup>9</sup> Act of July 23, 2020, P.L. 677, No. 70.

1 the City and PWSA conduct interactions on a business-like, transactional basis. The  
 2 2019 Cooperation Agreement is included with my testimony as PWSA Exhibit WJP-2.

3 **Q. WHAT ISSUES ARE FACING PWSA AS IT OPERATES THE WATER AND**  
 4 **WASTEWATER CONVEYANCE SYSTEMS OF THE CITY OF PITTSBURGH?**

5 A. As the City’s current water and sewer systems date back to the 1850s, PWSA continues  
 6 to face challenges caused by the dated infrastructure, the presence of lead in water service  
 7 lines, extreme storm events that impact stormwater and sewer systems, historical  
 8 contractual relationships, complex organizational and management structures and  
 9 numerous regulatory requirements and obligations.

10 **Q. HOW DID PWSA – A MUNICIPAL AUTHORITY – COME TO BE SUBJECT TO**  
 11 **THE COMMISSION’S JURISDICTION?**

12 A. In December 2017, Act 65 was passed which added Sections 3201-3209 to the Public  
 13 Utility Code subjecting PWSA to the Commission’s jurisdiction. Shortly after passage of  
 14 Act 65, the Commission issued a Tentative Implementation Order to guide the process for  
 15 PWSA’s transition to Commission jurisdiction.<sup>10</sup> After review of comments from  
 16 interested stakeholders, the Commission entered its Final Implementation Order on  
 17 March 15, 2018, which is the roadmap PWSA has been following to transition to  
 18 Commission jurisdiction.<sup>11</sup> I am pleased to report that with the adoption of Orders  
 19 entered on July 14, 2022 and August 25, 2022, PWSA’s Compliance Plans have been

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<sup>10</sup> *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water and Sewer Authority*, Docket Numbers M-2018-2640802 (water) and M-2018-2640803 (wastewater), Tentative Implementation Order entered January 18, 2018.

<sup>11</sup> *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water and Sewer Authority*, Docket Numbers M-2018-2640802 (water) and M-2018-2640803 (wastewater), Final Implementation Order entered March 15, 2018.

1 approved by the Commission and their provisions are now undergoing full and final  
 2 implementation.<sup>12</sup>

3

4 **IV. PWSA ORGANIZATIONAL STRUCTURE, MANAGEMENT QUALITY**  
 5 **UPDATES**

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

7 A. PWSA is governed by a nine-member Board of Directors (“Board”) whose members are  
 8 appointed by the Mayor of the City and confirmed by City Council. Although previously  
 9 the Board had seven members, it voted on March 26, 2020 to amend the Articles of  
 10 Incorporation to expand to nine members. The Board is responsible for providing  
 11 strategic direction and oversight to the PWSA management team, as well as adopting the  
 12 Authority’s annual operating and capital budgets, approving contracts, and setting rates.

13 **Q. PLEASE DESCRIBE PWSA’S EXECUTIVE MANAGEMENT AND**  
 14 **ORGANIZATIONAL STRUCTURE.**

15 A. PWSA is managed by an Executive Leadership Team under the Chief Executive Officer  
 16 inclusive of Chief Legal Officer, Chief Operating Officer & Chief Financial Officer,  
 17 Chief Environmental Compliance & Ethics Officer, Chief Information & Performance  
 18 Officer, Chief People & Culture Officer, and Chief Engineering Officer. Environmental  
 19 Compliance, Engineering and Construction, and Operations are three main departments  
 20 to highlight given some of the major PWSA initiatives underway. The remaining areas  
 21 within the organization could be categorized as administrative functions which are  
 22 responsible for the administrative and support functions of PWSA; this includes

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<sup>12</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 2, Docket Nos. M-2018-2640802 and M-2018-2640803 (Orders entered July 14, 2022 and August 25, 2022).*

1 Customer Service, Finance, Procurement, Information Technology, Public Affairs, Legal,  
2 and Human Resources.

3 The PWSA Environmental Compliance department, and subsequent  
4 programming, has been developed over the last two years as the foundation of PWSA's  
5 commitment to operating in accordance not only with the strict requirements of the law,  
6 but also in a manner that is consistent with high ethical and professional standards in the  
7 delivery of drinking water, wastewater, and stormwater services to our customers. In  
8 September 2021, a federal judge accepted the plea agreement PWSA negotiated with the  
9 EPA and the U.S. Department of Justice related to Clean Water Act violations dating  
10 back to prior management in 2016 and 2017. This final step in the legal process means  
11 that we are owning up to our past failures and moving forward as a utility that is focused  
12 on serving our customers and protecting the environment. PWSA is equipped with the  
13 resources, the dedicated leadership, and the fortitude to ensure that we move beyond past  
14 mistakes and forge a culture that prioritizes ethical behavior with a focus on  
15 environmental compliance. This culture change will help protect the environment and  
16 ensure PWSA continues to provide high-quality water services to the City of Pittsburgh  
17 and our neighbors. PWSA has developed and implemented an Environmental  
18 Compliance and Ethics Program with three primary goals: 1) Prevent fraud, waste, abuse,  
19 and other improper activity by creating a culture of environmental compliance and ethics  
20 within PWSA, 2) Detect any non-compliance activities at an early stage before they may  
21 impact water quality or compliance with regulations, and 3) Respond swiftly to  
22 environmental compliance and ethics issues through appropriate action and  
23 documentation. The Environmental Compliance and Ethics Program establishes an

1 organization-wide framework for environmental compliance and ethics through the  
2 following five key components: 1) PWSA's Mission Statement and Core Values, 2)  
3 Organizational Structure, 3) Codes and Policies, 4) Training, and 5) an Environmental  
4 Compliance Manual. The Environmental Compliance and Ethics Program applies to all  
5 PWSA Directors, Employees, Agents, and Contractors.

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

21 The Engineering and Construction Department works to deliver a safe, efficient  
22 and effective capital improvement program and to support operations with cost-effective  
23 technical solutions to water line breaks, sewer stoppages and collapsed pipes, combined

1 sewer overflows (“CSOs”) and stormwater flooding and basement backups. Also,  
2 Engineering and Construction is responsible for managing PWSA’s response to  
3 regulatory consent orders for drinking water, wastewater, and stormwater. Specific  
4 program areas delivered through Engineering and Construction include: Water Reliability  
5 Plan for critical drinking water infrastructure, Lead Service Line Replacement Projects,  
6 Wet Weather Planning for combined and sanitary sewer overflows, Urgent Water and  
7 Sewer Projects, and Green Infrastructure for stormwater management. Engineering and  
8 Construction also prepares and assists in reviewing of water and sewer tap-in applications  
9 from developers.

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

11 A. PWSA has 393 employees as of April 23, 2023. The majority of Authority employees  
12 are represented by one of three labor unions: The Pittsburgh Joint Collective Bargaining  
13 Committee represents blue-collar employees (plumber, electrician, truck driver, etc.); The  
14 American Federation of State, County and Municipal Employees represents Local 2719  
15 (customer service, dispatch, field service technicians, chemists) and Local 2037 (union  
16 foremen). Management and professional staff are “at will” employees with no Union  
17 affiliation. PWSA has engaged the services of professional consultants to support  
18 PWSA’s rapid growth in all staff categories and as necessary to meet its goals and  
19 objectives. These embedded consultants assist with permitting, design, and construction  
20 of facilities/infrastructure upgrades and replacements. PWSA engages engineering  
21 consultants to support all capital project implementation, including planning, design, and  
22 construction under the supervision of PWSA Project Managers. PWSA also supplements  
23 its core staff with a financial consulting services firm to support tariff and fee analyses

1 and additional experts in finance, legal and administration are engaged as needed or  
2 required to fulfill state, federal and local regulatory and administrative requirements.

3 **Q. IS PWSA WELL-POSITIONED TO CONTINUE ITS FORWARD PROGRESS?**

4 A. Provided that PWSA's obtains approval for the necessary rate relief, PWSA will be in a  
5 solid position to continue making progress toward enhancing the quality and  
6 effectiveness of customer service, providing responsible and responsive operations  
7 service, improving infrastructure reliability, and maintaining regulatory compliance.  
8 While PWSA has completed a number of construction projects that are designed to  
9 provide more reliable service to customers, meet stricter water quality standards and  
10 improve stormwater management, we need to continue these efforts so that we are a  
11 utility of the future that delivers the highest possible quality of services to our customers.  
12 Frankly, continued support from the Commission in the form of rate relief as well as  
13 collaborative efforts to improve the safety, quality and reliability of PWSA's water,  
14 wastewater and stormwater services are a must.

15  
16 **V. CONCLUSION**

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

18 A. Yes, although I reserve the right to file supplemental testimony if needed.



# Exhibit WJP-1

TABLE I  
Pittsburgh Water and Sewer Authority  
FPPTY 2024-2026 INCOME SUMMARY  
Docket Nos.: R-2023-3039920; R-2023-3039921; R-2023-3039919

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
	FPPTY 2024					2025 Rate Year				2026 Rate Year			
	PWSA	PWSA	PWSA	ALJ / Parties	ALJ / Parties	PWSA	PWSA	ALJ / Parties	ALJ / Parties	PWSA	PWSA	ALJ / Parties	ALJ / Parties
Revenue at Current Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
<b>INCOME SUMMARY</b>													
<b>Beginning Unrestricted Cash</b>	<b>89,747,395</b>		<b>89,747,395</b>	<b>0</b>	<b>89,747,395</b>		<b>90,792,056</b>	<b>0</b>	<b>90,792,056</b>		<b>95,591,395</b>	<b>0</b>	<b>95,591,395</b>
Revenues:													
User Charge Revenues	196,813,382	39,901,123	236,714,505	0	236,714,505	20,047,513	256,762,018	0	256,762,018	47,542,002	304,304,020	0	304,304,020
Infrastructure Improvement Charge	0	0	0	0	0	17,090,499	17,090,499	0	17,090,499	2,108,730	19,199,229	0	19,199,229
Customer Assistance Program Charge	0	0	0	0	0	5,512,454	5,512,454	0	5,512,454	942,958	6,455,412	0	6,455,412
DSIC Revenues	8,432,305	6,606,157	15,038,462	0	15,038,462	2,660,907	17,699,369	0	17,699,369	3,243,488	20,942,857	0	20,942,857
Other Misc. Revenues	3,566,080	0	3,566,080	0	3,566,080	71,322	3,637,402	0	3,637,402	72,748	3,710,150	0	3,710,150
Subtotal: Total Revenues	208,811,767		255,319,047		255,319,047		300,701,740		300,701,740		354,611,667		354,611,667
Less: Uncollectible Revenues	(5,971,537)	0	(5,971,537)	0	(5,971,537)	(1,219,327)	(7,190,864)	0	(7,190,864)	(1,277,016)	(8,467,880)	0	(8,467,880)
Less: Stormwater Credit Program Cost	(180,489)	0	(180,489)	0	(180,489)	(31,613)	(212,102)	0	(212,102)	(29,203)	(241,305)	0	(241,305)
<b>Total Revenues Net of Uncollectible</b>	<b>202,659,741</b>	<b>46,507,280</b>	<b>249,167,021</b>	<b>0</b>	<b>249,167,021</b>	<b>44,131,754</b>	<b>293,298,775</b>	<b>0</b>	<b>293,298,775</b>	<b>52,603,707</b>	<b>345,902,482</b>	<b>0</b>	<b>345,902,482</b>
Revenue Requirements:													
O & M Expense	135,911,272		135,911,272	0	135,911,272	9,730,412	145,641,684	0	145,641,684	13,981,720	159,623,404	0	159,623,404
Senior Lien Debt Service (2)	70,718,091		70,718,091	0	70,718,091	10,361,724	81,079,816	0	81,079,816	13,266,125	94,345,941	0	94,345,941
All Other Debt Service (2)	26,214,534		26,214,534	0	26,214,534	12,882,721	39,097,256	0	39,097,256	2,127,260	41,224,516	0	41,224,516
Cash-Financed Capital (Base Rates)	0		0	0	0	2,000,000	2,000,000	0	2,000,000	10,000,000	12,000,000	0	12,000,000
Cash-Financed Capital (DSIC)	15,038,462		15,038,462	0	15,038,462	2,660,907	17,699,369	0	17,699,369	3,243,488	20,942,857	0	20,942,857
Restricted Reserve Contributions	0		0	0	0	0	0	0	0	0	0	0	0
Operating Reserve Contribution	1,000,000		1,000,000	0	1,000,000	6,000,000	7,000,000	0	7,000,000	10,000,000	17,000,000	0	17,000,000
Other Expenses (3)													
DWSL	0		0	0	0	250,000	250,000	0	250,000	0	250,000	0	250,000
Hardship Grant Funding	0		0	0	0	216,320	216,320	0	216,320	0	216,320	0	216,320
Arrearage Funding	240,000		240,000	0	240,000	0	240,000	0	240,000	0	240,000	0	240,000
<b>Total Revenue Requirements</b>	<b>249,122,360</b>		<b>249,122,360</b>	<b>0</b>	<b>249,122,360</b>	<b>44,102,084</b>	<b>293,224,444</b>	<b>0</b>	<b>293,224,444</b>	<b>52,618,593</b>	<b>345,843,037</b>	<b>0</b>	<b>345,843,037</b>
<b>Revenue Surplus / (Deficit)</b>	<b>(46,462,619)</b>		<b>44,661</b>	<b>0</b>	<b>44,661</b>		<b>74,331</b>		<b>74,331</b>		<b>59,445</b>		<b>59,445</b>
Fund Balance Transactions													
Contributions (to)/from Operations	1,000,000		1,000,000	0	1,000,000		7,000,000	0	7,000,000		17,000,000	0	17,000,000
Contributions (to)/from Rate Stabilization Fund	0		0	0	0		0	0	0		0	0	0
Contributions (to)/from Operating Reserve	0		0	0	0		(2,274,992)	0	(2,274,992)		(1,395,217)	0	(1,395,217)
<b>Ending Unrestricted Cash Balance</b>	<b>44,284,776</b>		<b>90,792,056</b>		<b>90,792,056</b>		<b>95,591,395</b>		<b>95,591,395</b>		<b>111,255,622</b>		<b>111,255,622</b>
<b>KEY FINANCIAL METRICS</b>													
Debt Service Coverage			PWSA Filing		PWSA Filing		PWSA Filing		ALJ Adjusted		PWSA Filing		ALJ Adjusted
Senior (1.25 Requirement)	<b>0.99</b>		<b>1.65</b>		<b>1.65</b>		<b>1.87</b>		<b>1.87</b>		<b>2.02</b>		<b>2.02</b>
Total (1.10 Requirement)	<b>0.73</b>		<b>1.21</b>		<b>1.21</b>		<b>1.26</b>		<b>1.26</b>		<b>1.40</b>		<b>1.40</b>
Days Cash on Hand (4)	<b>120.8</b>		<b>247.6</b>		<b>247.6</b>		<b>243.6</b>		<b>243.6</b>		<b>258.9</b>		<b>258.9</b>
Days Cash on Hand with ALCOSAN (4)	<b>70.73</b>		<b>145.0</b>		<b>145.0</b>		<b>142.6</b>		<b>142.6</b>		<b>152.9</b>		<b>152.9</b>

(1) Company Main Brief

(2) Includes Principal and Interest payments on existing and proposed debt.

(3) Several programs funded, including assistance with sewer laterals and components of the customer assistance program.

(4) Calculated using Operating & Maintenance Expenses (excludes non-operating expenses).

TABLE I(A)  
Pittsburgh Water and Sewer Authority  
FPPTY 2024-2026 KEY RATIOS  
Docket Nos.: R-2023-3039920; R-2023-3039921; R-2023-3039919

	(A)		(B)	(C)	(D)		(E)	(F)		(G)
	PWSA		PWSA	ALJ	PWSA		PWSA	ALJ		ALJ
	FPPTY 2024		2025 Rate Year		2026 Rate Year					
	Revenue at Current Rates	Revenue At Proposed Rates	Revenue At Adjusted Rates	Revenue At Proposed Rates	Revenue At Adjusted Rates	Revenue At Proposed Rates	Revenue At Adjusted Rates	Revenue At Proposed Rates	Revenue At Adjusted Rates	Revenue At Adjusted Rates
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
<b>Key Ratio Breakdown</b>										
Debt Service Coverage										
Operating Revenues	208,811,767	255,319,047	255,319,047	300,701,740	300,701,740	354,611,667	354,611,667			
Less:										
Adjustments	(5,971,537)	(5,971,537)	(5,971,537)	(7,407,184)	(7,407,184)	(8,684,200)	(8,684,200)			
Net Collected Revenues	202,840,230	249,347,510	249,347,510	293,294,557	293,294,557	345,927,467	345,927,467			
Less:										
Current Expenses	(135,911,272)	(135,911,272)	(135,911,272)	(145,641,684)	(145,641,684)	(159,623,404)	(159,623,404)			
Adjustments:										
City Payments	3,419,629	3,419,629	3,419,629	3,624,807	3,624,807	3,842,295	3,842,295			
Placeholder										
Placeholder										
Revenues Available for Debt Service	70,348,587	116,855,867	116,855,867	151,277,680	151,277,680	190,146,358	190,146,358			
Senior Lien Debt Service	70,718,091	70,718,091	70,718,091	81,079,816	81,079,816	94,345,941	94,345,941			
All Other Debt Service	26,214,534	26,214,534	26,214,534	39,097,256	39,097,256	41,224,516	41,224,516			
Total Debt Service	96,932,626	96,932,626	96,932,626	120,177,071	120,177,071	135,570,456	135,570,456			
<b>Senior Lien Debt Service Coverage</b>	<b>0.99</b>	<b>1.65</b>	<b>1.65</b>	<b>1.87</b>	<b>1.87</b>	<b>2.02</b>	<b>2.02</b>			
<b>Total Debt Service Coverage</b>	<b>0.73</b>	<b>1.21</b>	<b>1.21</b>	<b>1.26</b>	<b>1.26</b>	<b>1.40</b>	<b>1.40</b>			
Days Cash on Hand										
Ending Cash Balance	44,284,776	90,792,056	90,792,056	95,591,395	95,591,395	111,255,622	111,255,622			
Operating Expenses	135,911,272	135,911,272	135,911,272	145,641,684	145,641,684	159,623,404	159,623,404			
Adjustments:										
(Loss) / Gain on ALCOSAN Billings	(2,066,814)	(2,066,814)	(2,066,814)	(2,400,861)	(2,400,861)	(2,771,926)	(2,771,926)			
Add: Adjustments to ALCOSAN	0	0	0	0	0	0	0			
Placeholder										
Net Operating Expenses	133,844,458	133,844,458	133,844,458	143,240,823	143,240,823	156,851,478	156,851,478			
<b>Days Cash on Hand (x 365)</b>	<b>120.8</b>	<b>247.6</b>	<b>247.6</b>	<b>243.6</b>	<b>243.6</b>	<b>258.9</b>	<b>258.9</b>			
Including ALCOSAN										
Add: ALCOSAN Charges	94,684,852	94,684,852	94,684,852	101,502,162	101,502,162	108,810,317	108,810,317			
<b>Days Cash on Hand (x 365)</b>	<b>70.7</b>	<b>145.0</b>	<b>145.0</b>	<b>142.6</b>	<b>142.6</b>	<b>152.9</b>	<b>152.9</b>			

(1) Company Main Brief  
(2) Revenue adjusted to meet to Revenue Requirements.

TABLE II  
Pittsburgh Water and Sewer Authority  
RATE FILING REVENUE DETAIL  
Docket Nos.: R-2023-3039920; R-2023-3039921; R-2023-3039919

Description	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)
	FPFTY 2024					2025 Rate Year				2026 Rate Year			
	PWSA	PWSA	PWSA	ALJ / Parties	ALJ / Parties	PWSA	PWSA	ALJ / Parties	ALJ / Parties	PWSA	PWSA	ALJ / Parties	ALJ / Parties
Revenue at Current Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	Rate Increase to Meet Revenue Requirements	Revenue At Proposed Rates	Adjustments	Revenue At Adjusted Rates	
0													
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
<b>Retail User Charge Revenues</b>													
Water	120,501,682	29,886,583	150,388,265	0	150,388,265	11,825,568	162,213,833	0	162,213,833	31,901,651	194,115,484	0	194,115,484
Water - Public Hydrants	1,322,609	641,484	1,964,093	0	1,964,093	372,997	2,337,090	0	2,337,090	459,490	2,796,580	0	2,796,580
Wholesale/Contract Revenues	3,726,934	677,396	4,404,330	0	4,404,330	290,612	4,694,942	0	4,694,942	724,163	5,419,106	0	5,419,106
Sewer	48,144,421	1,980,136	50,124,557	0	50,124,557	2,092,015	52,216,572	0	52,216,572	8,466,797	60,683,369	0	60,683,369
Stormwater	19,962,786	5,798,834	25,761,620	0	25,761,620	4,720,250	30,481,870	0	30,481,870	5,172,398	35,654,268	0	35,654,268
Stormwater Only	3,154,950	916,690	4,071,640	0	4,071,640	746,070	4,817,710	0	4,817,710	817,503	5,635,213	0	5,635,213
Subtotal: Retail User Charge Revenues	196,813,382	39,901,123	236,714,505	0	236,714,505	20,047,513	256,762,018	0	256,762,018	47,542,002	304,304,020	0	304,304,020
<b>Infrastructure Improvement Charge</b>													
Water	0	0	0	0	0	14,134,186	14,134,186	0	14,134,186	2,028,830	16,163,016	0	16,163,016
Sewer	0	0	0	0	0	2,956,313	2,956,313	0	2,956,313	79,900	3,036,213	0	3,036,213
Stormwater	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal: Infrastructure Improvement Charge	0	0	0	0	0	17,090,499	17,090,499	0	17,090,499	2,108,730	19,199,229	0	19,199,229
<b>Customer Assistance Program Charge</b>													
Water	0	0	0	0	0	3,134,371	3,134,371	0	3,134,371	533,510	3,667,881	0	3,667,881
Sewer	0	0	0	0	0	1,336,310	1,336,310	0	1,336,310	235,819	1,572,130	0	1,572,130
Stormwater	0	0	0	0	0	1,041,772	1,041,772	0	1,041,772	173,629	1,215,401	0	1,215,401
Subtotal: Customer Assistance Program Charge	0	0	0	0	0	5,512,454	5,512,454	0	5,512,454	942,958	6,455,412	0	6,455,412
<b>DSIC Revenues</b>													
Water	PWSA 5.0%		PWSA 7.5%		ALJ 7.5%		PWSA 7.5%		ALJ 7.5%		PWSA 7.5%		ALJ 7.5%
Sewer	5.0%		7.5%		7.5%		7.5%		7.5%		7.5%		7.5%
Stormwater (NSWO)	0.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
Stormwater Only	0.0%		0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
Water	6,025,084	5,254,036	11,279,120	0	11,279,120	2,182,059	13,461,179	0	13,461,179	2,584,799	16,045,979	0	16,045,979
Sewer	2,407,221	1,352,121	3,759,342	0	3,759,342	478,848	4,238,190	0	4,238,190	658,689	4,896,878	0	4,896,878
Stormwater (NSWO)	0	0	0	0	0	0	0	0	0	0	0	0	0
Stormwater Only	0	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal: DSIC Revenues	8,432,305	6,606,157	15,038,462	0	15,038,462	2,660,907	17,699,369	0	17,699,369	3,243,488	20,942,857	0	20,942,857
<b>Other System Revenues</b>													
Other Operating & Non-Operating Revenues	3,566,080	0	3,566,080	0	3,566,080	71,322	3,637,402	0	3,637,402	72,748	3,710,150	0	3,710,150
Subtotal: Other System Revenues	3,566,080	0	3,566,080	0	3,566,080	71,322	3,637,402	0	3,637,402	72,748	3,710,150	0	3,710,150
Subtotal: Total Revenues before Uncollectible	208,811,767		255,319,047		255,319,047		300,701,740		300,701,740		354,611,667		354,611,667
Less: Uncollectible Revenues	(4,953,627)	0	(4,953,627)	0	(4,953,627)	(1,060,408)	(6,014,035)	0	(6,014,035)	(1,078,199)	(7,092,233)	0	(7,092,233)
Less: Uncollectible Revenues (SW Only)	(1,017,910)	0	(1,017,910)	0	(1,017,910)	(158,919)	(1,176,829)	0	(1,176,829)	(198,817)	(1,375,646)	0	(1,375,646)
Less: Stormwater Credit Program	(180,489)	0	(180,489)	0	(180,489)	(31,613)	(212,102)	0	(212,102)	(29,203)	(241,305)	0	(241,305)
Subtotal: Less: Uncollectible Revenues	(6,152,026)	0	(6,152,026)	0	(6,152,026)	(1,250,940)	(7,402,966)	0	(7,402,966)	(1,306,219)	(8,709,185)	0	(8,709,185)
<b>Total Revenues Net of Uncollectible</b>	<b>202,659,741</b>	<b>46,507,280</b>	<b>249,167,021</b>	<b>0</b>	<b>249,167,021</b>	<b>44,131,754</b>	<b>293,298,775</b>	<b>0</b>	<b>293,298,775</b>	<b>52,603,707</b>	<b>345,902,482</b>	<b>0</b>	<b>345,902,482</b>
<b>Summary</b>													
Revenue from Base Rates		39,901,123			39,901,123		20,047,513		20,047,513		47,542,002		47,542,002
Revenue from New Reconcilable Charges		0			0		22,602,952		22,602,952		3,051,689		3,051,689
Revenue from DSIC		6,606,157			6,606,157		2,660,907		2,660,907		3,243,488		3,243,488
Revenue from Other System Revenues		0			0		71,322		71,322		72,748		72,748
Total Revenue Increase before Uncollectible		46,507,280			46,507,280		45,382,694		45,382,694		53,909,927		53,909,927
Change in Uncollectible Revenues		0			0		(1,250,940)		(1,250,940)		(1,306,219)		(1,306,219)
Total Revenue Increase with Uncollectible		46,507,280			46,507,280		44,131,754		44,131,754		52,603,707		52,603,707

(1) Company Main Brief

# Exhibit WJP-2

**COOPERATION AGREEMENT**  
**BETWEEN THE CITY OF PITTSBURGH AND**  
**THE PITTSBURGH WATER AND SEWER AUTHORITY**

This Cooperation Agreement ("Agreement"), is made this 3<sup>rd</sup> day of October, 2019, by and between the CITY OF PITTSBURGH, a municipal corporation existing under the laws of the Commonwealth of Pennsylvania ("City"), and THE PITTSBURGH WATER AND SEWER AUTHORITY, a body corporate and politic organized and existing under the laws of the Commonwealth of Pennsylvania ("PWSA").

WHEREAS, the City and PWSA entered into a Cooperation Agreement dated as of June 15, 1995 but effective as of January 1, 1995 (the "1995 Cooperation Agreement") and a First Amendment to Cooperation Agreement dated March 21, 2011 (the "First Amendment" and together with the 1995 Cooperation Agreement, the "Original Cooperation Agreement") relating to the operation and maintenance of the System, as hereinafter defined; and

WHEREAS, this Agreement is specifically intended to reinforce the concurrence of the parties that neither the City nor PWSA will entertain proposals, make arrangements or allow the sale or ownership of the System to a for-profit private entity; and

WHEREAS, pursuant to Act 65 of 2017, which amended the Pennsylvania Public Utility Code (the "Public Utility Code"), PWSA became subject to the Public Utility Code, except Chapters 11 (relating to certificates of public convenience) and 21 (relating to affiliated interests) in the same manner as a public utility and subject to regulation by the Pennsylvania Public Utility Commission (the "PUC"); and

WHEREAS, the Original Cooperation Agreement terminated on October 3, 2019 and City and PWSA desire to enter into this Agreement to, among other things, (i) reflect changes in their rights and obligations each with respect to the other, (ii) accurately reflect the division of services related to the System, (iii) accurately provide for payments by the City and PWSA to the other based upon actual, verifiable, direct expenses, and in accordance with customary utility practices under the Public Utility Code, (iv) confirm that payments by PWSA to the City continue to be subordinate to all debt obligations of PWSA, (v) provide for cooperation by the City and PWSA in their respective capital projects which may impact each other, (vi) provide for clarification of the responsibilities of PWSA with respect to City Parks larger than 50 acres and other City properties, (vii) confirm that the System will remain under public ownership and (viii) set forth certain other provisions relating to the roles and responsibilities of the City and PWSA with respect to the System.

Therefore, intending to be legally bound, the parties agree as follows:

1. **Incorporation of Recitals.** The foregoing recitals are incorporated herein by reference.
2. **Definitions.**

2.1 "Actual Direct Expenses" will mean all costs and expenses incurred by the City or PWSA that are directly related to services or goods provided to or for the benefit of the

other. Expenses in this category are either documented by a third-party invoice or specifically identifiable in the records of the party incurring the expense.

2.2 "Agreement" means this Cooperation Agreement.

2.3 "ALCOSAN" means the Allegheny County Sanitation Authority.

2.4 "City Parks" means City-owned parks that consist of fifty (50) or more contiguous acres, which include the following: Hays Woods, Frick Park, Schenley Park, Highland Park, Emerald View Regional Park, Riverview Park, McKinley Park, Allegheny Commons, Southside Park, Brookline Memorial Park and Sheraden Park. It is recognized that additional parks may be added, subject to the approval by PWSA, which approval will not be unreasonably withheld.

2.5 "Combination Sewer Laterals" means those Laterals that connect to Combined Sewers.

2.6 "Combined Sewers" means underground pipes or tunnels designed to transport sewage and stormwater.

2.7 "Distribution Mains" means small water mains that convey drinking water to Service Lines.

2.8 The "Effective Date" of this Agreement is October 3, 2019.

2.9 "Sanitary Sewers" means underground pipes or tunnels designed to transport sewage.

2.10 "Senior Debt" means all those bonds, notes, indentures, loan agreements, funding agreements, interest-rate swap agreements, hedge agreements, credit facilities, liquidity facilities, remarketing agreements, intercreditor agreements and any other related financial obligations and indebtedness issued, entered into or undertaken by the PWSA at any time, including but not limited to those in existence on the Effective Date hereof, but will not mean or include any obligations of the PWSA to the City, either under this Agreement or otherwise.

2.11 "Sewer Grates" means a grate that covers the entrance to a ground level Sewer Line, which allows water to enter the sewer.

2.12 "Sewer Lines" means Sewer Mains and Sewage Laterals.

2.13 "Service Lines" means those water lines that connect to System Water Mains and that deliver water from the Water Mains to one or more buildings, premises, or facilities.

2.14 "Sewage Laterals" means those individual Sewer Lines that transport sewage and/or storm water from one or more buildings or premises to the Sewer Mains.

2.15 "Sewer Mains" means the pipes that carry sanitary or combined sewage from Laterals to ALCOSAN sanitary mains or combined sewer mains.

2.16 "Sewer System" means the portion of the System that 1) collects sanitary and combined sewage and conveys it to ALCOSAN and 2) collects and discharges stormwater.

2.17 "Stormwater Conveyance Lines" means stormwater pipes that convey separated stormwater to points of approved discharge.

2.18 "System" means and includes, the following, then owned or operated by PWSA and used in the rendering of water service and sewer service by PWSA as of any particular time: all plants, warehouses, equipment, structures, facilities, lands, easements, rights of way, public Water Lines and public sewer lines, patents, copyrights, contracts with municipalities or authorities outside the boundaries of the City, water treatment plants, pumping facilities, reservoirs, storage tanks, distribution mains, public Service Lines and appurtenances, public sewers, inlets, sewer grates, manholes, diversion structures, pumping stations, force mains, public subsurface Stormwater Conveyance Lines and related facilities conveying stormwater, all patents and copyrights obtained by the City, assigned to the PWSA, or retained directly by PWSA and related to the design, operation, maintenance, replacement or abandonment of water, sewer or stormwater systems, all other tangible public property, fixed or moveable, all capital additions then constructed or otherwise acquired relating to water service and sewer service, and all franchises used or useful to the PWSA at such particular time in the rendering of water, sewer and stormwater service by PWSA and other agreements between the City and PWSA.

2.19 "Water Lines" means Water Mains and Service Lines.

2.20 "Water Mains" means the pipes that distribute drinking water from the treatment plants, pump stations and storage facilities to Service Lines.

2.21 "Water System" means the portion of the System that treats and distributes drinking water.

### 3. Services to be Provided between the City and PWSA.

3.1. The City Services. The City may render to PWSA the following services and goods: (i) participation of eligible PWSA employees in the City's Pension Plan, (ii) fuel for PWSA vehicles, (iii) City permits and licenses relating to PWSA projects (the charges to PWSA to be based on the usual customary charges paid by utilities obtaining similar permits and licenses from the City), (iv) vehicle fleet maintenance services, (v) a portion (50%) of street sweeping costs starting January 1, 2020, and (vi) any other services and goods upon such terms as may be agreed to by the parties hereto performed at usual and customary costs and the charges to PWSA based on the usual customary charges paid by utilities obtaining similar services and goods from the City. Except where otherwise specifically provided, PWSA will compensate the City for those services and goods provided pursuant to this Agreement. Any payments by PWSA pursuant to this Agreement shall be based on Actual Direct Expenses and must meet external audit and PUC auditing standards. The parties to this Agreement acknowledge that due to the unavailability of actual cost data certain current year charges by the City to PWSA may be



based on prior year data. If payments are made based on information other than actual current data, the accounts will be reconciled and overpayment and underpayment corrected no later than July 1 of the following calendar year. The City and the PWSA are not obligated to provide or to purchase these services from each other and may seek the services from other providers.

3.2 PWSA Services. PWSA may render to the City such services as agreed to by the City and PWSA which may include but not be limited to the following: (i) providing water through PWSA water mains to City properties, (ii) fire hydrant services, (iii) conveyance of sewage through PWSA sewer mains to ALCOSAN and payment of ALCOSAN charges, subject to Section 6.3 of this Agreement, and (iv) payment of any subsidy to other water service providers. Any such services by PWSA to the City will either be paid for directly by the City to PWSA or taken as a credit by PWSA against amounts owed by PWSA to the City under this Agreement. Any payments by the City to PWSA shall be based on Actual Direct Expenses. The City and the PWSA are not obligated to provide or to purchase these services from each other and may seek the services from other providers.

4. Capital Improvement Projects. The parties will work together in good faith, consistent with the City Right-of-Way Manual, as the same exists on the date of this Agreement (the "City Right-of-Way Manual") and the PWSA Developer Manual, as the same exists on the date of this Agreement (the "PWSA Developer Manual") to determine the impact of a City project on the System, including the design and location of any project and including the reconstruction and/or resurfacing of roadways. The parties will also work together in good faith, consistent with the City Right-of-Way Manual and the PWSA Developer Manual, to determine the impact of a PWSA project on the City's existing facilities and infrastructure, including the design and location of any replacement facilities or infrastructure resulting from the PWSA's project construction.

5. Water and Sewer Lines To and Within City Properties. The City and the PWSA agree as follows:

5.1 City Parks.

5.1.1 Water Mains and Service Lines. The PWSA will be responsible for the operation, maintenance, repair, and replacement of water mains. The PWSA will be responsible for existing and new service lines, which provide water service by PWSA to City Parks larger than 50 acres. If a water meter is not in place, PWSA shall provide a meter installation, and if necessary, a meter vault, as prescribed in the PWSA Developer Manual and in accordance with PUC requirements. The cost of the meter and meter vault installation shall be shared equally by PWSA and the City. The City shall be responsible for the cost of the repair and replacement of any meter vaults and meters. The City will be responsible for the operation, maintenance, installation, repair and replacement of plumbing inside City Park buildings or other City Park facilities such as fountains, spray pools and swimming pools.

5.1.2 Combined and Sanitary Sewers Mains and Laterals. The PWSA will be responsible for the operation, maintenance, repair and replacement of sanitary

sewer and combined sewer mains. The PWSA will be responsible for existing and new sewer laterals within the City Parks larger than 50 acres.

5.2 Other City Properties.

5.2.1 Water and Sewer Mains, Service Lines and Laterals. The PWSA will be responsible for the operation, maintenance, repair, and replacement of water mains providing water service by PWSA to City properties. The PWSA will be responsible for the operation, maintenance, repair, and replacement of sanitary sewer and combination sewer mains.

The City shall be treated like other commercial customers of PWSA with respect to service lines and sewer laterals with two important exceptions:

First, the operation, maintenance, repair and replacement of water service lines and sewer laterals in City Parks larger than 50 acres shall remain the responsibility of PWSA.

Second, the City will be responsible for the total cost of the operation, maintenance, repair and replacement of all other water service lines and sewer laterals beginning in 2025 and thereafter. Prior to 2025, the City will be responsible for the cost of these service lines and sewer laterals in increasing proportion following this annual schedule:

<u>Year</u>	<u>Percentage of Cost to be paid by City</u>
2020	0%
2021	20%
2022	40%
2023	60%
2024	80%
2025 and thereafter	100%

With respect to water service provided by PWSA, if a water meter is not in place, PWSA shall provide a meter installation, and if necessary, a meter vault, as prescribed in the PWSA Developer Manual and in accordance with PUC meter requirements. The cost of the meter and meter vault installation shall be shared equally by PWSA and the City. The City shall be responsible for the cost of the repair and replacement of any meter vaults and meters. The City shall be responsible for the operation, maintenance, installation, repair and replacement of internal plumbing with respect to all City buildings, facilities and City properties, including City Parks of 50 acres or less.

5.3 Saw Mill Run. PWSA will be responsible for the operation, maintenance, repair and replacement of water and sewer mains located in Saw Mill Run. PWSA shall not be responsible for the operation, maintenance, repair and replacement of service lines and laterals located in Saw Mill Run.

6. **Subsidy Payments; Water to City; Sewage Treatment Charges.**

6.1 **Subsidy Payments.** Pursuant to Ordinance No. 675 of the City enacted on December 27, 1973, the City entered into an agreement, dated December 28, 1973, with the Western Pennsylvania Water Company (now known as the Pennsylvania American Water Company ("PAWC")) (the "Water Rate Subsidy Agreement"). This agreement permitted the City to subsidize the water rates for City residents who are customers served by PAWC. Currently PWSA makes those subsidy payments to PAWC on behalf of the City. PWSA is now subject to PUC regulation and PUC regulations do not permit PWSA to subsidize the rates of a utility which is subject to PUC regulation.

Pursuant to this Agreement, it is agreed by both parties that:

- (1) The original Water Rate Subsidy Agreement is immediately assigned to PWSA;
- (2) It is understood that this Subsidy Agreement will be terminated by PWSA as soon as PWSA's current and projected rate increases have effectively eliminated any measurable subsidy to at least 67% of the residential customers (those with a 5/8" meter) for City residents served by PAWC. A measurable subsidy is defined as more than \$1.00 per month. The termination of the subsidy could occur as early as 2020.
- (3) Until the Water Rate Subsidy Agreement is terminated, PWSA and the City will share in the subsidy payments as follows:

--In 2020, PWSA will pay for any subsidy pursuant to the Water Rate Subsidy Agreement, if one exists;

--In 2021, PWSA and the City will share equally in any subsidy payment pursuant to the Water Rate Subsidy Agreement, if one exists;

--In 2022 and years thereafter, the City will pay any existing subsidy pursuant to the Water Rate Subsidy Agreement, if one exists.

During this period, the City will either promptly reimburse PWSA or PWSA will take as a credit the amount of any subsidy payments made by PWSA against payments to be made by PWSA hereunder.

6.2 **Water to City and Fire Hydrant Charges.** Until January 1, 2020, the City shall be entitled without charge to receive up to 600 million gallons of water each calendar year to be used by the City, its departments, agencies, and instrumentalities.

With respect to the Pittsburgh Zoo & PPG Aquarium, the Bob O'Connor Golf Course at Schenley Park and Phipps Conservatory and Botanical Gardens (collectively, the "Third Party Water Users"), which have agreements (e.g. leases) containing provisions contractually obligating the City to provide water and sewage service without charge as long as the City receives water and sewage service without charge, the water and sewer usage by the Third Party Water Users beginning January 1, 2020, shall be subject to the phased in PWSA

charges set forth in the table included in the second paragraph immediately following this paragraph. After water meters have been installed at the facilities of the Third Party Water Users, PWSA shall directly bill said users for their water and sewer usage in accordance with the aforesaid table.

The City shall not receive a credit for any water not used. To the extent the City uses in excess of 600 million gallons in any calendar year, the PWSA may offset that cost based on normal PWSA charges against monies owed the City under this Agreement. The City will cooperate with the PWSA in providing for the installation of water meters and meter vaults, if necessary, in all City properties including City Parks not metered as of the Effective Date, the cost of which shall be shared equally by PWSA and the City as set forth in Section 5 of this Agreement. The City shall not withhold or impede the installation of water meters and meter vaults at any of its properties including parks. Any City properties including parks not metered by January 1, 2024 will be subject to flat water charges levied by PWSA in accordance with its usual and customary practices.

Beginning January 1, 2020, the City shall pay PWSA normal PWSA charges (currently water, wastewater and ALCOSAN) on City-owned metered properties for all water usage and any fire hydrant usage charge. The foregoing charges shall be phased in over a five-year period as follows:

<u>Year</u>	<u>Percentage of Usage Charged</u>
2020	20%
2021	40%
2022	60%
2023	80%
2024 and thereafter	100%

6.3 Sewage Treatment Charges. As set forth in Section 5B of that certain Memorandum of Understanding by and among the City, PWSA and ALCOSAN dated October 16, 1996, the City will pay ALCOSAN directly for all City property ALCOSAN accounts. If ALCOSAN does not permit the City to pay it directly for the City property ALCOSAN accounts and PWSA makes such payments to ALCOSAN on behalf of the City, the City shall either promptly reimburse PWSA the amount of such payments made by PWSA to ALCOSAN or PWSA shall be entitled to a credit against any payments required to be made by PWSA under this Agreement.

7. Granting of Easements and Rights of Way. Subject to necessary City Council approval, the City shall grant to PWSA all necessary easements and rights of way which may be required by PWSA in the maintenance, repair and capital improvements to the System.

8. City Payroll Tax. Similar to other utility employers subject to the City's Payroll Tax, PWSA hereby agrees to pay the City effective January 1, 2020 an amount calculated based on the prior year's payroll data but otherwise in accordance with the City's Payroll Tax and the regulations issued pursuant to the Title II, Article VII, Chapter 258 of the City Code (the

"Payroll Tax Regulations"). Such amount shall be paid annually or taken as a credit by PWSA against amounts owed by the City under this Agreement.

9. **PURTA Payments.** Similar to other entities furnishing utility services that are regulated by the PUC, PWSA hereby agrees to pay the City, beginning with the year commencing January 1, 2020, an amount calculated pursuant to the Pennsylvania Public Utility Realty Tax (PURTA) (Article XI-A of the Tax Reform Code of 1971 (P.L. 6, No. 2), as amended). Subject to the phase-in below, the amount to be paid by PWSA ("PURTA Payment") shall be calculated based on the fair market value, as determined under PURTA and the regulations thereunder, of the PWSA realty of the System used for the treatment and delivery of water to PWSA customers. The PURTA Payment shall be paid annually by PWSA to the City in an amount that shall be phased in as follows:

<u>Year</u>	<u>% of PURTA Payment to be paid to the City</u>
2020	20%
2021	40%
2022	60%
2023	80%
2024 and thereafter	100%

In lieu of making a PURTA Payment, the amount of such payment, at the sole option of PWSA, may be taken as a credit against amounts owed by the City to PWSA under this Agreement.

10. **Credit May Not Be Pledged.** The credit of one party to this Agreement will not be pledged for payment of any debts of the other party, and neither party will be liable for debt payments of the other party. Unless consented to by the City, the taxing power of the City will not be pledged for payment of any PWSA indebtedness.

11. **Subordination to Senior Debt.** The City agrees to subordinate all legal and equitable rights it has or may have to payment from the PWSA for services rendered and goods provided by the City to the PWSA, whether under this Agreement, any amendment thereto, or otherwise, to the Senior Debt. The PWSA may make and the City may retain regularly scheduled payments under this Agreement when and as due; provided, however, that no payments may be made by the PWSA or retained by the City upon the occurrence of an event of default under any Senior Debt instrument or agreement or if the making of such payment would cause an event of default thereunder. The City agrees to subordinate, and does hereby subordinate, any payments received from the PWSA to the indefeasible payment or satisfaction in full of the Senior Debt.

The City is not obligated to pay the principal, redemption price, if any, or other payments on the Senior Debt. Neither the full faith, credit nor taxing power of the City is pledged to such payments.

This Agreement constitutes a supplement to the Original Cooperation Agreement within the meaning of PWSA's 2017 Amended and Restated Trust Indenture and 2019 Amended and Restated Subordinate Trust Indenture.

12. **Conflict With PUC Regulations.** If any obligation of PWSA to the City under this Agreement conflicts with provisions of the Public Utility Code or regulations of PUC thereunder, the provisions of the Public Utility Code and regulations of the PUC shall control. By signing this Agreement, or any other agreement to which it and PWSA are parties, the City does not consent to automatic PUC jurisdiction and does not waive any right to object thereto.

13. **Notices.** All notices and correspondence between the City and PWSA concerning or in furtherance of this Cooperation Agreement will be addressed to:

The City: Mayor William Peduto  
414 Grant Street #512  
Pittsburgh, PA 15219  
Phone: 412-255-2626

with a copy to: Solicitor  
Suite 313, City/County Building  
414 Grant Street  
Pittsburgh, PA 15219  
Phone: 412-255-2001  
Fax: 412-255-2285

PWSA: Executive Director  
The Pittsburgh Water and Sewer Authority  
Penn Liberty Plaza 1  
1200 Penn Avenue  
Pittsburgh, PA 15222  
Phone: 412-255-8949  
Fax: 412-393-0522

with copies to: Director of Engineering and Construction  
The Pittsburgh Water and Sewer Authority  
Penn Liberty Plaza 1  
1200 Penn Avenue  
Pittsburgh, PA 15222  
Phone: 412-255-8949  
Fax: 412-393-0522

and

Solicitor for PWSA  
 Mark F. Nowak, Esq.  
 Clark Hill PLC  
 One Oxford Centre  
 301 Grant Street, 14<sup>th</sup> Floor  
 Pittsburgh, PA 15219  
 Phone: 412-394-2428  
 Fax: 412-394-2555

Each party will notify the other whenever there is any change in the required contact.

14. **Miscellaneous Matters.**

a. With respect to tap-in fees charged by PWSA, until January 1, 2025, or at such later date as approved by the PWSA Board, the City shall be entitled to a 100% governmental exception to tap-in fee charges with respect to City owned governmental projects, to include community gardens located on City property.

c. PWSA and the City will obtain an appraisal of the water facilities component of the System, the cost of which shall be equally shared by the City and PWSA.

d. With respect to unknown water lines, if PWSA or the City discovers a previously unknown water line PWSA will consider such line to be part of the System provided the line was constructed in accordance with PWSA specifications that existed at that time and located within City owned property.

e. The City and PWSA will jointly create a map identifying water service lines and laterals within the City Parks. Each party will be entitled to an original copy of this map.

f. If PWSA abandons or vacates any System property prior to September 1, 2025, such property shall remain as City-owned property. After PWSA exercises its option to acquire the System, PWSA will provide the City with ninety (90) days prior written notice of its intent to sell any of the System's real property and the City shall have a right of first refusal to purchase said real property at fair market value. The City must exercise said right of first refusal within ninety (90) days after receiving the above written notice from PWSA.

15. **Relationship of PWSA and City.** The City agrees that the interactions between the City and PWSA under this Agreement will be on a business-like, transactional basis and the provisions hereof will be applied to PWSA in a manner similar to utilities operating in the City subject to the provisions of this Agreement.

16. **Public Ownership.** The City and PWSA agree that the System will remain under public ownership.

17. **Entire Agreement.** This Agreement will constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts will be

relevant or admissible for purposes of determining the meaning or intent of any of the provisions hereof.

18. **Amendments.** No changes, additions, modifications or amendments of this Agreement will be effective unless they are set out in writing and signed by the parties hereto.

19. **Assignment.** This Agreement will not be assignable by either party without the written consent of the other party.

20. **Termination.** The City and PWSA shall each have the right to unilaterally terminate this Agreement at any time upon ninety (90) days written notice to the other.

21. **Governing Law.** This Agreement will be governed by the laws of the Commonwealth of Pennsylvania, without reference to its conflicts-of-laws principles.

22. **Conflict.** To the extent that any provision in this Agreement conflicts with any provision of any trust indenture securing any indebtedness of the PWSA, the provisions of the trust indenture will prevail.

23. **Severability.** The provisions of this Agreement will be severable and should any part of the Agreement be declared invalid or unenforceable, the remainder will continue in full force and effect.

24. **No Third-Party Beneficiaries.** This Agreement shall create no rights in any party other than the City and the PWSA and no other party is intended to be a third-party beneficiary of this Agreement, except as specifically indicated herein. Moreover, the respective responsibilities and obligations of PWSA and the City with respect to service lines and the System set forth in this Agreement shall only apply to PWSA and the City and not to any other customer of PWSA.

25. **Pittsburgh Home Rule Charter.** This Agreement is subject to the provisions of the City of Pittsburgh Home Rule Charter.

26. **Authorizing Resolution.** The City is authorized to enter into this Agreement pursuant to Resolution No. 464 of 2019, effective July 25, 2019; and the PWSA is authorized to enter into this Agreement under Agenda Item No. 130 of 2019 duly approved and adopted at a meeting of its Board held on June 28, 2019.

[SIGNATURES ON NEXT PAGE]



IN WITNESS WHEREOF, the parties have duly executed this Cooperation Agreement the day and year first above written.

ATTEST:

*Paul Hill*

CITY OF PITTSBURGH

*[Signature]*  
Mayor

Reviewed by:

\_\_\_\_\_  
Assistant City Solicitor

Approved as to form:

\_\_\_\_\_  
City Solicitor

Countersigned by:

\_\_\_\_\_  
City Controller

ATTEST:

*Jan W. Turner*  
Secretary

THE PITTSBURGH WATER AND SEWER  
AUTHORITY

*Paul Seger*  
Chairman

**VERIFICATION**

I, William J. Pickering, hereby state that: (1) I am the Chief Executive Officer for The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: 05/03/2023 | 8:02 AM PDT

DocuSigned by:  
*William J. Pickering*  
6C8AA5A5E44147A...

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William J. Pickering  
Chief Executive Officer  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**EDWARD BARCA**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Support for Proposed Rate Increase

Support for DSIC Cap Increase

*Pro Forma* Financial Results

Rate Structure Changes & New Charges

Calculation of Revenue Requirements

Development of Operating Budget & Capital Needs

May 9, 2023

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**TABLE OF EXHIBITS**

Exhibit EB-1	Provides schedules showing PWSA's Income Statement, Cash Flow Statement, and Debt Service Coverage Statement at present rates for the HTY (FY 2022), FTY (FY 2023), FPFTY (FY 2024), the Forecast Period (FY 2025), and the Forecast Period (FY 2026)
Exhibit EB-2	Provides schedules showing PWSA's Income Statement, Cash Flow Statement, and Debt Service Coverage Statement at proposed rates for the HTY, FTY, FPFTY, Forecast Period 2025, and Forecast Period 2026
Exhibit EB-3	Contains additional budget information for HTY, FTY, FPFTY, Forecast Period 2025, and Forecast Period 2026
Exhibit EB-4	Contains PWSA’s 2022-2027 Capital Improvement Plan
Exhibit EB-5	Contains PWSA’s Financial Management Policy
Exhibit EB-6	Contains PWSA’s Debt and Swap Portfolio Summary
Exhibit EB-7	Contains PWSA’s Additional Bonds Test at Existing Rates
Exhibit EB-8	Contains PWSA’s Additional Bonds Test at Proposed Rates
Exhibit EB-9	Contains PWSA’s Cost-Benefit Analysis on the Arrearage Forgiveness Program

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND POSITION FOR THE RECORD.**

3 A. My name is Edward Barca and I am the Director of Finance for The Pittsburgh Water and  
4 Sewer Authority (“PWSA” or “Authority”).

5 **Q. WHEN DID YOU TAKE ON THE POSITION OF TREASURER?**

6 A. I was appointed as the Authority’s Treasurer in June 2018 and assumed my duties with  
7 the Authority during August 2018. I was promoted to the Deputy Director of  
8 Finance/Treasurer in July 2019 and ultimately became the Director of Finance in June  
9 2020, which is my current position.

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

11 A. I have a Master’s Degree in Finance from the Colorado State University-Global Campus  
12 and a Bachelor's Degree in Finance from Mercyhurst University.

13 **Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.**

14 A. I have been at the Authority since August 2018. As I stated, I started as the Authority’s  
15 Treasurer in August 2018. I remained in that position until I became the Authority’s  
16 Deputy Director of Finance/Treasurer in July 2019 and then the Director of Finance,  
17 which is the position I currently hold.

18 Prior to working at the Authority, I worked for the City of Pittsburgh (“City”). I  
19 joined the City in 2015 and was promoted to the Assistant Director of Finance in 2017.  
20 While at the City, I served as a Business Intelligence Analyst, Senior Financial Analyst,  
21 Revenue Manager, and, finally, Assistant Director of Finance.

22 Before starting with the City, I had prior work experience as a Financial Planning  
23 Analyst for the Allegheny Financial Group and as a Financial Services Representative for

1 E\*TRADE Financial. In addition, since November 2015, I have owned and operated a  
2 business — Barca Tax Services, LLC — that provides tax preparation services.

3 **Q. MR. BARCA, WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES WITH**  
4 **THE PWSA?**

5 A. In my present position, I am responsible for the financial affairs of the Authority along  
6 with overseeing the Finance Department. This includes creating, implementing, and  
7 monitoring the annual operating and capital budgets. I also manage the Authority’s (a)  
8 cash and liquidity to ensure that sufficient funds are available to process payments, invest  
9 in infrastructure, and service debt while preserving principal and thereafter maximizing  
10 return on cash and investments; and (b) debt portfolio, which includes assessing  
11 opportunities for financing and refinancing, securing additional debt capital from both  
12 bank and capital markets, managing the interest rate swap portfolio and maintaining all  
13 credit support vehicles. I further help to ensure compliance with all trust indentures, loan  
14 agreements, bond covenants, and filing deadlines.

15 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA**  
16 **PUBLIC UTILITY COMMISSION?**

17 A. Yes. I presented written Direct, Supplemental Direct, Rebuttal and Rejoinder testimony  
18 in support of PWSA’s most recent rate case at Docket Numbers R-2021-3024773 (water),  
19 R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater). I also presented  
20 written Direct Testimony in support of PWSA’s Compliance Plan Stage 2 Stormwater  
21 Proceeding at Docket Nos. M-2018-2640802 and M-2018-2640803. In addition, I have  
22 been directly involved in various financial proceedings before the Pennsylvania Public  
23 Utility Commission (“PUC” or “Commission”) regarding the issuance of securities  
24 certificates. In 2022 and 2023, these proceedings included: (1) the issuance of a  
25 securities certificate (S-2022-3032187) for a Capital Line of Credit; (2) the issuance of a

1 securities certificate (S-2022-3032192) for a series of Water Infrastructure and Finance  
2 Innovation Act (“WIFIA”) loans; (3) the issuance of an abbreviated securities certificate  
3 for a PENNVEST loan (S-2022-3034057); (4) the issuance of a securities certificate (S-  
4 2022-3034813) for indebtedness (revenue bonds in an amount up to \$125,000,000); (5)  
5 the issuance of a securities certificate for debt refunding (in an amount up to  
6 \$110,000,000); (6) the issuance of an abbreviated securities certificate for a PENNVEST  
7 Loan (S-2022-3036874), (7) the issuance of an abbreviated securities certificate for a  
8 PENNVEST Loan (S-2022-3036875); (8) the issuance of an abbreviated securities  
9 certificate for a PENNVEST Loan (S-2022-3036876); (9) the issuance of an abbreviated  
10 securities certificate for a PENNVEST Loan (S-2022-3036877); (10) the issuance of an  
11 abbreviated securities certificate for a PENNVEST Loan (S-2023-3038462).

12 **Q. PLEASE EXPLAIN THE PURPOSE OF YOUR TESTIMONY?**

13 A. The purpose of my testimony is to:

- 14 1) Provide the documentation and supporting methodology for the schedules and  
15 exhibits that are included in PWSA’s rate filing;
- 16 2) Describe PWSA’s financial results for the Authority’s proposed multi-year rate  
17 increase, which includes the fully projected future test year (“FPFTY”) comprised  
18 of the period from January 1, 2024 through December 31, 2024, as well as periods  
19 from January 1, 2025 through December 31, 2025 and January 1, 2026 through  
20 December 31, 2026;
- 21 3) Provide support for PWSA's total requested overall rate increase of \$146.1  
22 million, which is inclusive of the DSIC;
- 23 4) Explain and support two new charges starting in FY 2025, an “Infrastructure  
24 Improvement Charge” and a “Customer Assistance Charge”; and,
- 25 5) Explain how the Authority’s capital budget spending will be recovered from  
26 ratepayers.

27 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

28 A. Yes. I am sponsoring the following exhibits:



- 1 • **Exh. EB-1:** Exhibit EB-1 provides schedules showing PWSA's Income  
2 Statement, Cash Flow Statement, and Debt Service Coverage Statement at present  
3 rates for the HTY (FY 2022), FTY (FY 2023), FPFTY (FY 2024), the Forecast  
4 Period (FY 2025), and the Forecast Period (FY 2026).
- 5 • **Exh. EB-2:** Exhibit EB-2 provides schedules showing PWSA's Income  
6 Statement, Cash Flow Statement, and Debt Service Coverage Statement at  
7 proposed rates for the HTY, FTY, FPFTY, Forecast Period 2025, and Forecast  
8 Period 2026.
- 9 • **Exh. EB-3:** Exhibit EB-3 contains additional budget information for HTY, FTY,  
10 FPFTY, Forecast Period 2025, and Forecast Period 2026.
- 11 • **Exh. EB-4:** Exhibit EB-5 contains PWSA's 2022-2027 Capital Improvement  
12 Plan.
- 13 • **Exh. EB-5:** Exhibit EB-5 contains PWSA's Financial Management Policy.
- 14 • **Exh. EB-6:** Exhibit EB-6 contains PWSA's Debt and Swap Portfolio Summary.
- 15 • **Exh. EB-7:** Exhibit EB-7 contains PWSA's Additional Bonds Test at Existing  
16 Rates.
- 17 • **Exh. EB-8:** Exhibit EB-8 contains PWSA's Additional Bonds Test at Proposed  
18 Rates.
- 19 • **Exh. EB-9:** Exhibit EB-9 contains PWSA's Cost-Benefit Analysis on the  
20 Arrearage Forgiveness Program.

21 **II. PROPOSED RATE INCREASE**

22 **Q. PLEASE SUMMARIZE THE RATE INCREASE SOUGHT BY PWSA IN THIS**  
23 **PROCEEDING.**

24 A. The following points below summarize the requested increase in this proceeding.

- 25 • PWSA seeks a multi-year total overall rate revenue increase of \$146.1 million,  
26 which is inclusive of the DSIC. This includes a \$46.8 million or 22.5% increase in  
27 the FPFTY (FY 2024), \$45.4 million or 17.8% in FY 2025, and \$53.9 million or  
28 17.9% in FY 2026.
- 29 • It is proposed to allocate in rates \$432,640 for the Hardship Grant program and  
30 \$720,000 for the Arrearage Forgiveness program to support the grants and credits  
31 provided to eligible customers.

- 1 • It is proposed to adopt two new charges starting in FY 2025. The first is an  
2 Infrastructure Improvement Charge and the second is a Customer Assistance  
3 Charge.
- 4 • PWSA proposes to phase out the minimum water and wastewater charges starting  
5 in 2025 and in 2025 introduce the two new above-mentioned reconcilable charges  
6 to recover the costs of PENNVEST and Water Infrastructure and Finance  
7 Innovation Act (“WIFIA”) loans as well as the costs of PWSA’s low income  
8 customer assistance programs.

9 **Q. CAN YOU DESCRIBE THE NEED FOR THIS RATE INCREASE?**

10 A. The main factors driving the need to file this rate case include inflation, capital costs, the  
11 expansion of operations, continued compliance to meet financial obligations, and  
12 improvements to the financial metrics that impact PWSA’s bond rating.  
13 The details that justify the need for the additional revenues in this rate case along with the  
14 rate structure changes proposed in this proceeding will be fully described later in my  
15 testimony.

16 **III. CALCULATION OF REVENUE REQUIREMENT**

17 **A. Cash Flow Ratemaking**

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

20 A. PWSA is not regulated on the basis of a fair rate of return on a used and useful rate base  
21 as are investor-owned utilities; instead, the Authority’s revenue requirement is  
22 established on the basis of the “Cash Flow Method.”

23 The Commission has directed that PWSA’s revenue requirement will be  
24 determined using the “Cash Flow” method, the traditional method of determining just and

1 reasonable rates for municipal utilities such as PWSA.<sup>1</sup> In PWSA’s first three rate cases,<sup>2</sup>  
 2 PWSA and the other parties determined its revenue requirement using the “Cash Flow”  
 3 method.

4 It is appropriate to continue to use the “Cash Flow” method for PWSA, since  
 5 PWSA has no shareholders and does not pay a dividend or a rate of return to its owner.  
 6 With that in mind, rather than having its revenue requirement determined on the basis of  
 7 a fair rate of return on a used and useful rate base, PWSA’s rates should be set by  
 8 determining the levels of cash necessary to fund an operating budget that enables PWSA  
 9 to maintain the system, pay for needed capital improvements, the level of debt service  
 10 coverage that both meets PWSA’s bond covenant requirements, meets the additional  
 11 bonds test, and also produces sufficient cash to fund all obligations and maintain access  
 12 to the capital markets at reasonable rates.

13 In a 2010 Policy Statement, the Commission described the requirements of the  
 14 Cash Flow Method as follows:

15 *(b) ... Included in that requirement [of establishing just and reasonable rates] is the*  
 16 *subsidiary obligation to provide revenue allowances from rates adequate to cover*  
 17 *[the utility’s] reasonable and prudent operating expenses, depreciation allowances*  
 18 *and debt service, as well as sufficient margins to meet bond coverage requirements*  
 19 *and other internally generated funds over and above its bond coverage*  
 20 *requirements, as the Commission deems appropriate and in the public interest for*  
 21 *purposes such as capital improvements, retirement of debt and working capital.*<sup>3</sup>

---

<sup>1</sup> *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water And Sewer Authority*, Docket Nos. M-2018-2640802 and M-2018-2640803, Final Implementation Order entered March 15, 2018 at 27-28.

<sup>2</sup> *See, e.g., Pennsylvania Public Utility Commission v. PWSA*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

<sup>3</sup> 52 Pa.Code § 69.2702.

1           The Commission also stated that, in determining just and reasonable rate levels  
 2           under the Cash Flow Methodology it would consider, among other relevant factors, the  
 3           following financial factors:<sup>4</sup>

- 4                     • Test year-end and (as a check) projected future levels of non-borrowed  
 5                     year-end cash.
- 6                     • Available short term borrowing capacity and internal generation of  
 7                     funds to fund construction.
- 8                     • Debt to equity ratios and financial performance of similarly situated  
 9                     utility enterprises.
- 10                    • Level of financial performance needed to maintain or improve the  
 11                    utility’s bond rating thereby permitting the utility to access the capital  
 12                    markets at the lowest reasonable costs to customers over time.

13 **Q. PLEASE EXPLAIN HOW PWSA DETERMINED ITS REVENUE**  
 14 **REQUIREMENT IN THE FPFTY?**

15 A. PWSA’s revenue requirement in this case was determined by calculating the level of  
 16 additional revenues the Authority needs in order to fund its capital and operating budgets  
 17 and maintain financial metrics at least at or above its minimum requirements, considering  
 18 the levels needed to maintain PWSA’s current bond rating.

19 **IV. PRO FORMA FINANCIAL RESULTS**

20 **Q. HAVE YOU PREPARED A PROFORMA TEST YEAR INCOME STATEMENT,**  
 21 **CASH FLOW AND DEBT SERVICE COVERAGE STATEMENT THAT**  
 22 **PROJECTS THE AUTHORITY’S STATUS IN THE CURRENT YEAR AS WELL**  
 23 **AS ON A PROJECTED BASIS?**

24 A. Yes. Please see Exhibit EB-1 and Exhibit EB-2.

---

<sup>4</sup> 52 Pa.Code § 69.2703.

1 **Q. FIRST, PLEASE EXPLAIN THE TEST YEAR ON WHICH PWSA’S CLAIMED**  
2 **REVENUE REQUIREMENT IS BASED.**

3 A. As permitted by Act 11 of 2012, PWSA has based its claimed revenue requirement on the  
4 fully forecasted 12 months ending December 31, 2024, referred to as the Fully Projected  
5 Future Test Year (“FPFTY”). The Future Test Year (“FTY”) is calendar year 2023,  
6 January 1, 2023 to December 31, 2023, and the Historical Test Year (“HTY”) is calendar  
7 year 2022, January 1, 2022 to December 31, 2022. Those results are displayed on Exhibit  
8 EB-1. Each page of this exhibit shows data for: (1) the HTY, the 12 months ended  
9 December 31, 2022 or FY 2022; (2) the FTY, the 12 months ended December 31, 2023  
10 or FY 2023; (3) the FPFTY, the 12 months ended December 31, 2024 or FY 2024; (4) the  
11 Forecast Period, the 12 months ended December 31, 2025 or FY 2025; and (5) the  
12 Forecast Period, the 12 months ended December 31, 2026 or FY 2026.

13 **Q. HAS THE AUTHORITY RELIED UPON OTHER PROVISIONS OF ACT 11 IN**  
14 **DEVELOPING THIS CASE?**

15 A. Yes, as addressed in two petitions which are being filed simultaneously with the filing of  
16 its rate case package. First, PWSA is filing a Petition for consolidation of the three  
17 dockets (water, wastewater, stormwater) and for authorization to use combined water,  
18 wastewater and stormwater revenue requirements as authorized by 66 Pa. C.S. §  
19 1311(c).<sup>5</sup> Granting of the Petition will continue the prior accounting and ratemaking  
20 practice of PWSA. Second, PWSA is simultaneously filing a Petition for Waiver of  
21 Statutory Definition of FPFTY to enable it to use a FPFTY beginning on January 1, 2024.  
22 Due to the May 9, 2023 filing date of this rate package, the application of the full  
23 suspension period (60 days plus 7 months) will end on February 8, 2024. The purpose of

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<sup>5</sup> Alternatively, PWSA requests a waiver pursuant to 66 Pa. C.S. § 3203(b) which permits the Commission to suspend or waive the applicability of any provision of the Public Utility Code to PWSA.

1 PWSA’s Petition is to enable it to utilize a FPFTY beginning on January 1, 2024 (rather  
2 than February 1, 2024 as would be required by the statute) which is consistent with  
3 PWSA’s budgeting processes.

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

6 A. The HTY is the cash-basis results for FY 2022.

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

9 A. The FTY (FY 2023) and FPFTY (FY 2024) results were derived through a  
10 comprehensive Authority-wide budgeting process. PWSA uses a zero-based budgeting  
11 method to develop annual budgets. The previous year’s budgets are referenced when  
12 developing the FPFTY budget, but each cost is individually considered when developing  
13 the budget. This is contrary to a traditional budgeting approach in which an escalation  
14 factor is applied for an anticipated increase in a specific type of cost.

15 On Exhibit EB-3, I have provided additional information concerning actual and  
16 budget financial information. This Exhibit shows the Operating Budgets for FPFTY (FY  
17 2024), FY 2025, FY 2026 as well as the anticipated Operating Expenses incurred in the  
18 FTY (FY 2023). The types of expenses incurred or projected for each department are also  
19 shown.

20 Exhibit EB-3 provides information regarding changes in budgeted levels from the  
21 HTY (FY 2022) to the FTY (FY 2023) and from the FTY (FY 2023) to the FPFTY (FY  
22 2024), FY 2025, and FY 2026.

1 **B. Impact of Inflation**

2 **Q. WHAT IMPACT HAS INFLATION HAD ON THIS RATE REQUEST?**

3 A. Inflation is one of the biggest drivers for this rate request. As I will describe, general  
 4 price increases over the past two years have made it difficult to fund all operations at  
 5 current rates. This increase is further compounded by the fact that PWSA continues to  
 6 drastically increase operations to address deferred maintenance. PWSA is now at a point  
 7 where additional revenues must be implemented or the financial stability of the  
 8 organization will be at risk.

9 **Q. HOW MUCH HAS INFLATION INCREASED SINCE PWSA’S LAST RATE**  
 10 **CASE FILING IN APRIL 2021?**

11 A. The chart below shows the consumer price index for all urban consumers from fiscal year  
 12 2013 through March 2023. The data clearly demonstrates that inflation is dramatically  
 13 increasing with the combined 2021 and 2022 total increase of 12.70%. This trend does  
 14 not appear to be slowing down in 2023 with the estimated annual percentage of 6.89%.  
 15 That would result in an estimated increase of 19.59% over a three-year period.

16

Annual Inflation: 2013 - 2023 <sup>6</sup>	
Year	Percentage Increase
2013	1.46%
2014	1.62%
2015	0.12%
2016	1.26%
2017	2.13%
2018	2.44%
2019	1.81%

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<sup>6</sup> United States Bureau of Labor Statistics ([BLS Data Viewer](#))

2020	1.23%
2021	4.70%
2022	8.00%
2023 <sup>7</sup>	6.89%

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**Q. HAS INFLATION OUTPACED THE REVENUE INCREASE IN PWSA’S LAST RATE INCREASE?**

A. Yes. The PWSA filed a proposed settlement with the PUC regarding its 2022 and 2023 water, wastewater, and stormwater rate proposal, which was approved by the PUC in November 2021 and went into effect on January 12, 2022. The settlement raised rates by approximately 10.98%, with the estimated combined total 2022 and 2023 inflation rate of 14.89% far exceeding that amount. That has, in effect, forced PWSA to maintain operations with "decreased" rates due to a loss of purchasing power. To make matters worse, PWSA experienced significant non-discretionary cost increases that exceeded the amount of inflation, such as water treatment chemicals and utility costs.

PWSA has been making tough financial decisions over the past two years in order to stay solvent. One example is that PWSA had to limit the amount of public bonds issued in 2022 to approximately \$45 million, with \$100 million originally planned to be issued. This ultimately resulted in lower debt service costs design to alleviate budget pressures in 2023. It is clear that the organization has struggled to maintain its financial position amid the current environment and must implement additional revenues to continue operations reasonably.

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<sup>7</sup> Estimated annual percentage based on average increase between January 1, 2023 through March 31, 2023.



1 **Q. DO YOU HAVE ANYTHING ELSE TO MENTION AS IT RELATES TO THE**  
2 **ISSUE OF INFLATION?**

3 A. Yes. I want to be clear that inflation is impacting every revenue requirement in this rate  
4 case. My testimony will describe specific cost increases that justify the proposed  
5 increase. However, to some degree, inflation is the primary or secondary factor for all  
6 increases.

7 **C. PWSA Budgeting Process**

8 **Q. PLEASE DESCRIBE HOW PWSA’S OPERATING BUDGETS ARE CREATED.**

9 A. Each of the fifteen departments within PWSA prepares budget requests for the upcoming  
10 fiscal year. Those requests are reviewed by the Finance Department for accuracy and  
11 adherence to the realistic expectations and/or projections. The Finance Department  
12 prepares a “roll-up” of initial funding and expense recommendations for the Chief  
13 Executive Officer and Chief Operating Officer / Chief Financial Officer. The Chief  
14 Executive Officer and Chief Operating Officer / Chief Financial Officer then may make  
15 recommendations on the initial budget requests. Any recommendations are discussed  
16 with the applicable department and, if accepted, results in a revised set of budget  
17 requests. Once satisfied, the Chief Executive Officer and Chief Operating Officer / Chief  
18 Financial Officer (with the assistance of the Finance Department) prepares an operating  
19 budget for review by the Board. The Board may accept or modify the operating budget.  
20 The final operating budget is approved by the Board. Typically, approval is received in  
21 November or December for the fiscal year commencing on January 1.

22 **Q. PLEASE DESCRIBE HOW PWSA’S CAPITAL IMPROVEMENT PLAN IS**  
23 **CREATED.**

24 A. PWSA updates its 5-year capital improvement plan annually by soliciting budget requests  
25 from subject matters experts within the main functional areas (water, wastewater, and

1 stormwater). The Finance Department prepares a “roll-up” of all budget requests for the  
2 purposes of being reviewed by the Capital Improvement Plan Committee. The Capital  
3 Improvement Plan Committee is made of up of representatives from the Water Treatment  
4 Plan, Operations, Engineering & Construction, Management Information Systems, and  
5 Finance. The purpose of the Capital Improvement Plan Committee is to ensure capital  
6 funds are invested efficiently given the needs of the PWSA, with funding  
7 recommendations ultimately being sent to the Chief Executive Officer and Chief  
8 Operating Officer / Chief Financial Officer for review. The Chief Executive Officer and  
9 Chief Operating Officer / Chief Financial Officer then may make recommendations on  
10 the initial budget requests. Any recommendations are discussed with the Capital  
11 Improvement Plan Committee and, if accepted, results in a revised set of budget requests.  
12 Once satisfied, the Chief Executive Officer and Chief Operating Officer / Chief Financial  
13 Officer (with the assistance of the Finance Department) prepares a capital improvement  
14 plan for review by the Board. The Board may accept or modify the capital improvement  
15 plan. The final budget is approved by the Board. Typically, approval is received in  
16 around the last quarter of the year for the fiscal year commencing on January 1.

17 **Q. WHAT IS THE REVIEW AND APPROVAL PROCESS ASSOCIATED WITH**  
18 **THIS BUDGET AND TWO-YEAR FORECAST?**

19 A. In addition to an internal review and approval process by the PWSA executive team,  
20 PWSA is required to obtain final approval by PWSA’s Board of Directors. The Board is  
21 the governing body of the Authority and is responsible for providing strategic direction  
22 and oversight to PWSA management team, as well as adopting the Authority’s annual  
23 operating and capital budgets, approving contracts, and approving proposed rate increases

(that are subject to final review and approval by the Commission). Once final, PWSA makes its annual operating budget and CIP available to the public on its website.

**Q. DOES PWSA ALSO PREPARE A TWO-YEAR FORECAST OF FINANCIAL OPERATIONS (HERE REFERRED TO AS THE FORECAST PERIOD)?**

A. Yes. PWSA rolls forward its budgeted operating results using the Budget year which is the FPFTY in this case, as the base year to create a two-year forecast, taking account of any known rate or other changes that might affect the results in a particular year. For this filing, PWSA accelerated its budgeting process for FY 2024 to establish a fully developed FPFTY as the test year in this proceeding and as a base year of its two-year forecast. Beyond FPFTY, FY 2025, and FY 2026, the remainder of the Forecast Period, PWSA uses the aforementioned traditional budgeting method of applying escalation factors to certain groups or types of cost in anticipation of increased cost of service. The Forecast Period results are shown on Exhibit EB-2.

**D. PWSA’s Operating Needs**

**Q. WHAT ARE THE OPERATING REVENUE REQUIREMENTS IN THE FPFTY 2024, FY 2025, AND FY 2026?**

A. PWSA is proposing operating revenue requirements of \$18.4 million in the FPFTY, \$9.7 million in FY 2025, and \$14.0 in FY 2026, making up about 29% of the total revenue requirement increase in this rate case. The table below summarizes this request by the expense categories within the operating budget.

<b>Expense Category</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>
Direct Operating	\$48,605,780	59,314,576	65,692,572	73,197,072
Salaries	35,521,459	41,932,394	44,845,082	47,105,066
General & Administrative	18,390,087	17,531,950	16,142,127	17,867,654
Employee Benefits	10,917,059	12,360,967	13,973,205	15,938,579
Inventory	2,303,165	2,441,355	2,587,837	2,743,107
COVID-Related Expenses	-	263,215	-	-

Net ALCOSAN	1,766,508	2,066,814	2,400,861	2,771,926
<b>Total</b>	<b>\$117,504,058</b>	<b>135,911,272</b>	<b>145,641,684</b>	<b>159,623,404</b>
<b>Difference</b>	<b>-</b>	<b>18,407,213</b>	<b>9,730,412</b>	<b>13,981,720</b>

1

2 The expense categories of Direct Operating, Salaries, and Employee Benefits are main  
 3 drivers of the increase given PWSA’s continued efforts to right size its operations to fit  
 4 the size of the system.

5 **Q. CAN YOU EXPLAIN WHAT EXPENSES ARE INCLUDED IN THE DIRECT**  
 6 **OPERATING EXPENSE CATEGORY?**

7 A. Yes, as the name implies, the direct operating expense category includes expenses that  
 8 are required to keep the authority running on a day-to-day basis such as material  
 9 purchases, surface restoration, water and sewer repairs, vehicles purchases, catch basin  
 10 cleaning, maintenance contracts and water treatment chemical purchases.

11 The direct operating expense category represents the largest increase of all of the  
 12 operating budget categories. This is a result of PWSA’s continued need to address and  
 13 maintain its large water, sewer, and stormwater systems. Not providing PWSA with the  
 14 requested amount of funds for this expense category will put even more pressure on the  
 15 already massive capital improvement plan as improvements will only be made when  
 16 failures occur.

17 **Q. WHAT ARE THE MAIN DRIVERS IN THE DIRECT OPERATING EXPENSE**  
 18 **CATEGORY?**

19 A. The main drivers of this category are the rapid increase in water treatment chemical costs,  
 20 costs to implement PWSA forthcoming wet weather consent decree, surface restoration  
 21 costs, and urgent water and sewer repair costs. These expenses make up over 40% of the  
 22 cost increase in this expense category between the FPFTY and FY 2026.

1 **Q. CAN YOU ELABORATE ON THE WATER TREATMENT CHEMICAL COST**  
 2 **INCREASE?**

3 A. Yes. As displayed by the chart below, water treatment chemical costs have risen by 50%  
 4 between FY 2021 and FY 2022.

	FY 2021	FY 2022	\$ Increase	% Increase
Chemical Costs	\$3,495,040	\$5,248,184	\$1,753,143	50%

5 This is the result of inflation and supply chain issues. Prices are continuing to rise with  
 6 recent bids showing some chemicals prices again doubling. As a result of this activity,  
 7 PWSA’s chemical claim of \$6.8 million in the FPFTY, \$8.2 million in FY 2025, and \$9.8  
 8 million in FY 2026 is justified. Having the funds available for this expense is non-  
 9 negotiable. It is arguably the most important expense in order to ensure safe drinking  
 10 water.

11 **Q. CAN YOU DISCUSS PWSA’S WET WEATHER CONSENT DECREE?**

12 A. As discussed in the testimony of Mr. Igwe, negotiations are currently ongoing between  
 13 PWSA and the United States Environmental Protection Agency for the purpose of  
 14 entering into a Wet Weather Consent Decree. The goal of the decree will be to  
 15 significantly reduce sanitary sewer and combined sewer overflows.

16 While the timeline can change, PWSA anticipates that the consent decree will be  
 17 finalized in FY 2024. It is for this reason that PWSA included \$7.5 million - \$2.5 million  
 18 in the FPFTY, an additional \$2.5 million in FY 2025, and an additional \$2.5 million in  
 19 FY 2026 – in this rate case to comply with the consent decree.

20 It is estimated that Wet Weather Consent Decree will result in hundreds of  
 21 millions of dollars in required improvements, with a significant portion being paid for out  
 22 of the operating budget. The reality of PWSA not receiving the necessary revenues in this

1 rate case will result in non-compliance. That only negatively impacts ratepayers while  
 2 hurting the reputation that PWSA has worked so hard to rebuild.

3 **Q. CAN YOU PROVIDE THE REVENUE REQUIREMENTS FOR THE URGENT**  
 4 **WATER, URGENT SEWER, AND SURFACE RESTORATION MENTIONED**  
 5 **ABOVE FOR THE FPFTY, FY 2025, AND FY 2026?**

6 A. The chart below shows the requested revenue requirements for urgent water, urgent  
 7 sewer, and surface restoration costs in the FPFTY, FY 2025, and FY 2026.

	FY 2024	FY 2025	FY 2026
Urgent Sewer	\$9,053,157	9,596,347	10,172,128
Surface Restoration	7,836,351	8,306,532	8,804,924
Urgent Water	4,836,911	5,127,126	5,434,753

8  
 9 PWSA must receive revenues sufficient to cover these three expenses. The recent  
 10 strides made on PWSA’s capital improvement plan has helped to jump start the  
 11 replacement of assets that are well beyond their useful life. However, this effort will need  
 12 to continue for at least the next decade in order to address the backlog of assets that need  
 13 to be replaced. This means the risk for water line breaks and sewer failures remains high.  
 14 PWSA cannot predict when breaks and failures will occur, but when they do, heavy  
 15 reliance is placed on the urgent water and sewer contracts for repairs.

16 The surface restoration contract is used to repave streets that result from breaks or  
 17 other work performed by PWSA. Due to funding restrictions, there is currently a large  
 18 backlog of sites within PWSA’s service area that have a temporary patch and are waiting  
 19 to be paved. This has resulted in a poor level of service and complaints from ratepayers.  
 20 The requested funding in this rate case will provide PWSA with the funding necessary to  
 21 address this backlog and future restoration work.

1 **Q. WHY IS PWSA REQUESTING A LARGE INCREASE IN THE SALARY AND**  
 2 **EMPLOYEE BENEFITS EXPENSE CATEGORY?**

3 A. The salary and employee benefits increase supports PWSA’s plan to continue to expand  
 4 its workforce. PWSA currently employees over 400 employees with the plan to add 33  
 5 new positions in FPFTY and an additional 19 new positions in FY 2025. This staffing  
 6 increase is necessary to support PWSA’s over \$1.8 billion capital improvement plan,  
 7 forthcoming Wet Weather Consent Decree compliance activities, and expansion of  
 8 operations.

9 **Q. WHAT IS THE ALLEGHENY COUNTY SANITARY SEWER AUTHORITY**  
 10 **(ALCOSAN) AND WHAT RELATIONSHIP DOES IT HAVE WITH PWSA?**

11 A. The Allegheny County Sanitary Sewer Authority (ALCOSAN) is the region’s wastewater  
 12 treatment provider that is a separate legal entity to PWSA, and not regulated by the PUC.  
 13 All of the wastewater collected and conveyed by PWSA’s wastewater conveyance system  
 14 is treated at the wastewater treatment facilities of ALCOSAN. PWSA bills customers on  
 15 behalf of ALCOSAN for wastewater treatment service via a pass-through charge on  
 16 PWSA bills. ALCOSAN’s rates are established by ALCOSAN, not PWSA.

17 PWSA makes ALCOSAN whole for all charges billed on their behalf, regardless  
 18 of what is collected. It is for this reason that PWSA typically carries bad debt expenses  
 19 for collections related to this pass-through engagement within PWSA budget. PWSA is  
 20 budgeting for an ALCOSAN bad debt expenses of \$2.1 million in FPFTY, \$2.4 million  
 21 in FY 2025, and \$2.8 million in FY 2026.

22 **Q. IS THE COST OF THIS RATE CASE AND THE ANNUAL PUC ASSESSMENT**  
 23 **FEE INCLUDED IN THE FPFTY?**

24 A. Yes, PWSA has budgeted approximately \$1.5 million for this rate case and \$1.4 million  
 25 for the annual PUC assessment fee in FPFTY. With respect to rate case expense, PWSA

1 is proposing to include these expenditures as projected in its revenue requirement rather  
2 than amortizing or “normalizing” these expenditures over some period of time. As a cash  
3 flow regulated municipal entity, PWSA’s rates reflect what it actually incurs in a year  
4 and collecting those costs in rates over two or three years is not reasonable. Also, PWSA  
5 has been involved in rate-related activity on an annual basis since coming under the  
6 jurisdiction of the PUC.

7 **Q. ARE THERE ANY OTHER OPERATING EXPENSES THAT YOU WOULD**  
8 **LIKE TO DISCUSS?**

9 A. Yes, I would like to discuss PWSA’s claim for COVID-19 expenses. Extraordinary  
10 COVID-19 expenses were not claimed in PWSA’s last rate case. Instead, and consistent  
11 with the settlement of the last rate case,<sup>8</sup> the claim was deferred and is now being  
12 including in this rate case. In addition, PWSA is also proposing to pass credit card  
13 payment convenience fees on to residential customers.

14 **Q. HOW MUCH IS THE COVID-19 CLAIM IN THE FPFTY?**

15 A. PWSA is claiming \$263,215 of COVID-19 expenses in the FPFTY. This represents  
16 expenses incurred between the period between March 2020 – March 2021. The majority  
17 of this claim was used to pay for personal protection equipment (sanitizing wipes, rubber  
18 gloves, masks, etc.). No uncollectible amount is being recovered through this claim.

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<sup>8</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021 adopting Recommended Decision dated October 6, 2021 at p. 13 Section 9, D,c.



1 **Q. PLEASE DETAIL PWSA’S EFFORTS TO OBTAIN COVID-19 RELATED**  
 2 **FUNDING, ANY AMOUNTS OBTAINED AS PART OF ITS EFFORTS, THEIR**  
 3 **INTENDED USE AND, IF DENIED, THE REASONS FOR SUCH DENIAL.<sup>9</sup>**

4 A. The only COVID-19 related funding that PWSA has received was a \$17.5 million grant  
 5 to replace lead service lines. This funding was granted to PWSA from the City of  
 6 Pittsburgh as part of the American Rescue Plan funding. PWSA has not received any type  
 7 of external funding to pay for the COVID-19 expenses claimed in this rate case.

8 **Q. DID PWSA PREVIOUSLY AGREE TO ELIMINATE THE ADDITIONAL FEES**  
 9 **FOR RESIDENTIAL CUSTOMERS TO MAKE INTERACTIVE VOICE**  
 10 **RESPONSE AND ON-LINE PAYMENTS?**

11 A. Yes. PWSA agreed to do this as part of its 2019 rate case settlement which was  
 12 negotiated during the fall of 2020 during the COVID-19 pandemic.<sup>10</sup> Since then, PWSA  
 13 passes through the costs of credit card convenience fees for residential customers as part  
 14 of its rates, while these same costs are paid directly by commercial customers who incur  
 15 them.

16 **Q. IS PWSA PROPOSING TO REINSTITUTE THE REQUIREMENT THAT**  
 17 **CUSTOMERS INCURRING THESE THIRD PARTY FEES PAY FOR THEM**  
 18 **RATHER THAN PASSING ON THE COSTS TO ALL RATEPAYERS?**

19 A. Yes. PWSA has decided to return to its historical policy of requiring customers incurring  
 20 third party fees to pay for them for several reasons. Requiring customers of all rate  
 21 classes to pay the fees they incur is justified since it treats all customer classes the same.  
 22 Also, as explained by Ms. Mechling we consider the return to our prior policy as a rate  
 23 mitigation effort because it ensures the customers electing to incur the third party costs  
 24 pay for them rather than spreading that cost to all ratepayers and, therefore, increasing the

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<sup>9</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021 adopting Recommended Decision dated October 6, 2021 at p. 14 Section 9, D.2.b.

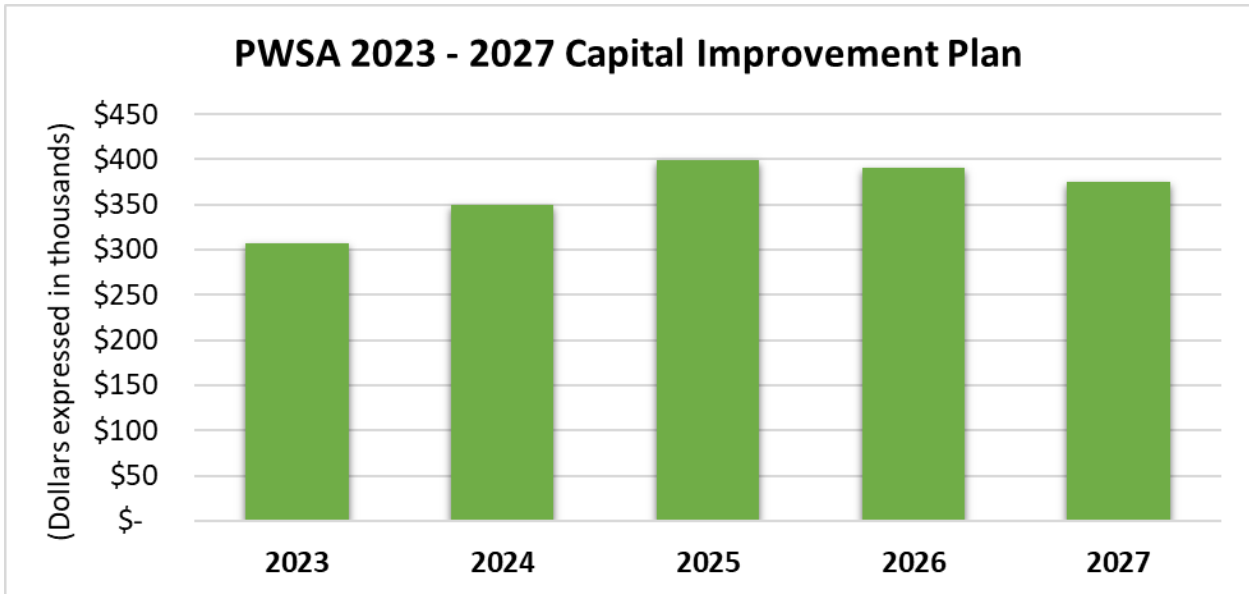
<sup>10</sup> Deanne add CITE – 2019 RC Settlement at 14, Section III.G.2.

1 rates to be paid by everyone and avoiding the subsidization of the convenience fees by  
 2 other ratepayers. Returning to our historical practice of charging the ratepayer for the  
 3 costs associated with paying their specific bill ensures that costs are recovered in a more  
 4 fair manner.

5 **E. PWSA’s Capital Needs**

6 **Q. PLEASE EXPLAIN PWSA’S CAPITAL IMPROVEMENT PLAN (“CIP”).**

7 A. The PWSA Board of Directors approved the 2023-2027 CIP on October 28, 2022. Please  
 8 see Exhibit EB-4 for a copy of the CIP. The CIP, which includes over \$1.8 billion in  
 9 capital improvements, is the result of multiple decades of deferred maintenance and lack  
 10 of capital investment.



11 The CIP includes detailed information about the PWSA’s construction projects related to  
 12 the Water Treatment Plant, Water Pumping and Storage, Water Distribution, Wastewater,  
 13 Stormwater, and Miscellaneous Projects. As discussed in Mr. King’s testimony, the  
 14 projects within the CIP must be completed in order to maintain adequate levels of  
 15 service. Delays in completing these projects will result in poor water quality, a complete  
 16

1 failure to deliver water, or an inability to meet regulatory requirements of the consent  
 2 order and agreement.

3 The CIP also includes annual replacement projects designed to retire assets as  
 4 they approach the end of their useful life. These projects include meter, water line, sewer  
 5 line, valve, hydrant, vehicle and catch basin replacements. Funding these annual  
 6 replacements is critical to the future state of the system as it enables the proactive  
 7 replacement of assets. This benefits PWSA’s ratepayers in the long-term by “smoothing”  
 8 future revenue requirements while assuring reliable levels of service.

9 In addition, as discussed in Mr. King’s testimony, the CIP includes funding for  
 10 projects that are related to the Consent Order and Agreement (“COA”) issued by the  
 11 Pennsylvania Department of Environmental Protection (“PA DEP”). The CIP also  
 12 includes funding for the forthcoming Wet Weather Consent Decree.

13 **Q. WHAT IS PWSA’S FPFTY 2024, FY 2025, AND FY 2026 CAPITAL BUDGET?**

14 A. Below is a summary of the FPFTY 2024, FY 2025 and FY 2026 capital budget.

Capital Requirements	FY 2024	FY 2025	FY 2026	Total
Water Treatment Plant	\$ 26,885,665	24,038,988	54,790,691	105,715,344
Water Pumping and Storage	115,127,475	121,491,637	113,245,473	349,864,585
Water Distribution	125,439,446	155,468,790	143,283,004	424,191,240
Wastewater System	31,442,487	27,579,779	45,751,309	104,773,575
Stormwater	34,827,423	36,884,821	33,038,424	104,750,668
Miscellaneous	15,500,000	33,000,000	500,000	49,000,000
<b>Total Capital Requirements</b>	<b>\$ 349,222,497</b>	<b>398,464,014</b>	<b>390,608,900</b>	<b>1,138,295,411</b>

15 Included in the amounts above, the costs associated with the previously  
 16 mentioned COA, anticipated Wet Weather Consent Decree, and unrelated water main  
 17 replacement program (which includes lead service line identification and replacement)  
 18 represents approximately a) \$209.7 million (or 60%) of the capital requirements in  
 19 FPFTY 2024, b) \$227.1 million (or 57%) of the capital requirements in FY 2025 Forecast  
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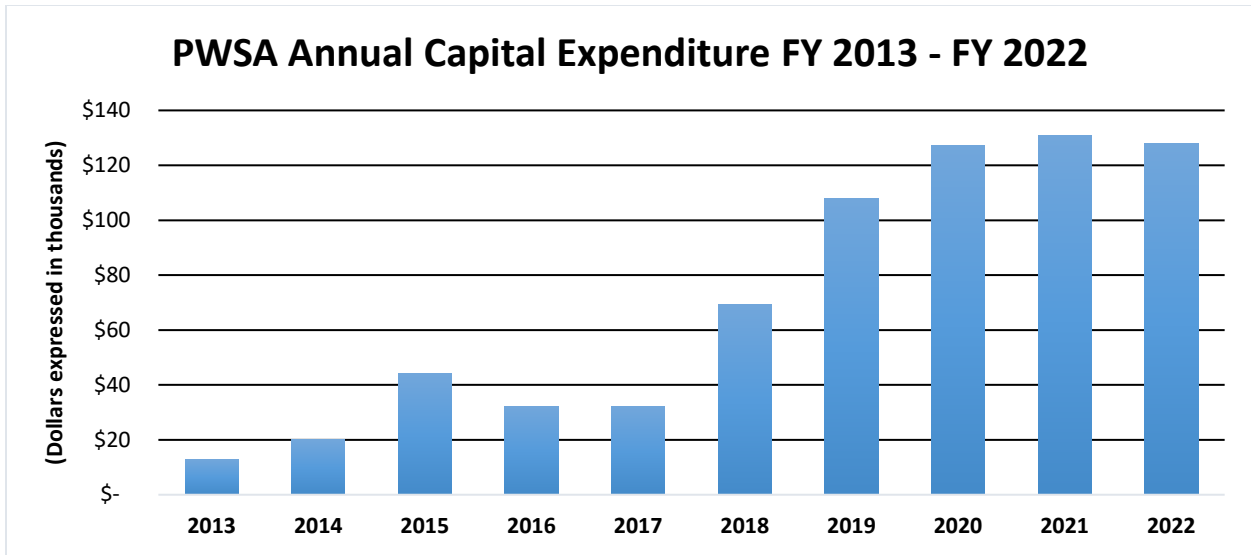
1 Period, and b) \$177.6 million (or 45%) of the capital requirements in the FY 2026  
2 Forecast Period. This funding must be available to comply with the COA, Wet Weather  
3 Consent Decree, and to continue replacing lead service lines. Failure to do so increases  
4 the risk of public health issues as well as fines or other disciplinary actions.

5 The majority of the remaining capital requirements in FPFTY 2024, FY 2025, and  
6 FY 2026 includes funding for annual replacement costs associated with meters, sewer  
7 lines, valves, hydrants, catch basins, and stormwater improvements. These projects must  
8 also be funded in order to replace aged infrastructure and implement annual asset  
9 replacement cycles.

10 **Q. IS PWSA CAPABLE OF COMPLETING THE CAPITAL BUDGET LEVEL OF**  
11 **INVESTMENT IN FPFTY 2024, FY 2025, AND FY 2026?**

12 A. Yes, PWSA can meet the capital budget in FPFTY 2024, FY 2025, and FY 2026. The  
13 ramp up in PWSA's capital improvement plan started in FY 2018 and was the result of  
14 regulatory mandates and system failures. This required the entire organization to mature  
15 at a rapid pace by hiring qualified employees, implementing new processes and standard  
16 operating procedures, and obtaining the necessary funds to pay for the plan. The  
17 historical capital expenditure chart below shows PWSA recent success in this effort.

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PWSA looks to build off this success by planning to double its current level of annual capital expenditures. Not only is it required to stay compliant with regulatory requirements, but it is also necessary to ensure that PWSA can provide a safe and adequate level of service to its ratepayers.

**Q. WHAT IS THE CAPITAL REVENUE REQUIREMENTS IN THE FPFTY 2024, FY 2025, AND FY 2026?**

A. PWSA is proposing capital revenue requirements of \$24.0 million in the FPFTY, \$27.9 million in FY 2025, and \$28.6 in FY 2026, making up about 55% of the total revenue requirement increase within this rate case.

**Q. CAN YOU EXPLAIN WHAT SPECIFIC COSTS ARE INCLUDED THE REQUESTED CAPITAL REVENUE REQUIREMENT?**

A. Yes. As a municipal authority, PWSA has a different capital structure than investor-owned utilities, whereby the only available sources to fund capital improvements for the Authority are debt, grants, and internally generated funds (pay-as-you-go or “PAYGO”). These sources are detailed below to show the incremental costs associated with each within the overall revenue requirements of this rate case. Note that a line for grants is not listed below because there is no revenue requirement associated with it. Any grants

1 received are substituted for planned future debt issuances and therefore reduce the  
 2 revenue requirement for capital costs. To be conservative, PWSA typically does not  
 3 include grants in its financial plans unless the award is final.

Incremental Capital Costs (\$M) FY 2024-2026				
Description	2024 Budget	2025 Budget	2026 Budget	Total
Debt Service	\$17.4	\$23.2	\$15.4	\$56.0
Internally Generated Funds	\$-	\$2.0	\$10.0	\$12.0
Internally Generated Funds (DSIC)	\$6.6	\$2.7	\$3.2	\$12.5
<b>Total</b>	<b>\$24.0</b>	<b>\$27.9</b>	<b>\$28.6</b>	<b>\$80.5</b>

4

5 **Q. CAN YOU FURTHER ELABORATE ON THE \$56.0 MILLION DEBT SERVICE**  
 6 **REVENUE REQUIREMENT INCLUDED IN THIS RATE REQUEST?**

7 A. Yes, the chart below shows the detail of what is included within the total \$56.0 million  
 8 debt service revenue requirement.

Incremental Debt Service Costs Detail (\$M) FY 2024-2026				
Description	2024 Budget	2025 Budget	2026 Budget	Total
WIFIA Loans	\$0.7	\$1.0	\$1.7	\$3.4
Public Debt	\$8.8	\$10.3	\$13.3	\$32.4
PENNVEST Loans	\$6.4	\$11.9	\$0.4	\$18.7
Capital Line of Credit	\$1.5	-	-	\$1.5
<b>Total</b>	<b>\$17.4</b>	<b>\$23.2</b>	<b>\$15.4</b>	<b>\$56.0</b>

9

10 The WIFIA loan debt service is made up of three separate loans that will fund  
 11 approximately 49% of PWSA’s Water Reliability Plan initiative, and which will be used  
 12 to replace the clearwell at the Water Treatment Plant. The anticipated WIFIA loan  
 amounts and estimated closing dates are listed below.

Estimated WIFIA Loan Schedule		
Description	Loan Amount (\$M)	Estimated Closing Date
WIFIA Loan #1	\$52.5	May, 2023
WIFIA Loan #2	\$104.7	June, 2024
WIFIA Loan #3	\$28.5	June, 2025
<b>Total</b>	<b>\$185.7</b>	

1 It is important to note that the WIFIA loans are drawn down as expenses are  
 2 incurred. This results in the debt service gradually increasing to the maximum amount of  
 3 \$13.3 million in total in fiscal year 2031.

4 The public debt service revenue requirement of \$32.4 million is made up of the  
 5 new debt issuances below.

Estimated Public Debt Issuance (\$M) FY 2024 - 2026		
Description	Loan Amount (\$M)	Estimated Issuance Date
Series 2024	\$150.0	Spring, 2024
Series 2025	\$150.0	Spring, 2025
Series 2026	\$200.0	Spring, 2026
<b>Total</b>	<b>\$500.0</b>	

6 These debt issuances will be utilized to fund the capital projects within the capital  
 7 improvement plan that are not funded by WIFIA, PENNVEST, and PAYGO (requested  
 8 to be funded with base rates and the DSIC in this rate case, as explained below)

9 The PENNVEST debt service revenue requirement of \$18.7 million is the result  
 10 of receiving regular PENNVEST awards since 2018. PWSA expects PENNVEST to have  
 11 sufficient capacity to continue to award funds because of the U.S. Bipartisan  
 12 Infrastructure Bill (BIL) that was passed in 2021. The BIL provides a once in a  
 13 generation infusion of funding to rebuild America’s roads, bridges, rails, water,  
 14 wastewater, and stormwater infrastructure. This includes the largest single investment in  
 15 our nation’s water in U.S. history. Similar to the WIFIA loans, PENNVEST loans are  
 16 drawn down as expenses are incurred, which results in the gradual increase of debt  
 17 service over the coming decade.

18 The capital line of credit is used to interim fund capital expenditures. New public  
 19 debt is issued to reduce the balance when the line of credit nears capacity. Interest

1 payments on the capital line of credit are variable, with the current interest rate  
 2 environment increasing the interest costs associated with this facility, driving the need for  
 3 the additional \$1.5 million revenue requirement. In addition to these various borrowing  
 4 vehicles, PWSA’s construction funding is supplemented by internally generated funds, or  
 5 “PAYGO”.

6 **Q. PLEASE EXPLAIN INTERNALLY GENERATED FUNDS (PAYGO)**

7 A. PAYGO is a funding mechanism which finances capital assets with current year  
 8 revenues. PAYGO funding is often utilized in the place of long term debt to fund capital  
 9 assets that have a short useful life (less than 10 years). Capital assets financed through  
 10 long term debt should have a minimum useful life no shorter than the average maturity of  
 11 the debt being issued. Failure to do so would result in an “overleveraged” debt position,  
 12 which would limit the ability and increase the cost to borrow and fund capital projects.

13 PAYGO funding should also be considered when funding capital assets with a  
 14 longer useful life as it reduces financial risks (such as default), lowers financing costs,  
 15 makes the Authority less susceptible to market vagaries, as well as provides financial  
 16 flexibility within the capital program. In addition, PAYGO funding is cheaper compared  
 17 to the debt service and required debt service coverage costs associated with long term  
 18 debt when the cost of long-term borrowing is computed.

19 **Q. WHAT SOURCES OF INTERNALLY GENERATED FUNDS ARE INCLUDED**  
 20 **IN THIS RATE CASE?**

21 A. PWSA has two sources of internally generated funds within this rate case. The first is a  
 22 request to receive \$12.0 million in base rates over three years for the purpose of funding  
 23 capital improvements with current rate dollars. The second is a request to increase  
 24 PWSA’s water and wastewater DSIC percentage from 5% to 7.5% for the purpose of



1 continuing to utilize DSIC funds as a source of internally generated funds to fund projects  
 2 within PWSA’s long-term infrastructure improvement plan (LTIP). This expansion of  
 3 the DSIC will result in approximately \$12.5 million in additional revenue over three  
 4 years.

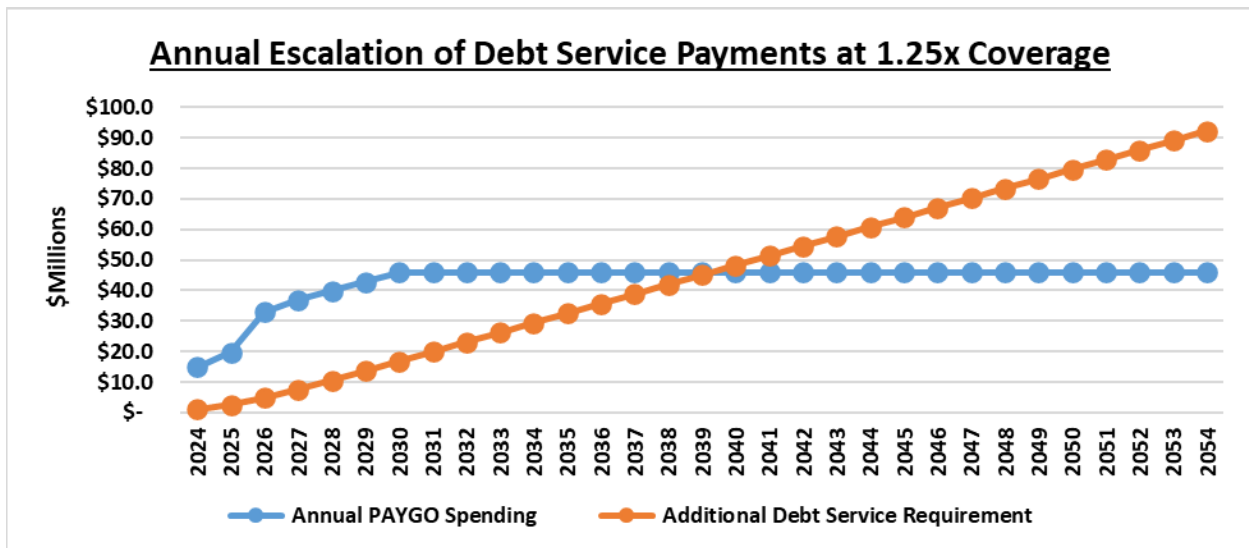
5 PWSA’s justification for this increase of internally generated funds is the  
 6 following. First, PWSA seeks to accelerate the rate at which projects within the LTIP are  
 7 completed. Second, the rate of inflation over the past two years has resulted in the loss of  
 8 purchasing power at the current DSIC rate of 5%. Increasing the rate to 7.5% will provide  
 9 the necessary infusion of cash to make up for this loss. Third, PWSA also seeks to  
 10 increase its level of internally generated funds in an effort to reduce its financial leverage  
 11 or debt ratio. PWSA’s financial leverage (liabilities divided by assets) continues to  
 12 remain high with the percentage being 100% at the end of 2022. However, the chart  
 13 below clearly shows that the implementation of the DSIC starting in 2021 has helped to  
 14 reduce this ratio by 12%. In fact, if the DSIC increase is granted, PWSA estimates that  
 15 the debt ratio will fall below 90% by the end of FY 2026.

Debt Ratio Percentage FY 2018 - 2022			
Fiscal Year	Assets	Liabilities	Debt Ratio
2018	864,343	967,243	112%
2019	947,934	1,058,762	112%
2020	1,035,990	1,160,406	112%
2021*	1,148,020	1,228,601	107%
2022	1,280,090	1,274,314	100%
2023**	1,361,457	1,312,283	96%
2024**	1,442,823	1,350,253	94%
2025**	1,524,190	1,388,222	91%

2026**	1,605,557	1,426,191	89%
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\* Implementation of the DSIC \*\*Estimate

Finally, using a “PAYGO” method of financing, rather than long term debt is also less expensive to ratepayers over time. This is because, when PWSA finances construction through long term debt it must recover in its rates both the debt service associated with the long term debt issuance together with the debt service coverage. The combination of the debt service and debt service coverage and the fact that PWSA must regularly issue new debt to fund construction projects results in the PAYGO funding method being cheaper for customers after the first several bond issuance (as noted above, PWSA is planning to use borrowed funds, either PENNVEST/WIFIA loans or publicly issued Revenue Bonds each year for the foreseeable future). This is demonstrated in the following chart:



\*includes PAGO proposed to be produced by base rates

1 **Q. DOES THE AUTHORITY HAVE A PWSA BOARD APPROVED FINANCIAL**  
 2 **POLICY WHICH ESTABLISHES A PAYGO FUNDING GOAL?**

3 A. Yes. The Financial Management Policy included in Exhibit EB-5 requires financial  
 4 performance to be evaluated on an annual basis with the goal of funding at least 10% of  
 5 capital expenditures not supported by grants or intergovernmental aid from PAYGO  
 6 funding as measured on a five-year basis. At present rates, the PAYGO funding  
 7 percentage as measured on a five-year basis is 2.3%, which falls short of the Board’s  
 8 10% target.

9 **F. PWSA’s Debt Structure**

10 **Q. WHAT IS THE STRUCTURE OF THE AUTHORITY’S CURRENT DEBT**  
 11 **PROFILE?**

12 A. As of February 1, 2023, PWSA currently has outstanding \$1.5 billion of bonds  
 13 outstanding, comprised of approximately \$744.0 million (49%) issued under the Senior  
 14 Lien, \$104.3 million (7%) issued as Subordinate Bonds, and \$678.1 million (44%) issued  
 15 as Secondary Subordinate Lien. Of the bonds outstanding, \$218.8 million (15%) were  
 16 issued as variable rate bonds, hedged with a 70% of 1-month LIBOR receiver and fixed  
 17 payer interest rate swap (with the exception of \$2.1 million of the Senior Lien which is  
 18 unhedged). All of the outstanding variable rate debt was remarketed as publicly issued  
 19 Floating Rate Notes with a Securities Industry and Financial Markets Association  
 20 (“SIFMA”) Index Rate Period prior to a mandatory tender date of December 1, 2023. In  
 21 addition, PWSA entered into a basis swap where PWSA receives SIFMA and pays 70%  
 22 of 1-month LIBOR to manage variable rate interest payments. The Debt and Swap  
 23 Portfolio Summary is attached in Exhibit EB-6.

24 In addition to the financial and other covenants required in the governing  
 25 Amended and Restated Senior Indenture (“Senior Indenture”), the Authority has a bank

1 agreement and two swap agreements, all with separate events of default and termination  
2 events. With the exception of the Series B of 2013 and the September 1, 2021 through  
3 2023 maturities of the Series A of 2019 Bonds, all of the outstanding bonds are secured  
4 with a Surety Policy with Assured Guaranty Municipal Corp. (“AGM”) to meet the debt  
5 service reserve requirement of the Senior Indenture, which is the lesser of (i.) 10% of par,  
6 (ii.) maximum annual debt service or (iii.) 125% of average annual debt service. The  
7 Authority has also purchased bond insurance on the majority of its outstanding issues  
8 with 2021 through 2023 maturities of the Series A of 2019 Bonds and 2025 through  
9 2032, 2039 through 2042 maturities, and 2052 maturity of the Series A of 2022 Bonds  
10 being the only exclusions. The Series 1998 Series B Bonds are also partially insured by  
11 National Public Finance Guaranty Corporation (“NPFGC”) which has placed additional  
12 restrictions on interim borrowings against the Senior Lien. Lastly, PWSA has also  
13 purchased swap insurance on its outstanding interest rate swap agreements, also insured  
14 by AGM, with regard to certain termination events.

15 **Q. WHAT ARE THE RISKS AND/OR BURDENS ASSOCIATED WITH THE**  
16 **AUTHORITY’S CURRENT DEBT PROFILE?**

17 A. Many of PWSA’s bond transactions and PWSA’s swap transactions were entered into  
18 before the late 2000’s fiscal crisis and the related bank and bond insurer credit  
19 downgrades and, at that time, were viewed as cost effective. Since that time, the  
20 Authority has had to spend significant resources in replacing bank agreements,  
21 restructuring and/or terminating swap agreements and reaching certain side agreements  
22 with the bond insurers. The risks inherent to the debt and swap portfolio are still  
23 significant even after these changes especially since PWSA has lower credit ratings

1 compared to most large municipal utility systems and PWSA will need to continue  
2 mitigating these risks in the future.

3 Since being under PUC oversight, PWSA has made progress in “de-risking” its  
4 debt and related swap portfolio. While in 2019 it was able to refund \$103.7 million of  
5 variable rate debt and to terminate the related hedged swap agreements replacing the  
6 floating rate debt and swaps with low-cost, fixed rate bonds, PWSA has concluded that  
7 current financial conditions and other factors make additional “de-risking” inadvisable at  
8 the present time. In addition, PWSA’s outstanding debt also has several associated rating  
9 triggers that could increase costs and/or cause a termination event. For example, all of the  
10 swap agreements have rating triggers related to the bond insurer, as well as the Authority,  
11 that, if violated, could result in a forced termination event. As a result of the Authority’s  
12 debt being secured by Surety Policies, any refunding or restructuring requires bond  
13 insurer approval, or the Authority would need to fund these debt service reserve funds  
14 with cash. Furthermore, the capital draw-down line of credit agreement includes  
15 automatic increased spreads (higher interest costs) if PWSA is downgraded to certain  
16 rating levels.

17 **Q. CAN YOU DESCRIBE THE DEBT ISSUANCE PHILOSOPHY FOR FUTURE**  
18 **ISSUANCES?**

19 A. Yes. Current PWSA management plans to be prudent with future debt issuances, with the  
20 goal of minimizing risks and keeping debt costs as low as possible for ratepayers. This is  
21 being achieved through the continued pursuit of low-cost financing from PENNVEST  
22 and WIFIA. The Infrastructure Improvement Charge requested in this rate case will  
23 further support this effort.

1 **Q. CAN YOU DISCUSS THE SUCCESS THAT PWSA HAS HAD OBTAINING**  
2 **PENNVEST FUNDING?**

3 A. Yes, PWSA has obtained \$610.8 million in low-interest loans and \$35.7 million in grants  
4 from PENNVEST since 2018.

5 **Q. IS PWSA IN PROCESS OF APPLYING FOR ADDITIONAL PENNVEST**  
6 **FUNDING?**

7 A. Yes, PWSA has submitted an application for the 2023 Neighborhood Lead Service Line  
8 (B) project in the total amount of \$13,354,750 prior to the May 3, 2023 deadline. The  
9 estimated award date is July/August 2023.

10 **Q. ARE THE DEBT SERVICE REVENUE REQUIREMENTS ASSOCIATED WITH**  
11 **THIS AWARD INCLUDED IN THIS RATE CASE?**

12 A. Yes, to be conservative, PWSA included a revenue requirement of \$773,826 in FPFTY  
13 2024 and then \$827,810 every year thereafter. However, PWSA expects the 2023  
14 Neighborhood Lead Service Line (B) project to be funded with grants given the  
15 additional lead service line funding provided by the BIL.

16 **Q. ARE THERE ANY PENDING AWARDS THAT ARE INCLUDED IN THE**  
17 **FPFTY 2024, FY 2025, AND FY 2026 PENNVEST DEBT SERVICE REVENUE**  
18 **REQUIREMENT?**

19 A. No. Aside from the 2023 Neighborhood Lead Service Line (B) project, the entire  
20 PENNVEST revenue requirement request is to fund loans that have already been  
21 awarded. As previously mentioned, PENNVEST loan are drawn down as expenses are  
22 incurred. That is the reason why the PENNVEST revenue requirement increases in  
23 FPFTY 2024, FY 2025, and FY 2026.

24 **Q. IF ADDITIONAL PENNVEST LOANS ARE RECEIVED, WILL THE REVENUE**  
25 **REQUIREMENTS IN THIS RATE CASE NEED TO BE LOWERED?**

26 A. No. PENNVEST loans typically have a term of 20 years as compared to the 30-year term  
27 of public bonds. This shorter loan term results in the debt being repaid over a shorter

1 period of time, decreasing the total cost to ratepayers, but the short term effect is to  
 2 increase the debt service compared to the debt service associated with our 30-year bond,  
 3 thus increasing the revenue requirements.

4 **G. PWSA Financial Metrics**

5 **Q. PLEASE EXPLAIN THE KEY FINANCIAL METRICS FOR PWSA ON WHICH**  
 6 **THIS RATE REQUEST SHOULD BE EVALUATED.**

7 A. As a “cash flow” regulated municipal entity, PWSA’s operations are entirely funded from  
 8 rates, either indirectly as a result of short-term or long-term borrowing (which then must  
 9 be paid back by ratepayers) or directly through charges to customers. Accordingly, the  
 10 PWSA’s most important financial metrics are:

- 11 1) Debt service coverage ratios;
- 12 2) Additional bonds test;
- 13 3) Reserves and liquidity; and
- 14 4) Bond ratings

15  
 16 **Q. EXPLAIN THE REQUIREMENTS OF PWSA’S RATE COVENANTS?**

17 A. Beginning on January 1, 2020 and each year thereafter, the Authority must calculate  
 18 whether the Rate Covenant has been complied with for the prior fiscal year. The Senior  
 19 Indenture states, “The Authority shall fix, charge and collect such rates, fees and other  
 20 charges for the use of and the services furnished by the System and shall, from time to  
 21 time and as often as shall appear necessary, revise such rates, fees and other charges so as  
 22 to satisfy all of the three following independent requirements:

- 23 1. Net revenues shall be sufficient in each fiscal year to pay annual senior  
 24 debt service, annual total debt service, all deposits to satisfy the reserve  
 25 requirement and any additional indebtedness in that fiscal year.
- 26 2. Net revenues shall not be less than 125% of annual senior debt service  
 27 plus 110% of aggregate annual debt service in that fiscal year.

1           3.       Rate covenant net revenues, excluding transfers from the rate stabilization  
2 fund, shall equal not less than 100% of aggregate annual debt service.”  
3 Pursuant to the Senior Indenture, if PWSA “fails to comply with the Rate  
4 Covenant, the Authority shall promptly request a Qualified Independent  
5 Consultant to submit a written report and recommendations with respect to  
6 increases in the Authority’s rates, fees and other charges and improvements...to  
7 bring the Authority into compliance with the Rate covenant.” The explicit legal  
8 language identifies that PWSA would need to file a petition to the regulatory body  
9 (i.e., the PUC) for the increases. The Senior Indenture specifies that if PWSA  
10 cannot establish proper rates, fees and charges to comply with the Rate Covenant  
11 within 180 days of the filed petition to the PUC, then an event of default occurs.  
12 An event of default could lead to an acceleration of bond payments by request of  
13 bondholders where principal and interest on outstanding bonds become  
14 immediately due and payable. In addition, the event of default would cause  
15 negative impacts regarding PWSA’s current bond ratings and access to liquidity  
16 and capital markets to continue to finance the necessary improvements outlined in  
17 the CIP for the benefit of ratepayers. It is very rare that a large municipal water  
18 and sewer utility would violate its respective rate covenant. The consequences of  
19 PWSA not meeting the annual Rate Covenant could be devastating to the  
20 Authority. This is one reason why PWSA seeks to establish consistent, higher  
21 debt service coverage levels. The negative financial consequences, of lower  
22 coverage levels and/or the risk of not meeting the Rate Covenant is discussed in  
23 more detail within my testimony, as well as within Ms. Christine Fay’s testimony.



1 **Q. WHY IS IT IMPORTANT TO MAINTAIN OR IMPROVE DEBT SERVICE**  
 2 **COVERAGE?**

3 A. The fundamental ratemaking philosophy for most financially stable municipal utilities is  
 4 to provide safe and reliable service at rates that recover all current costs, plus a margin in  
 5 excess of current costs. This margin, also referred to as coverage, is a municipal utility’s  
 6 only real source of cash. Coverage also provides assurance to investors that the utility  
 7 will have the cash available to make timely debt service payments. The recent rating  
 8 agency reports by Moody’s Investor’s Services, as outlined in Ms. Fay testimony, have  
 9 emphasized the need for PWSA to maintain as well as improve its debt service coverage  
 10 over time. Adequate coverage is critically necessary to permit PWSA to have sufficient  
 11 cash available to meet all of its obligations when they come due, and to allow PWSA to  
 12 continue to have access to the capital markets on acceptable terms. It also permits PWSA  
 13 to finance a portion of the capital program through internally generated funds which  
 14 provide significant savings to ratepayers over time.

15 **Q. PLEASE DISCUSS, AT PRESENT RATES, PWSA’S DEBT SERVICE**  
 16 **COVERAGE RATIOS IN THE FPFTY AND IN THE FORECAST PERIOD.**

17 A. At current rates, the debt service coverage ratios decrease to 1.00x for senior debt and  
 18 0.73x for total debt in the FPFTY. For the Forecast Year 2025, coverages decline to  
 19 0.76x for senior debt and 0.51x for total debt with coverages declining even further to  
 20 0.50x for senior debt and 0.35x for total debt. The debt service coverage ratios shown  
 21 below are well below the legal minimum requirement and show that the PWSA would  
 22 not be able to fully pay its senior debt obligations and other financial obligations.

	<i>FY 2024</i>	<i>FY 2025</i>	<i>FY 2026</i>
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<i>Senior Debt Service Coverage Ratio</i>	<i>1.00x</i>	<i>0.76x</i>	<i>0.50x</i>
<i>Total Debt Service Coverage</i>	<i>0.73x</i>	<i>0.51x</i>	<i>0.35x</i>

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**Q. PLEASE EXPLAIN PWSA’S USE OF THE CASH GENERATED BY THE DEBT SERVICE COVERAGE RATIO REQUIREMENT IN EXCESS OF MINIMUM REQUIRED DEBT SERVICE COVERAGE.**

A. As noted, the Authority is a “cash flow” regulated municipal utility, which means that there are no profit margin goals within the organization. Any “profit” or excess of revenues over expenses is invested back into the system. This benefits the ratepayers of the Authority because it offsets future revenue requirements that would otherwise be recovered through rates.

Specifically, the Authority would use cash generated in excess of minimum required debt service coverage in the following ways: (1) increase funding into the Rate Stabilization Fund; (2) increase the amount of PAYGO funding within a specific year; (3) pay the costs associated of terminating swaps in favor of refunding current debt with long-term municipal fixed rate debt; and (4) increase reserves in order to handle unexpected capital and operating costs. But, it is important to note that the PWSA has *no* cash in excess of minimum requirements at present rates, either in the FPPTY or the Forecast Periods.

**Q. WHAT IS THE “ADDITIONAL BONDS TEST” AND WHAT IMPACT DOES THAT HAVE ON ISSUING BONDS?**

A. As stated in Section 3.02 of the Senior Indenture, PWSA must satisfy the additional bonds test prior to issuing additional bonds as outlined below:

1 A certificate of an independent consultant stating the Authority would have been  
 2 able to meet the Rate Covenant requirements for any twelve consecutive months  
 3 within the past twenty-four months taking into account:

4 (i) The Maximum Annual Debt Service on the proposed series of  
 5 additional bonds in the current or any future fiscal year;

6 (ii) the additional net revenue from the rates, fees and other charges  
 7 adjusted to reflect any rate increases that had not been in effect throughout  
 8 the consecutive twelve months but that have been approved by and can be  
 9 implemented by the Authority at the time of delivery of the proposed  
 10 series of additional bonds to go into effect within the following five years;

11 and

12 (iii) additional net revenues that the Authority may realize from the  
 13 addition of assets it proposes to finance through the issuance of the  
 14 proposed series of additional bonds or other funding sources within the  
 15 following five years or the Authority has met the rate covenant, taking into  
 16 account the maximum annual debt service on the proposed series of  
 17 additional bonds.

18 In summary, the Additional Bonds Test requires that PWSA meet its required  
 19 Rate Covenant debt service coverage ratios taking into account existing and authorized  
 20 rates and the maximum annual debt service of a proposed series of bonds prior to issuing  
 21 additional bonds. The Senior Indenture does not allow PWSA to factor in unauthorized  
 22 future rate increases when calculating the additional bonds test. Failure to satisfy the

1 additional bonds test would prohibit PWSA from issuing bonds and thus, would create  
2 obstacles to fund necessary improvements and new projects for ratepayers.

3 **Q. WHY IS IT IMPORTANT THAT PWSA HAVE SUFFICIENT REVENUES TO**  
4 **PASS THE ADDITIONAL BONDS TEST?**

5 A. Failure to meet this test will stop the issuance of debt, and concurrently, PWSA’s capital  
6 program.

7 **Q. DOES PWSA SATISFY THE ADDITIONAL BONDS TEST FOR THE FPPTY IF**  
8 **NO RATE INCREASE IS GRANTED?**

9 A. As shown in Exhibit EB-7, PWSA fails the additional bonds test at present rates in the  
10 FPPTY with the impact getting worse in the 2025 and 2026 forecast. To be clear, this  
11 means that PWSA cannot issue additional debt to fund its capital program starting in FY  
12 2024 unless the requested rate increase is approved. Ms. Fay’s testimony further  
13 describes the devastating impact that this would have on PWSA.

14 **Q. DOES PWSA SATISFY THE ADDITIONAL BONDS TEST FOR THE FPPTY AT**  
15 **THE REQUEST LEVEL OF THE RATE INCREASE?**

16 A. Yes, as shown in Exhibit EB-8, PWSA passes the additional bonds test for the FPPTY at  
17 requested rates.

18 **Q. WHAT IS THE DAYS CASH ON HAND CALCULATION?**

19 A. The Days Cash on Hand (DCOH) calculation is a liquidity measurement that estimates  
20 how much cash is on hand to pay for operations only using cash. The calculation is  
21 typically performed on an annual basis by dividing the year ending cash balance by  
22 operating expenditures, then multiplying by 365.

23 **Q. HOW IMPORTANT IS IT FOR PWSA TO CONTINUE THE PROGRESS OF**  
24 **INCREASING ITS DAYS CASH ON HAND?**

25 A. It is very important. The DCOH metric is heavily used by rating agencies to determine  
26 the ratings of municipal authorities. In fact, as explained by Ms. Fay, the Moody’s

1 Investors Service recent rating of PWSA cited the DCOH metric as being a factor in  
 2 potential future upgrades.

3 In addition, PWSA feels that it is a best practice to increase its DCOH metric to  
 4 ensure resiliency through unexpected events, such as the COVID-19 pandemic or a  
 5 financial downturn.

6 **Q. AT PRESENT RATES, WHAT LEVELS OF YEAR END CASH IS THE PWSA**  
 7 **PROJECTING IT WILL EXPERIENCE IN THE FPFTY?**

8 A. At present rates, PWSA’s Days of Cash on Hand (“DCOH”) in the FPFTY (FY 2024) is  
 9 projected to be 70.9 days with the DCOH metric dropping to negative 60.5 days in FY  
 10 2025 and negative 230.0 days in FY 2026.

	<i>FY 2024</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Days Cash on Hand (“DCOH”)</i>	<i>70.9 DCOH</i>	<i>(60.5) DCOH</i>	<i>(230.0) DCOH</i>

11  
 12  
 13 The substantial drop in DCOH, which is a result of required increases to operation  
 14 and capital spending without rate relief to keep up with these additional obligations,  
 15 demonstrates the imperative need for a substantial increase in rates to repair these cash  
 16 levels. As described in EB-5, it also falls short of PWSA’s goal of maintaining 100  
 17 DCOH with the target of 300 DCOH over the next 5 years.

18 **Q. DOES THE PWSA HAVE ACCESS TO SHORT TERM BORROWING THAT IT**  
 19 **COULD USE TO OFFSET NEGATIVE CASH BALANCES?**

20 A. No. PWSA does not have an Operating Cashflow Line of Credit. That being said,  
 21 borrowed funds are excluded from the calculation of DCOH at year end. It is for this

1 reason that the Authority must focus on continuing to improve the cash balance, which  
 2 will also improve the DCOH.

3 **Q. DOES PWSA HAVE ANY MONEY AVAILABLE THAT COULD PROVIDE AN**  
 4 **ADDITIONAL SOURCE OF FUNDS TO PAY FOR UNFORESEEN**  
 5 **CIRCUMSTANCES TO MEET THE REQUIRED DEBT SERVICE COVERAGE**  
 6 **RATIO?**

7 A. Yes, a small amount.. It has a Rate Stabilization Fund (“RSF”), which is currently funded  
 8 at \$9.9 million. The RSF is a standard feature of municipal ratemaking. It is designed to  
 9 provide flexibility to a municipal utility to meet minimum debt service coverage ratios as  
 10 well as to demonstrate to the financial community that it is financially stable. However,  
 11 the Indenture limits the amount that can be transferred from the Rate Stabilization Fund  
 12 in any one year to be used for meeting coverage requirements.

13 **Q. IS THE PWSA PROPOSING TO PROVIDE ADDITIONAL RESOURCES FOR**  
 14 **THE RSF AS PART OF THIS RATE REQUEST?**

15 A. Yes. We are proposing to allocate \$25 million in total to the RSF with revenue received  
 16 as part of this rate case.

17 **Q. PLEASE DESCRIBE THE PWSA’S CURRENT BOND RATINGS?**

18 A. The ratings from the two rating agencies that rate the PWSA Revenue Bonds are:<sup>11</sup>

19 S&P: to A+ (Stable Outlook)  
 20 Moody’s A3 (Stable Outlook)

21 **Q. WHY IS IT IMPORTANT FOR THE PWSA TO MAINTAIN ITS CURRENT**  
 22 **BOND RATINGS?**

23 A. Credit ratings are important because PWSA, like most utilities, is required to make  
 24 significant capital infrastructure improvements each year for new and replacement assets.  
 25 Credit ratings are a critical component in determining the cost of debt as the ratings

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<sup>11</sup> See Exhibit EB-9 and EB-10.

1 signal PWSA’s ability and willingness to meet financial obligations in full and on time. A  
 2 downgrade of the credit ratings for PWSA’s Bonds would result in an increase in  
 3 PWSA’s borrowing costs and necessitate higher rate increases over time.

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

6 A. The downgrading of the Authority’s bond ratings is something that should be avoided.  
 7 Ultimately, it increases costs to the ratepayer for many years because it increases the cost  
 8 of long term financing due to the perception of increased borrowing risk. In addition, the  
 9 downgrade of bond ratings can limit the number of investors willing to lend to the  
 10 Authority within the capital markets, which will result in: (1) the reduction of funds  
 11 needed to fund capital project; (2) a reduction in the level of service due to a lack of  
 12 capital investments; (3) decreased financial flexibility; and (4) decreased public trust.

13  
 14 **H. Financial Results at Present Rates for FPFTY and Forecast Period**

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

17 A. The operating results at present rates show that it is crucially important that PWSA obtain  
 18 rate relief in order to repair these financial indicators to meet the minimums required by  
 19 the bond covenant, as well as to have sufficient cash in order to prudently operate the  
 20 Authority at the budgeted levels. A failure to improve these results with additional  
 21 revenues would prevent PWSA from issuing additional bonds in FY 2024, for failure to  
 22 meet the Additional Bonds Test, and almost certainly result in a bond rating downgrade.  
 23 It could also result in a default, which would raise the costs of borrowing and limit  
 24 PWSA’s access to capital markets. Moreover, a failure to approve the level of rate relief  
 25 requested would threaten PWSA’s ability to pay its bills when due.

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

4 A. PWSA has determined that an increase of \$146.1 million over three years including \$46.8  
 5 million in the FPFTY would provide barely sufficient additional revenues to enable it to  
 6 maintain its financial metrics at adequate levels and would likely maintain its existing  
 7 bond rating. Without a rate increase, PWSA would be forced to stop all operations in the  
 8 hopes that enough money would be remaining to stay solvent. This most certainly would  
 9 result in a poor level of service for ratepayers.

10 **Q. HAVE YOU CALCULATED PWSA’S FINANCIAL RESULTS IN THE FPFTY**  
 11 **AS WELL AS IN THE FORECAST PERIOD IF ITS PROPOSED \$146.1**  
 12 **MILLION RATE INCREASE IS GRANTED?**

13 A. Yes, those results are shown on Exhibit EB-2. PWSA total rate request of \$146.1 million,  
 14 with \$46.8 million in the FPFTY, \$45.4 million in the FY 2025, and \$53.9 million in FY  
 15 2026, would result in the following debt service coverage ratios.

	<i>FY 2024</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Senior Debt Service Coverage Ratio</i>	<i>1.65x</i>	<i>1.87x</i>	<i>2.02x</i>
<i>Total Debt Service Coverage</i>	<i>1.21x</i>	<i>1.26x</i>	<i>1.40x</i>

16  
 17 As PWSA’s financial advisor, Ms. Fay, testifies that these coverage levels at proposed  
 18 rates are just minimally adequate and well below the levels that bond rating agencies  
 19 expect for a credit such as PWSA. Even though our financial metrics following the  
 20 requested rate increase are barely sufficient to meet the legally required coverage levels  
 21 we hope to maintain our existing credit ratings based on the plan to continue to improve  
 22 our financial performance in future years.

23 The proposed rate increase would also result in 145 DCOH, in the FPFTY (FY



2024), 142.6 DCOH in FY 2025, and 152.9 of DCOH in FY 2026. While the level of DCOH slightly increases over the three year period, as explained by Ms. Fay, the levels produced by the requested rate increase, again, are below the median levels of similarly rated municipal utilities as calculated by rating agencies.

**V. MULTI-YEAR RATE FILING AND NEW CHARGES**

**Q. IS PWSA PROPOSING A MULTI-YEAR RATE INCREASE WITHIN THIS RATE CASE?**

A. Yes, the PWSA is proposing a three-year rate increase which would increase revenues by \$46.8 in FPFTY (FY 2024), \$45.4 in FY 2025, and \$53.9 in FY 2026.

**Q. PLEASE DISCUSS THE LEGAL AND POLICY SUPPORT FOR THE AUTHORITY’S MULTI-YEAR RATE INCREASE REQUEST.**

A. Section 1330 of the Public Utility Code, added to the Code in 2018, authorizes the Commission to approve an application by a utility to establish alternative rate mechanisms in the context of a base rate case. Section 1330(b) specifically states that:

the commission may approve an application by a utility in a base rate proceeding to establish alternative rates and rate mechanisms, including, but not limited to, the following mechanisms:

- (i) decoupling mechanisms;
- (ii) performance-based rates;
- (iii) formula rates;
- (iv) multiyear rate plans; or
- (v) rates based on a combination of more than one of the mechanisms...<sup>12</sup>

Therefore, PWSA’s request for a multi-year rate plan is specifically authorized by Section 1330.

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<sup>12</sup> 66 Pa. C.S. § 1330(b).

1           After Section 1330 was added to the Public Utility Code, the Commission issued a  
 2 Policy Statement in which it set out issues that the Commission will consider when  
 3 judging whether an alternative ratemaking proposal is just, reasonable and in the public  
 4 interest. The answers to those questions, to the extent they are relevant to a multi-year  
 5 rate plan such as that which PWSA is proposing, support the approval of the multi-year  
 6 request.

7 **Q. PLEASE SET FORTH THOSE QUESTIONS AND ANSWERS.**

8 A. Certainly. The relevant factors, which can be found in the Commission's regulations,<sup>13</sup>  
 9 are as follows:

- 10 (1) How the ratemaking mechanism and rate design align revenues with cost  
 11 causation principles as to both fixed and variable costs.

12 *One of the principal benefits of a multi-year rate plan is that it permits a better*  
 13 *alignment of fixed and variable costs with revenues. Rates based upon a static test*  
 14 *year – even a fully projected future test year – will necessarily diverge from the*  
 15 *costs and revenues actually experienced by the utility in subsequent years when the*  
 16 *rate award is still in place. Determinations of revenues and expenses in the rate*  
 17 *case may be higher or lower than the levels subsequently experienced. A multi-*  
 18 *year filing permits a better alignment with the levels of expenses and revenues that*  
 19 *are reasonably expected to be experienced in the years following the fully*  
 20 *projected test year.*

- 21 (3) Whether the ratemaking mechanism and rate design reflect the level of demand  
 22 associated with the customer's anticipated consumption levels.

23 *A multi-year rate plan permits a better alignment with the customer's anticipated*  
 24 *consumption level.*

- 25 (4) How the ratemaking mechanism and rate design limit or eliminate interclass and  
 26 intraclass cost shifting.

27 *A multi-year rate plan does not have an effect on interclass or intraclass cost*  
 28 *shifting.*

- 29 (7) How the ratemaking mechanism and rate design impact low-income customers  
 30 and support consumer assistance programs.

31 *PWSA's Multi-year rate plan proposal will have no impact on its existing low-*  
 32 *income customer assistance programs.*

---

<sup>13</sup> 52 Pa. Code § 69.3302.

- 1 (8) How the ratemaking mechanism and rate design impact customer rate stability  
 2 principles.  
 3 *Multi-year rate plans provide rate certainty for customers which in turn permits*  
 4 *them to plan and facilitates investment in water efficiency measures.*
- 5 (10) How the ratemaking mechanism and rate design impact the frequency of rate case  
 6 filings and affect regulatory lag.  
 7 *A second major benefit of a multi-year rate plan is that it will dramatically reduce*  
 8 *the frequency of rate case filings and regulatory lag.*
- 9 (11) If or how the ratemaking mechanism and rate design interact with other revenue  
 10 sources, such as Section 1307 automatic adjustment surcharges, 66 Pa.C.S. § 1307  
 11 (relating to sliding scale of rates; adjustments), riders such as 66 Pa.C.S.  
 12 § 2804(9) (relating to standards for restructuring of electric industry) or system  
 13 improvement charges, 66 Pa.C.S. § 1353 (relating to distribution system  
 14 improvement charge).  
 15 *The multi-year rate plan will work in tandem with PWSA’s existing DSIC or any*  
 16 *of the new reconcilable charges PWSA is proposing in this case.*
- 17 (12) Whether the alternative ratemaking mechanism and rate design include  
 18 appropriate consumer protections.  
 19 *The revenue requirement in each year of the multi-year rate plan will be set after*  
 20 *an examination of PWSA’s projected revenues, expenses and cash needs for those*  
 21 *years. Accordingly, customers will be assured that the rate increases placed into*  
 22 *effect will be just and reasonable. If actual costs turn out to be less than*  
 23 *projected those revenues will be used to fund future operations and investment.*
- 24 (13) Whether the alternative ratemaking mechanism and rate design are  
 25 understandable to consumers.  
 26 *PWSA has provided notice to customers of the multi-year rate plan and will*  
 27 *provide notices prior to the proposed rate increases being placed into effect. This*  
 28 *will assure that customers will be adequately informed of the increase.*
- 29 (14) How the ratemaking mechanism and rate design will support improvements in  
 30 utility reliability.  
 31 *The multi-year rate plan will assure that PWSA will have sufficient revenues to*  
 32 *fund its operating and capital budgets in each year of the multi-year plan thereby*  
 33 *making it more likely that the Authority will be able to engage in necessary*  
 34 *repairs and maintenance and to continue to modernize water and wastewater*  
 35 *systems and to make those systems more reliable.*

36 **Q. PLEASE DESCRIBE THE ADMINISTRATIVE EFFICIENCIES OF A MULTI-**  
 37 **YEAR RATE INCREASE.**

38 **A.** One of the main reasons why the multi-year rate plan is reasonable is that it increases  
 39 administrative efficiency and reduces costs. For example, it helps entities to create more

1 accurate organizational plans since rate levels are predetermined. Specifically, one of the  
2 areas that suffers when a multi-year rate plan is not in place is that it makes budgeting  
3 (both the Operating and Capital budget) more speculative and difficult. PWSA is required  
4 to have a PWSA Board approved Operating and Capital budgets in place by January 1  
5 each year. Not knowing what the revenue levels will be for the following year forces  
6 PWSA to “guess” what levels to assume when creating the budgets. This causes to  
7 PWSA to be in a state of uncertainty until rates are finalized. As a result, capital projects  
8 are not initiated, operating budget contracts are not utilized, and staffing decisions are  
9 held off until rates are finalized. Thus, the less certain PWSA is about revenue, the more  
10 negative impact on the normal functioning of PWSA which is not in the interest of  
11 PWSA’s ratepayers.

12 **Q. HOW IS PWSA PROPOSING THAT THE YEAR TWO AND YEAR THREE**  
13 **RATE CHANGES BE IMPLEMENTED?**

14 A. In his testimony, Mr. Smith provides additional support for our proposal and describes  
15 how the multi-year rate change process works in Rhode Island. This process is  
16 reasonable and would be acceptable for PWSA.

17 **Q. IS PWSA PROPOSING NEW RECONCILABLE CHARGES IN THIS RATE**  
18 **CASE?**

19 A. Yes, PWSA is proposing the implementation of an Infrastructure Improvement Charge  
20 and Customer Assistance Charge starting in FY 2025.

21 **Q. PLEASE EXPLAIN PWSA’S PROPOSAL FOR AN “INFRASTRUCTURE**  
22 **IMPROVEMENT CHARGE”.**

23 A. Certainly. The PUC presently has a policy statement which authorizes water and  
24 wastewater utilities to recover in an automatic adjustment clause PENNVEST principal

1 and interest obligations.<sup>14</sup> PWSA proposes to establish such a clause but to expand it to  
 2 also include a recently added Federal government loan program – the Water  
 3 Infrastructure Finance and Innovation Act (WIFIA). WIFIA is the Federal government  
 4 equivalent of PENNVEST.

5 **Q. PLEASE EXPLAIN WHY PWSA IS REQUESTING THE INFRASTRUCTURE**  
 6 **IMPROVEMENT CHARGE.**

7 A. The requested Infrastructure Improvement Charge will expedite PWSA’s ability to obtain  
 8 additional low-cost funding through PENNVEST and WIFIA by having a stable revenue  
 9 source to ensure the required debt covenants and additional bonds tests can be met, in  
 10 addition to having funds available to pay annual debt service. This would allow PWSA to  
 11 keep rates as low as possible by financing its aggressive capital improvement plan with  
 12 these low-cost funding programs.

13 Expediting PWSA’s ability to obtain PENNVEST and WIFIA funding is even  
 14 more crucial with the BIL. The majority of the BIL water, wastewater, and stormwater  
 15 funding will be awarded through the WIFIA program or the various state revolving fund  
 16 agencies via the Clean Water State Revolving Fund (CWSRF) and Drinking Water State  
 17 Revolving Fund (DWSRF).

18 **Q. CAN YOU EXPLAIN THE MECHANICS OF THE PROPOSED**  
 19 **INFRASTRUCTURE IMPROVEMENT CHARGE?**

20 A. Yes, the Infrastructure Improvement Charge is proposed to become effective in FY 2025  
 21 to coincide with the removal of the minimum charges from PWSA’s water and sewer  
 22 rates, which I will discuss shortly. The revenues obtained through the Infrastructure  
 23 Improvement Charge will be used to recover debt service associated with new

---

<sup>14</sup> 52 Pa. Code §69.363.

1 PENNVEST and WIFIA loans starting in the FY 2025. The charge would be calculated  
2 separately and added to the base charges to be combined as one charge on the customer  
3 bills. We are proposing to reconcile the charge on a semi-annual basis via the filing of  
4 supporting schedules and a proposed tariff supplement with the updated amounts to be  
5 included in the customer bills per the proposed effective date of the tariff supplements.

6 The charge will automatically adjust as PWSA obtains additional loan funding  
7 and debt service increases. The amount of the charge paying for loans that have reached  
8 their full amortization schedule will then be rolled into PWSA's base rates in subsequent  
9 rate case proceedings.

10 **Q. PLEASE EXPLAIN PWSA'S PROPOSAL FOR A "CUSTOMER ASSISTANCE**  
11 **CHARGE".**

12 A. PWSA values the benefits that its customer service assistance program provides to  
13 vulnerable ratepayers. However, the administration of customer assistance program has  
14 become increasingly expensive. The Customer Assistance Charge would recover 1) the  
15 discounts provided to customers pursuant to the Bill Discount Program, 2) the operating  
16 costs for the PGH2O Cares team, 3) the costs of PWSA's Hardship Funding, and 4) past  
17 due arrearages forgiven pursuant to PWSA's Arrearage Forgiveness Program.

18 **Q. CAN YOU EXPLAIN THE MECHANICS OF THE PROPOSED CUSTOMER**  
19 **ASSISTANCE CHARGE?**

20 A. Yes, the mechanics of the Customer Assistance Charge would be the same as the  
21 Infrastructure Improvement Charge whereby the proposed charge would become  
22 effective in FY 2025 to coincide with the removal of the minimum charges. As explained  
23 more fully by Ms. Mechling and described in our proposed tariff supplements, the  
24 charges would be calculated separately and added to the base charges to be combined as  
25 one charge on the customer bills. We are proposing to reconcile the charge on a semi-

1 annual basis via the filing of supporting schedules and a proposed tariff supplement with  
 2 the updated amounts to be included in the customer bills per the proposed effective date  
 3 of the tariff supplements.

4 **Q. CAN YOU EXPLAIN PWSA’S PROPOSAL TO ELIMINATE THE MINIMUM**  
 5 **WATER AND WASTEWATER CHARGE STARTING IN FY 2025?**

6 A. As previously stated, PWSA is proposing to eliminate the minimum water and  
 7 wastewater charges and shift the recovery of those costs to volumetric rates starting in FY  
 8 2025. PWSA is making this proposal in order to comply with a settlement item from  
 9 PWSA’s prior rate case as explained more fully by Ms. Mechling.

10 **Q. WHAT CONCERNS HAS PWSA IDENTIFIED REGARDING TRANSITIONING**  
 11 **AWAY FROM THE MINIMUM ALLOWANCE?**

12 A. In addition to our concerns about customer rate impacts, the removal of the minimum  
 13 allowance will remove revenue stability from PWSA’s rate structure. Regarding timing,  
 14 as explained by Ms. Mechling, PWSA needs approval to make the change and then a  
 15 period of time to test and implement the change within the ERP and billings systems.  
 16 Assuming this rate case is approved in early 2024, it would be impossible for PWSA to  
 17 implement the rate structure changes prior to the effective date of new rates.

18 **Q. HOW ARE PWSA’S OTHER PROPOSALS INTENDED TO SUPPORT ITS**  
 19 **PROPOSED REMOVAL OF THE MINIMUM ALLOWANCE?**

20 A. PWSA’s request for a multi-year rate increase for three years supports our need for time  
 21 to implement any approved rate structure change. In addition, as described by Ms.  
 22 Mechling and set forth in our proposed tariff supplements, PWSA is seeking authority to  
 23 implement two new reconcilable charges: (1) an Infrastructure Improvement Charge  
 24 (“IIC”); and, (2) a Customer Assistance Charge (“CAC”). The implementation of these  
 25 two new reconcilable charges would ensure PWSA’s ability to recover the actual costs in

1 a timely manner supporting PWSA’s multi-year rate request and saving ratepayers the  
 2 time and expense associated with rate case proceedings. Additional support for the CAC  
 3 is also set forth in a petition we are simultaneously filing seeking approval for its  
 4 implementation.

5 **VI. PRIOR SETTLEMENT COMMITMENTS**

6 **A. Arrearage Forgiveness Program**

7 **Q. WHAT DID PWSA AGREE TO FURTHER INVESTIGATE REGARDING ITS**  
 8 **ARREARAGE FORGIVENESS PROGRAM (“AFP”) AS PART OF THE LAST**  
 9 **RATE CASE SETTLEMENT?**

10 A. PWSA agreed to undertake a cost-benefit analysis regarding a restructuring of its current  
 11 program that would have included: (1) reducing the customer’s account balance by 1/36<sup>th</sup>  
 12 of the original pre-program balance account; (2) at the time of enrollment, separating (or  
 13 “freezing”) the customer’s total arrears from their current and future bills; (3) forgiving  
 14 the frozen arrearage at a rate of 1/36<sup>th</sup> per month for each month the customer timely and  
 15 fully pays the bill; (4) retroactively forgive arrearages for customers who miss a monthly  
 16 bill payment but make catch-up payments.<sup>15</sup>

17 **Q. DID PWSA PERFORM AND PRESENT THE COST-BENEFIT ANALYSIS TO**  
 18 **THE PARTIES?**

19 A. Yes. Attached as Exhibit EB-9 is the Cost Benefit Analysis we performed in February of  
 20 2022 and shared with the parties on February 18, 2022. As illustrated by this analysis,  
 21 PWSA would lose an estimated \$900,000 if the program were to be restructured per the  
 22 parameters of the settlement agreement. Based on that, we determined that it was not  
 23 feasible to pursue a restructuring of the program at that time.

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<sup>15</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021 adopting Recommended Decision dated October 6, 2021 at p. 27 Section 9, F.1.vi.



1 **Q. DOES PWSA'S PROPOSAL TO CREATE A RECONCILABLE CUSTOMER**  
2 **ASSISTANCE CHARGE CHANGE YOUR POSITION ON RESTRUCTURING**  
3 **THE CURRENT ARREARAGE FORGIVENESS PROGRAM?**

4 A. No. While I recognize that we are proposing to create a new reconcilable charge to  
5 recover the costs of the forgone revenue forgiven as part of this customer assistance  
6 program, we still do not support restructuring the program at this time due to the  
7 successful Low Income Household Water Assistance Program (LIHWAP).  
8 Pennsylvania's program awarded more than \$43 million last year, with the funds paid  
9 directly to water and wastewater providers. It is anticipated that a second round of  
10 funding will occur. The funding for the second round will come from the states that did  
11 not spend the first round of federal funding by the government's deadline. Therefore, in  
12 PWSA's view, there will be additional funding to assist low income customers with  
13 paying their bills such that increasing the costs of an arrearage management program,  
14 which will require all other ratepayers to cover those additional costs, is not prudent at  
15 this time.

16 **VII. CONCLUSION**

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

18 A. Yes. I do reserve the right to supplement this testimony as may be appropriate.

# Exhibit EB-1

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	
	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>	
<b>System Revenues</b>						
1	Water Sales	\$ 110,173,919	\$ 121,498,414	\$ 122,154,943	\$ 122,154,901	\$ 122,154,901
2	Wastewater Sales	56,769,103	48,046,585	47,912,050	47,912,050	47,912,050
3	Stormwater Sales	17,762,994	23,303,779	23,117,736	23,117,736	23,117,736
4	Sale for Resale & Contract Sales	3,565,227	3,726,610	3,757,360	3,789,321	3,823,493
5	DSIC Revenues	8,304,932	8,411,120	8,420,687	8,420,684	8,420,684
6	Other Revenues	5,330,309	3,496,157	3,566,080	3,637,402	3,710,150
7	Penalties and interest	-	-	-	-	-
8	<b>Total: System Revenues</b>	<b>\$ 201,906,485</b>	<b>\$ 208,482,665</b>	<b>\$ 208,928,856</b>	<b>\$ 209,032,095</b>	<b>\$ 209,139,015</b>
<b>System Revenue Requirements</b>						
<u>Operating Expenses</u>						
<i>Direct Operating Expenses</i>						
9	Executive Director	\$ 2,570,082	\$ 2,788,992	\$ 3,336,779	\$ 3,512,429	\$ 3,733,714
10	Customer Service	7,768,329	9,214,830	9,577,647	10,257,097	11,006,829
11	Management Information Systems	9,733,025	6,291,824	7,612,251	7,281,648	7,749,637
12	Finance	8,335,767	6,960,075	7,477,373	7,891,743	8,386,915
13	Procurement	-	-	-	-	-
14	Human Resources	1,501,220	1,750,667	2,435,869	2,989,580	3,167,034
15	Legal	3,080,031	4,638,131	4,215,777	4,450,963	4,727,104
16	Safety & Security	847,280	2,051,186	2,341,031	2,473,261	2,641,877
17	Public Affairs	1,229,537	1,469,848	1,902,689	2,232,489	2,372,232
18	Environmental Compliance	4,427,185	4,234,203	4,638,632	4,902,739	5,204,858
19	Warehouse	621,623	531,048	562,637	595,295	642,469
20	Ops Capital Assets	-	-	-	-	-
21	Water Quality (Lab)	2,423,278	2,400,034	2,676,383	2,473,136	2,642,150
22	Water Treatment Plant	20,944,573	24,047,029	27,206,247	30,467,749	34,393,839
23	Sewer Operations	2,568,876	3,322,879	11,357,094	13,805,463	16,993,620
24	Water Distribution	15,742,708	15,929,517	17,698,299	19,290,991	20,663,146
25	Engineering & Construction	28,219,979	26,947,789	27,122,905	26,991,433	28,683,757
26	<i>Subtotal: Direct Operating Expenses</i>	<b>\$ 110,013,492</b>	<b>\$ 112,578,051</b>	<b>\$ 130,161,613</b>	<b>\$ 139,616,016</b>	<b>\$ 153,009,183</b>
<i>Other Operating Expenses</i>						
27	Loss / (Gain) on ALCOSAN Billings	\$ (413,783)	\$ 1,766,508	\$ 2,066,814	\$ 2,400,861	\$ 2,771,926
28	City Services	1,523,249	3,159,499	3,419,629	3,624,807	3,842,295
29	Covid Expenses	-	-	263,215	-	-
30	<i>Subtotal: Other Operating Expenses</i>	<b>\$ 1,109,466</b>	<b>\$ 4,926,007</b>	<b>\$ 5,749,659</b>	<b>\$ 6,025,668</b>	<b>\$ 6,614,221</b>
31	<b>Total: Operating Expenses</b>	<b>\$ 111,122,958</b>	<b>\$ 117,504,058</b>	<b>\$ 135,911,272</b>	<b>\$ 145,641,684</b>	<b>\$ 159,623,404</b>
<u>Debt Service</u>						
32	Senior Debt Service	\$ 56,567,456	\$ 61,933,967	\$ 71,451,642	\$ 82,812,182	\$ 97,803,768
33	Subordinate Debt Service	12,542,789	16,089,068	22,480,984	34,364,890	34,766,688
34	Revolving Line of Credit Interest	-	1,500,000	3,000,000	3,000,000	3,000,000
35	<b>Total: Debt Service</b>	<b>\$ 69,110,245</b>	<b>\$ 79,523,035</b>	<b>\$ 96,932,626</b>	<b>\$ 120,177,071</b>	<b>\$ 135,570,456</b>
<u>Capital Expenditures &amp; Transfers</u>						
36	Internally Generated Funds / PAYGO	\$ -	\$ -	\$ -	\$ 2,000,000	\$ 12,000,000
37	Internally Generated Funds / PAYGO (DSIC)	8,304,932	8,411,120	15,038,462	17,699,369	20,942,857
38	Other Transfers to Reserves	5,122,000	(4,500,000)	1,000,000	7,000,000	17,000,000
39	Bad Debt Expense	3,931,524	4,099,730	5,971,536	5,355,444	5,555,403
40	DWSL	-	-	-	250,000	250,000
41	Hardship Grant Funding	-	-	-	216,320	216,320
42	Arrearage Funding	-	-	240,000	240,000	240,000
43	Stormwater Credit Program Cost	56,858	75,843	180,489	152,703	152,703
44	<i>Total: Capital Expenditures &amp; Transfers</i>	<b>\$ 17,415,314</b>	<b>\$ 8,086,693</b>	<b>\$ 22,430,486</b>	<b>\$ 32,913,836</b>	<b>\$ 56,357,283</b>
45	<b>Total: Systemwide Revenue Requirements</b>	<b>\$ 197,648,517</b>	<b>\$ 205,113,786</b>	<b>\$ 255,274,383</b>	<b>\$ 298,732,591</b>	<b>\$ 351,551,143</b>
46	<b>System Revenue Surplus / (Deficit)</b>	<b>\$ 4,257,967</b>	<b>\$ 3,368,879</b>	<b>\$ (46,345,526)</b>	<b>\$ (89,700,496)</b>	<b>\$ (142,412,128)</b>

**Pittsburgh Water and Sewer Authority**  
**Projected Cash Flow - Existing Rates**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>
<b>Operating Fund</b>				
Beginning Balance	\$ 86,028,516	\$ 87,147,395	\$ 41,301,868	\$ (45,423,620)
<u>Sources:</u>				
Operating Surplus/(Deficit)	\$ 3,368,879	\$ (46,345,526)	\$ (89,700,496)	\$ (142,412,128)
Budgeted Contributions	(4,500,000)	1,000,000	7,000,000	17,000,000
<u>Uses:</u>				
Hardship Grant Fund Contribution	-	-	-	-
Contributions to Rate Stabilization Fund	2,250,000	(500,000)	(1,750,000)	(3,400,000)
Contributions to Operating Reserve Fund	-	-	(2,274,992)	(1,395,217)
<i>Ending Balance</i>	\$ 87,147,395	\$ 41,301,868	\$ (45,423,620)	\$ (175,630,964)

**Days Cash on Hand (Days O&M)**

Unrestricted Cash (Excluding ALCOSAN)	<b>283.0</b>	<b>121.1</b>	<b>(103.4)</b>	<b>(389.5)</b>
Unrestricted Cash (Including ALCOSAN)	<b>160.5</b>	<b>70.9</b>	<b>(60.5)</b>	<b>(230.0)</b>

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

	<u>FY 2022</u> HTY	<u>FY 2023</u> FTY	<u>FY 2024</u> COS	<u>FY 2025</u> Forecast	<u>FY 2026</u> Forecast
<u>Revenues</u>					
1	\$ 201,906,485	\$ 208,482,665	\$ 208,928,856	\$ 209,032,095	\$ 209,139,015
2	77,026,440	86,558,914	92,618,038	99,101,301	106,038,392
3	-	-	-	-	-
4	<u>\$ 278,932,925</u>	<u>\$ 295,041,579</u>	<u>\$ 301,546,894</u>	<u>\$ 308,133,395</u>	<u>\$ 315,177,407</u>
<u>Current Expenses</u>					
5	\$ (111,536,741)	\$ (115,737,550)	\$ (133,581,242)	\$ (143,240,823)	\$ (156,851,478)
6	(78,598,409)	(88,325,422)	(94,684,852)	(101,502,162)	(108,810,317)
7	-	-	(263,215)	-	-
8	(3,931,524)	(4,099,730)	(5,971,536)	(5,355,444)	(5,555,403)
9	-	-	-	(216,320)	(216,320)
12	<u>\$ (194,066,673)</u>	<u>\$ (208,162,702)</u>	<u>\$ (234,500,845)</u>	<u>\$ (250,314,748)</u>	<u>\$ (271,433,519)</u>
13	1,523,249	3,159,499	3,419,629	3,624,807	3,842,295
14	<b>\$ 86,389,500</b>	<b>\$ 90,038,376</b>	<b>\$ 70,465,678</b>	<b>\$ 61,443,453</b>	<b>\$ 47,586,183</b>
<u>Debt Service</u>					
<u>Existing Debt</u>					
15	\$ 56,567,456	\$ 58,560,224	\$ 58,313,859	\$ 59,621,399	\$ 60,815,279
16	4,877,900	4,877,900	4,877,900	4,877,900	4,877,900
17	7,664,889	10,201,503	12,629,321	12,198,094	12,131,649
18	-	1,500,000	3,000,000	3,000,000	3,000,000
19	<u>\$ 69,110,245</u>	<u>\$ 75,139,627</u>	<u>\$ 78,821,080</u>	<u>\$ 79,697,394</u>	<u>\$ 80,824,829</u>
<u>Future Debt</u>					
20	\$ -	\$ 3,373,743	\$ 12,404,232	\$ 21,458,416	\$ 33,530,661
21	-	1,009,665	5,707,313	19,021,262	21,214,966
22	<u>\$ -</u>	<u>\$ 4,383,408</u>	<u>\$ 18,111,546</u>	<u>\$ 40,479,678</u>	<u>\$ 54,745,628</u>
23	<u>\$ 69,110,245</u>	<u>\$ 79,523,035</u>	<u>\$ 96,932,626</u>	<u>\$ 120,177,071</u>	<u>\$ 135,570,456</u>
24	<b>1.53</b>	<b>1.45</b>	<b>1.00</b>	<b>0.76</b>	<b>0.50</b>
25	1.25	1.25	1.25	1.25	1.25
26	<b>1.25</b>	<b>1.13</b>	<b>0.73</b>	<b>0.51</b>	<b>0.35</b>
27	1.10	1.10	1.10	1.10	1.10

# Exhibit EB-2

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

	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	
	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>	
<b>System Revenues</b>						
1	Water Sales	\$ 110,173,919	\$ 121,498,414	\$ 152,352,358	\$ 181,819,480	\$ 216,742,961
2	Wastewater Sales	56,769,103	48,046,585	50,124,557	56,509,195	65,291,712
3	Stormwater Sales	17,762,994	23,303,779	29,833,260	36,341,353	42,504,882
4	Sale for Resale & Contract Sales	3,565,227	3,726,610	4,404,330	4,694,942	5,419,106
5	DSIC Revenues	8,304,932	8,411,120	15,038,462	17,699,369	20,942,857
6	Other Revenues	5,330,309	3,496,157	3,566,080	3,637,402	3,710,150
7	Penalties and interest	-	-	-	-	-
8	<b>Total: System Revenues</b>	<b>\$ 201,906,485</b>	<b>\$ 208,482,665</b>	<b>\$ 255,319,046</b>	<b>\$ 300,701,741</b>	<b>\$ 354,611,668</b>
<b>System Revenue Requirements</b>						
<u>Operating Expenses</u>						
<i>Direct Operating Expenses</i>						
9	Executive Director	\$ 2,570,082	\$ 2,788,992	\$ 3,336,779	\$ 3,512,429	\$ 3,733,714
10	Customer Service	7,768,329	9,214,830	9,577,647	10,257,097	11,006,829
11	Management Information Systems	9,733,025	6,291,824	7,612,251	7,281,648	7,749,637
12	Finance	8,335,767	6,960,075	7,477,373	7,891,743	8,386,915
13	Procurement	-	-	-	-	-
14	Human Resources	1,501,220	1,750,667	2,435,869	2,989,580	3,167,034
15	Legal	3,080,031	4,638,131	4,215,777	4,450,963	4,727,104
16	Safety & Security	847,280	2,051,186	2,341,031	2,473,261	2,641,877
17	Public Affairs	1,229,537	1,469,848	1,902,689	2,232,489	2,372,232
18	Environmental Compliance	4,427,185	4,234,203	4,638,632	4,902,739	5,204,858
19	Warehouse	621,623	531,048	562,637	595,295	642,469
20	Ops Capital Assets	-	-	-	-	-
21	Water Quality (Lab)	2,423,278	2,400,034	2,676,383	2,473,136	2,642,150
22	Water Treatment Plant	20,944,573	24,047,029	27,206,247	30,467,749	34,393,839
23	Sewer Operations	2,568,876	3,322,879	11,357,094	13,805,463	16,993,620
24	Water Distribution	15,742,708	15,929,517	17,698,299	19,290,991	20,663,146
25	Engineering & Construction	28,219,979	26,947,789	27,122,905	26,991,433	28,683,757
26	<i>Subtotal: Direct Operating Expenses</i>	<b>\$ 110,013,492</b>	<b>\$ 112,578,051</b>	<b>\$ 130,161,613</b>	<b>\$ 139,616,016</b>	<b>\$ 153,009,183</b>
<i>Other Operating Expenses</i>						
27	Loss / (Gain) on ALCOSAN Billings	\$ (413,783)	\$ 1,766,508	\$ 2,066,814	\$ 2,400,861	\$ 2,771,926
28	City Services	1,523,249	3,159,499	3,419,629	3,624,807	3,842,295
29	Covid Expenses	-	-	263,215	-	-
30	<i>Subtotal: Other Operating Expenses</i>	<b>\$ 1,109,466</b>	<b>\$ 4,926,007</b>	<b>\$ 5,749,659</b>	<b>\$ 6,025,668</b>	<b>\$ 6,614,221</b>
31	<b>Total: Operating Expenses</b>	<b>\$ 111,122,958</b>	<b>\$ 117,504,058</b>	<b>\$ 135,911,272</b>	<b>\$ 145,641,684</b>	<b>\$ 159,623,404</b>
<u>Debt Service</u>						
32	Senior Debt Service	\$ 56,567,456	\$ 61,933,967	\$ 71,451,642	\$ 82,812,182	\$ 97,803,768
33	Subordinate Debt Service	12,542,789	16,089,068	22,480,984	34,364,890	34,766,688
34	Revolving Line of Credit Interest	-	1,500,000	3,000,000	3,000,000	3,000,000
35	<b>Total: Debt Service</b>	<b>\$ 69,110,245</b>	<b>\$ 79,523,035</b>	<b>\$ 96,932,626</b>	<b>\$ 120,177,071</b>	<b>\$ 135,570,456</b>
<u>Capital Expenditures &amp; Transfers</u>						
36	Internally Generated Funds / PAYGO	\$ -	\$ -	\$ -	\$ 2,000,000	\$ 12,000,000
37	Internally Generated Funds / PAYGO (DSIC)	8,304,932	8,411,120	15,038,462	17,699,369	20,942,857
38	Other Transfers to Reserves	5,122,000	(4,500,000)	1,000,000	7,000,000	17,000,000
39	Bad Debt Expense	3,931,524	4,099,730	5,971,536	7,190,864	8,467,880
40	DWSL	-	-	-	250,000	250,000
41	Hardship Grant Funding	-	-	-	216,320	216,320
42	Arrearage Funding	-	-	240,000	240,000	240,000
43	Stormwater Credit Program Cost	56,858	75,843	180,489	212,102	241,305
44	<i>Total: Capital Expenditures &amp; Transfers</i>	<b>\$ 17,415,314</b>	<b>\$ 8,086,693</b>	<b>\$ 22,430,486</b>	<b>\$ 34,808,655</b>	<b>\$ 59,358,362</b>
45	<b>Total: Systemwide Revenue Requirements</b>	<b>\$ 197,648,517</b>	<b>\$ 205,113,786</b>	<b>\$ 255,274,383</b>	<b>\$ 300,627,410</b>	<b>\$ 354,552,222</b>
46	<b>System Revenue Surplus / (Deficit)</b>	<b>\$ 4,257,967</b>	<b>\$ 3,368,879</b>	<b>\$ 44,663</b>	<b>\$ 74,331</b>	<b>\$ 59,446</b>

**Pittsburgh Water and Sewer Authority**  
**Projected Cash Flow - Proposed Rates**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast</i>	<i>Forecast</i>
\$	86,028,516	\$ 87,147,395	\$ 87,692,058	\$ 90,741,397
\$	3,368,879	\$ 44,663	\$ 74,331	\$ 59,446
	(4,500,000)	1,000,000	7,000,000	17,000,000
	-	-	-	-
	2,250,000	(500,000)	(1,750,000)	(3,400,000)
	-	-	(2,274,992)	(1,395,217)
\$	87,147,395	\$ 87,692,058	\$ 90,741,397	\$ 103,005,626

**Operating Fund**

Beginning Balance

Sources:

Operating Surplus/(Deficit)

Budgeted Contributions

Uses:

Hardship Grant Fund Contribution

Contributions to Rate Stabilization Fund

Contributions to Operating Reserve Fund

*Ending Balance*

**Days Cash on Hand (Days O&M)**

Unrestricted Cash (Excluding ALCOSAN)

Unrestricted Cash (Including ALCOSAN)

**283.0**  
**160.5**

**247.6**  
**145.0**

**243.6**  
**142.6**

**258.9**  
**152.9**



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

	<u>FY 2022</u> <i>HTY</i>	<u>FY 2023</u> <i>FTY</i>	<u>FY 2024</u> <i>COS</i>	<u>FY 2025</u> <i>Forecast</i>	<u>FY 2026</u> <i>Forecast</i>
<u>Revenues</u>					
1	\$ 201,906,485	\$ 208,482,665	\$ 255,319,046	\$ 300,701,741	\$ 354,611,668
2	77,026,440	86,558,914	92,618,038	99,101,301	106,038,392
3	-	-	-	-	-
4	\$ 278,932,925	\$ 295,041,579	\$ 347,937,084	\$ 399,803,041	\$ 460,650,059
<u>Current Expenses</u>					
5	\$ (111,536,741)	\$ (115,737,550)	\$ (133,581,242)	\$ (143,240,823)	\$ (156,851,478)
6	(78,598,409)	(88,325,422)	(94,684,852)	(101,502,162)	(108,810,317)
7	-	-	(263,215)	-	-
8	(3,931,524)	(4,099,730)	(5,971,537)	(7,190,864)	(8,467,880)
9	-	-	-	(216,320)	(216,320)
10	\$ (194,066,673)	\$ (208,162,702)	\$ (234,500,846)	\$ (252,150,168)	\$ (274,345,995)
11	1,523,249	3,159,499	3,419,629	3,624,807	3,842,295
12	<b>\$ 86,389,500</b>	<b>\$ 90,038,376</b>	<b>\$ 116,855,867</b>	<b>\$ 151,277,680</b>	<b>\$ 190,146,359</b>
<u>Debt Service</u>					
<u>Existing Debt</u>					
13	\$ 56,567,456	\$ 58,560,224	\$ 58,313,859	\$ 59,621,399	\$ 60,815,279
14	4,877,900	4,877,900	4,877,900	4,877,900	4,877,900
15	7,664,889	10,201,503	12,629,321	12,198,094	12,131,649
16	-	1,500,000	3,000,000	3,000,000	3,000,000
17	\$ 69,110,245	\$ 75,139,627	\$ 78,821,080	\$ 79,697,394	\$ 80,824,829
<u>Future Debt</u>					
18	\$ -	\$ 3,373,743	\$ 12,404,232	\$ 21,458,416	\$ 33,530,661
19	-	1,009,665	5,707,313	19,021,262	21,214,966
20	-	4,383,408	18,111,546	40,479,678	54,745,628
21	\$ 69,110,245	\$ 79,523,035	\$ 96,932,626	\$ 120,177,071	\$ 135,570,456
22	<b>1.53</b>	<b>1.45</b>	<b>1.65</b>	<b>1.87</b>	<b>2.02</b>
23	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>	<i>1.25</i>
24	<b>1.25</b>	<b>1.13</b>	<b>1.21</b>	<b>1.26</b>	<b>1.40</b>
25	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>	<i>1.10</i>

# Exhibit EB-3

**Exhibit EB-3****PWSA Actual and Budget Information 2022-2026**

	<i>HTY</i>	<i>FTY</i>	<i>FPFTY</i>	<i>Forecast Period</i>	<i>Forecast Period</i>
	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
	<b>Actual</b>	<b>Estimate</b>	<b>Budget</b>	<b>Budget</b>	<b>Budget</b>
<b>Receipts</b>					
Water	113,739,146	123,245,329	156,756,688	186,514,422	222,162,067
Sewage Conveyance	56,769,103	48,448,406	50,124,557	56,509,195	65,291,712
Stormwater	17,762,994	21,356,870	29,833,260	36,341,353	42,504,882
DSIC	8,304,932	9,132,320	15,038,462	17,699,369	20,942,857
ALCOSAN	79,012,192	86,558,914	92,618,038	99,101,301	106,038,392
Miscellaneous Revenue	5,330,309	3,496,157	3,566,080	3,637,402	3,710,150
<b>Total Receipts</b>	<b>280,918,676</b>	<b>292,237,996</b>	<b>347,937,085</b>	<b>399,803,042</b>	<b>460,650,060</b>
<b>Operating Expenses</b>					
Salaries	29,461,084	35,166,244	41,932,394	44,845,082	47,105,066
Benefits	8,238,852	10,807,888	12,360,967	13,973,205	15,938,579
Direct Operating	50,419,329	48,119,722	59,314,576	65,692,572	73,197,072
Inventory	2,404,560	2,280,133	2,441,355	2,587,837	2,743,107
General & Administrative	21,012,916	18,206,186	17,531,950	16,142,127	17,867,654
ALCOSAN	78,598,409	88,325,422	94,684,852	101,502,162	108,810,317
COVID-19 Related Expenses	-	-	263,215	-	-
<b>Total Operating Expenses</b>	<b>190,135,150</b>	<b>202,905,597</b>	<b>228,529,309</b>	<b>244,742,985</b>	<b>265,661,795</b>
<b>Net Operating Income</b>	<b>90,783,526</b>	<b>89,332,400</b>	<b>119,407,776</b>	<b>155,060,057</b>	<b>194,988,265</b>
<b>Debt Service</b>					
Debt Service - Principal	33,397,046	36,272,640	43,988,123	58,335,366	65,151,823
Debt Service - Interest	35,713,199	43,250,395	52,944,503	61,841,705	70,418,633
<b>Total Debt Service</b>	<b>69,110,245</b>	<b>79,523,035</b>	<b>96,932,626</b>	<b>120,177,071</b>	<b>135,570,456</b>
<b>Total Costs</b>	<b>259,245,395</b>	<b>282,428,632</b>	<b>325,461,935</b>	<b>364,920,056</b>	<b>401,232,251</b>
<b>Net Cash Flow</b>	<b>21,673,281</b>	<b>9,809,365</b>	<b>22,475,150</b>	<b>34,882,986</b>	<b>59,417,809</b>
Internally Generated Funds / PAYGO	-	-	-	2,000,000	12,000,000
Internally Generated Funds / PAYGO (DSIC)	8,304,932	9,132,320	15,038,462	17,699,369	20,942,857
Other Transfers to Reserves	5,122,000	(4,500,000)	1,000,000	7,000,000	17,000,000
Bad Debt Expense	3,931,524	4,099,730	5,971,536	7,190,864	8,467,880
DWSL	-	-	-	250,000	250,000
Hardship Grant Funding	-	-	-	216,320	216,320
Arrearage Funding	-	-	240,000	240,000	240,000
Stormwater Credit Program Cost	56,858	75,843	180,489	212,102	241,305
<b>Revenue Surplus / (Deficit)</b>	<b>4,257,967</b>	<b>1,001,472</b>	<b>44,663</b>	<b>74,331</b>	<b>59,447</b>

# Exhibit EB-4



# **The Pittsburgh Water and Sewer Authority**

**2023 – 2027 Capital Improvement Plan**

**Approved on October 28, 2022**



## **BOARD OF DIRECTORS**

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**Erika Strassburger**, Vice Chairperson

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**Kevin Pawlos**, Deputy Director, Finance

**Timothy DiSalvio**, Manager, Capital Budget

**Jason Felser**, Director, Information Technology

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**Jennifer Presutti**, Chief Operating Officer & Chief Financial Officer

**Frank P. Sidari III, PE, BCEE**, Chief Environmental Compliance & Ethics Officer

**Logan Carmichael**, Chief People & Culture Officer

**Lee Haller**, Chief Information & Performance Officer

**Monica Walaan, Esquire**, Chief Legal Officer

## **SENIOR LEADERSHIP**

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**Brittany Schacht**, Deputy Director, Customer Service

**Barry King, PE**, Director, Engineering and Construction

**Kate Mechler, PE**, Deputy Director, Engineering and Construction

**William McFaddin**, Director, Operations

**Joseph Tewell**, Deputy Director, Operations

**George Watson**, Deputy Director, Water Production



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## Introduction

The Pittsburgh Water and Sewer Authority (“**the Authority**” or “**the PWSA**”) is a body corporate and politic organized and existing under the Act pursuant to Resolution No. 36 of the Council of the City of Pittsburgh (the “**City**”), duly enacted on February 6, 1984, approved by the Mayor on February 8, 1984, and effective February 16, 1984. The Secretary of the Commonwealth of Pennsylvania approved the Authority’s Articles of Incorporation and issued a Certificate of Incorporation on February 17, 1984. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on December 11, 1989, to include, among authorized projects, low head dams and facilities for generating surplus electric power. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on May 9, 2008, to extend the term of existence of the Authority to May 21, 2045. Articles of Amendment were approved and a Certificate of Amendment was issued by the Pennsylvania Department of State on March 19, 2020, to extend the term of existence of the Authority to March 13, 2070 and to include stormwater systems.

Under its Articles of Incorporation, the Authority is specifically authorized to acquire, hold, construct, finance, improve, maintain, operate, own and lease, either as lessor or lessee, projects of the following kinds and character: sewers, sewer systems or parts thereof, waterworks, water supply works, and water distribution systems, low head dams, facilities for generating surplus power, and stormwater systems.

The System provides water to approximately 75,000 customers or 84% of the total population in the geographic boundaries of the City. The Authority provides wastewater collection and transmission service to almost the entire City, estimated at 301,000 residents. The System does not include wastewater treatment facilities; such facilities are the responsibility of Allegheny County Sanitary Authority (“**ALCOSAN**”), a separate and distinct legal entity.

The Authority operates and maintains a 117 million gallon per day (MGD) rapid sand type water treatment plant, a 21 MGD microfiltration plant, approximately 964 miles of water mains, over 32,000 valves and fire hydrants, 1 raw water pump station, 10 finished water pump stations, 4 in-ground reservoirs, 10 storage tanks, approximately 1,220 miles of sanitary, storm and combined sewers, 29,500 manholes, 25,000 catch basins and inlets, 98 combined sewer overflow outfalls, 195 storm outfalls, and 4 wastewater pump stations.

## Pennsylvania Public Utility Commission Oversight of the Authority

On December 21, 2017, the Pennsylvania legislature enacted Act 65 of 2017 (“**Act 65**”), placing the Authority under the jurisdiction of the Pennsylvania Public Utility Commission (“**PUC**”) pursuant to the Pennsylvania Public Utility Code (the “**Public Utility Code**”). Act 65 applies most of the provisions of the Public Utility Code to the Authority in the same manner as a “public utility,” resulting in regulation of the Authority’s rate making, its operating effectiveness, debt issuances and other aspects of conducting its business similar to the way the PUC regulates investor-owned utilities. Act 65 includes provisions that allow the Authority to impose, charge or collect rates or charges as necessary to permit the Authority to comply with its covenants with the holders of any bonds or other financial obligations of the Authority, and prohibits the PUC from requiring the Authority to take any action that would cause the interest on the Authority’s financial obligations to be includible in gross income of the holders of such obligations for federal income tax purposes.

## Capital Improvement Program

### Overview

The PWSA's Capital Improvement Program (CIP) focuses on sustaining cost-effective operations, while optimizing the system's asset performance and life expectancy. The 2023-2027 Capital Improvement Program invests in programs which consider risk and consequence of asset failure and levels of service benefits.

### Development and Approval Process

The PWSA’s CIP process begins each year in May when project nominations are solicited from the entire organization. At the completion of the nomination period, the CIP Review Committee screens, evaluates and prioritizes the nominated projects to determine the projects that should be included in the CIP. Further planning efforts consist of the preparation of a project sheet, which provides more detailed information on a project’s potential scope options, risks, schedule, and the



cost estimate. This process lasts several months and culminates with the presentation of the updated CIP to PWSA's Board of Directors. Projects that are not selected for execution at any stage will be re-assessed during the next year's CIP development process.

### **Capital Project Prioritization**

Due to funding limitations and the need to renew/replacing a significant amount of aging infrastructure, the following criteria are used to evaluate and prioritize capital projects:

- Regulatory Compliance
- Safety
- Operating Efficiency
- Quality of Service
- Organizational Goals
- Social Impact

### **Funding Sources**

The PWSA Capital Improvement Program is funded through several primary sources to which specific programs and projects are allocated. These funding sources include, but are not limited to, Debt (Revenue Bonds), Distribution System Improvement Charge ("DSIC"), Water Infrastructure Finance and Innovation Act ("WIFIA"), Pennsylvania Infrastructure Investment Authority ("PENNVEST"), American Rescue Plan Act ("ARPA") and cost shares with other entities.

### **Capital Improvement Plan Organization**

The CIP is organized into six project classes (types):

- Water Treatment Plant
- Water Pumping and Storage
- Water Distribution
- Wastewater System
- Stormwater
- Miscellaneous

Each project class is then made up of individual projects. Projects are defined based upon current information, which range from annual allowances for asset renewal and/or replacement activities, to major, multiple phase facility renewal projects.

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## **Project Information**

The following information is provided for each project:

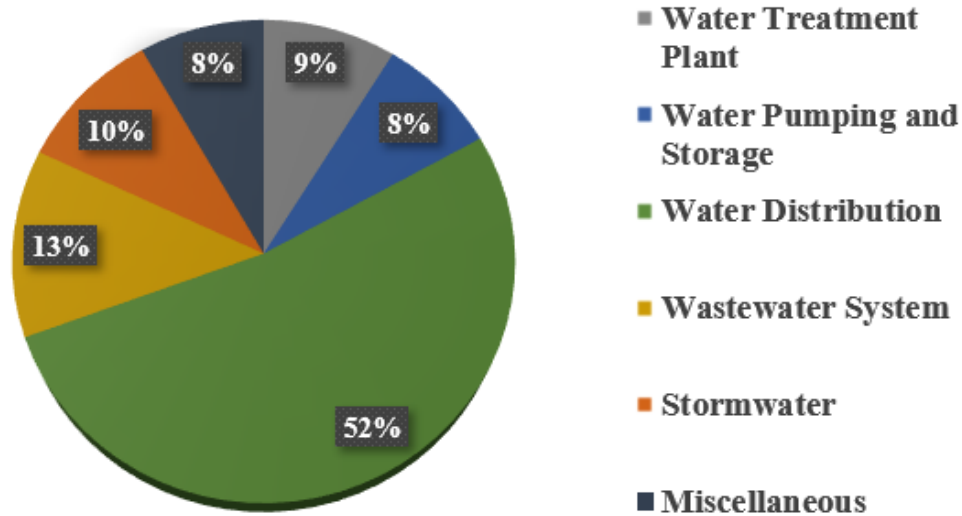
- **Cash Flow Summary** – Estimated five-year cash flow for the project.
- **DSIC Eligibility** – Determination of whether costs qualify under the Distribution System Improvement Charge.
- **Funding Source(s)** – Proposed funding source(s) for the project.
- **Impact on Operations** – Describes the anticipated impact to the PWSA’s operations when the project is completed.
- **Phase** – Phase in the project life-cycle (i.e. assessment/design/construction).
- **Priority** – Criteria utilized to prioritize the project.
- **Project Class** – Type of project.
- **Project Description** - A basic understanding of the project’s intent and scope of work.
- **Project Justification** - A detailed explanation to why the project is needed.
- **Project Name** – Descriptive name assigned to the project.
- **Project Number** – Unique number(s) assigned to track the project from inception to completion. This number is established once a project is approved.
- **Risk(s)** - Outlines the risk(s) to the PWSA if the project is delayed or is not selected.

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# Historical and Forecasted Capital Expenditures

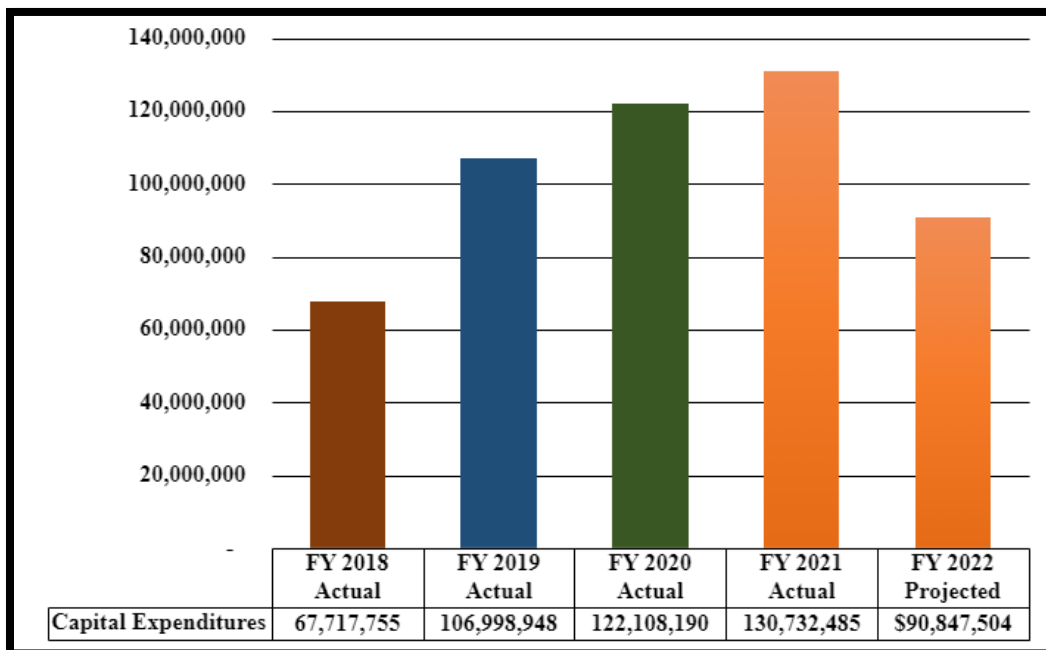
The figures below illustrate the historical capital expenditures by project class for FY 2018 – FY 2021 as well as the historical and forecasted capital expenditures for FY 2018 – FY 2021.

Figure 1. Historical Capital Expenditures by Project Class: FY 2018 – FY 2021



	FY 2018 - Actual	FY 2019 - Actual	FY 2020 - Actual	FY 2021 - Actual	Total
Water Treatment Plant	7,275,878	15,665,185	8,959,256	5,946,283	\$ 37,846,602
Water Pumping and Storage	11,732,850	9,667,165	7,304,722	5,941,184	34,645,921
Water Distribution	27,185,518	55,588,889	64,838,953	76,722,470	224,335,829
Wastewater System	9,225,987	15,152,656	8,767,047	20,632,500	53,778,189
Stormwater	3,156,175	6,901,255	15,791,622	15,614,923	41,463,976
Miscellaneous	9,141,347	4,023,798	16,446,590	5,875,126	35,486,861
<b>Total</b>	<b>\$ 67,717,755</b>	<b>106,998,948</b>	<b>122,108,190</b>	<b>130,732,485</b>	<b>\$ 427,557,378</b>

Figure 2. Historical and Forecasted Capital Expenditures: FY 2018 – FY 2022



## 2023-2027 Capital Improvement Program

The figures below illustrate the proposed breakdown of the project classes, funding sources, and yearly cash flows for the 2023 to 2027 CIP.

Figure 3. Proposed Yearly Capital Cash Flow by Project Class

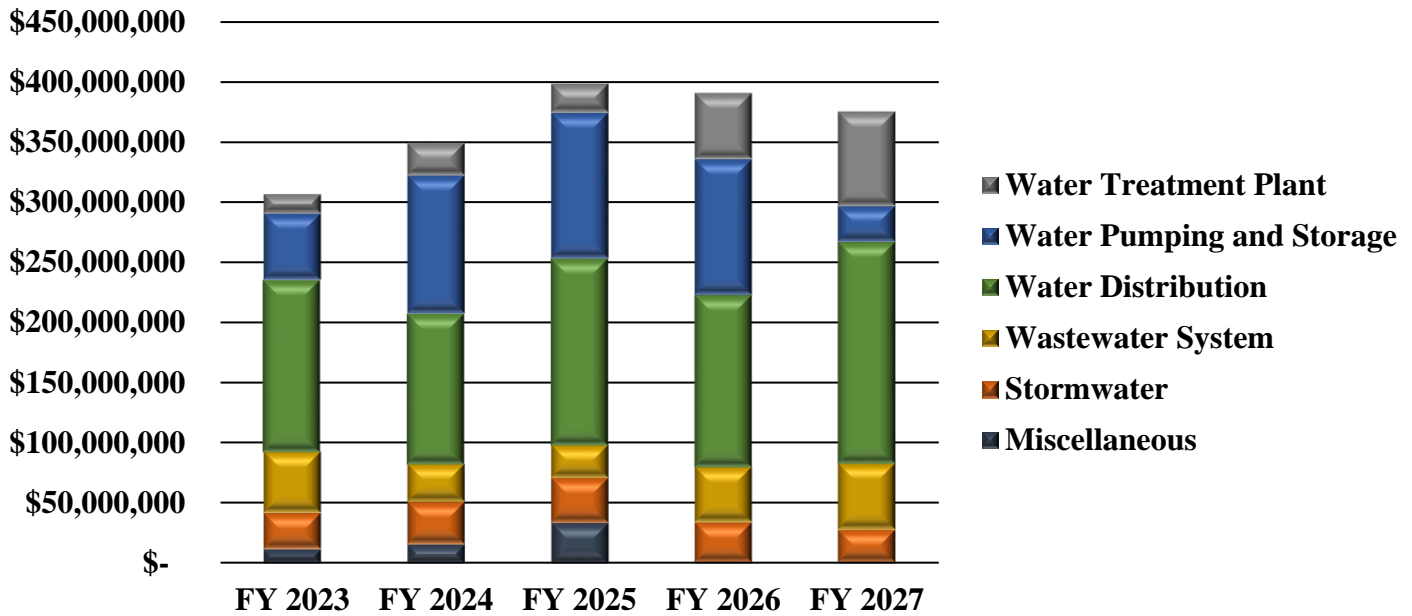


Figure 4. Capital Requirements

	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Water Treatment Plant	\$ 16,030,211	26,885,665	24,038,988	54,790,691	78,451,718	\$ 200,197,272
Water Pumping and Storage	55,304,597	115,127,475	121,491,637	113,245,473	30,009,851	435,179,033
Water Distribution	143,302,527	125,439,446	155,468,790	143,283,004	184,525,120	752,018,887
Wastewater System	50,634,240	31,442,487	27,579,779	45,751,309	54,918,077	210,325,892
Stormwater	29,822,932	34,827,423	36,884,821	33,038,424	26,808,750	161,382,350
Miscellaneous	11,439,316	15,500,000	33,000,000	500,000	500,000	60,939,316
<b>Total Capital Requirements</b>	<b>\$ 306,533,823</b>	<b>349,222,497</b>	<b>398,464,014</b>	<b>390,608,900</b>	<b>375,213,516</b>	<b>\$ 1,820,042,750</b>

Figure 5. Funding Sources

	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Debt (Revenue Bonds)	\$ 122,335,310	150,214,517	203,743,270	236,469,077	316,179,204	\$ 1,028,941,377
PENNVEST	127,409,339	97,299,382	86,216,706	47,511,528	10,020,526	368,457,481
WIFIA/PENNVEST	35,113,456	89,843,438	98,036,402	98,113,624	40,456,543	361,563,462
DSIC - Water	6,028,526	6,058,669	6,088,962	6,119,407	6,150,004	30,445,568
DSIC - Wastewater	2,359,691	2,371,490	2,383,347	2,395,264	2,407,240	11,917,032
ARPA	10,582,757	-	-	-	-	10,582,757
WIFIA	2,540,345	3,310,501	1,995,327	-	-	7,846,173
Cash (Rates)	164,400	124,500	-	-	-	288,900
<b>Total Funding Sources</b>	<b>\$ 306,533,823</b>	<b>349,222,497</b>	<b>398,464,014</b>	<b>390,608,900</b>	<b>375,213,516</b>	<b>\$ 1,820,042,750</b>



# 2023-2027 Project Summary



Page	Project Name	2023 Budget	2024 Budget	2025 Budget	2026 Budget	2027 Budget	Total
<b>Project Class: Water Treatment Plant</b>							
11	Algae Control for Open Basins	\$360,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$360,000.00
12	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	\$0.00	\$866,981.00	\$1,087,515.00	\$7,794,745.00	\$14,874,582.00	\$24,623,823.00
13	Aspinwall Water Treatment Plant Filter Improvements	\$123,706.90	\$164,942.53	\$246,599.62	\$1,208,045.99	\$1,006,704.99	\$2,750,000.02
14	Aspinwall Water Treatment Plant Filter Building Sodium Hypochlorite Improvements	\$3,222,924.72	\$0.00	\$0.00	\$0.00	\$0.00	\$3,222,924.72
15	Aspinwall Water Treatment Plant Raw Water Intakes - East Intake	\$0.00	\$465,000.00	\$1,116,000.00	\$756,000.00	\$36,000.00	\$2,373,000.00
16	Aspinwall Water Treatment Plant Raw Water Intakes - West Intake	\$469,736.84	\$1,127,368.42	\$767,368.42	\$5,747,368.42	\$8,597,368.42	\$16,709,210.53
17	Chemical Feed Modernization Project/Rapid Mix and Clarifier Improvements	\$1,252,063.75	\$2,789,028.23	\$2,936,058.88	\$16,350,331.00	\$19,072,483.58	\$42,399,965.45
18	Clearwell Emergency Response Project	\$2,741,630.73	\$7,408,660.00	\$7,408,660.00	\$7,408,660.00	\$1,234,457.00	\$26,202,067.73
19	Clearwell Improvements	\$4,293,312.12	\$2,448,008.62	\$107,717.51	\$107,717.51	\$16,708,182.43	\$23,664,938.19
20	Corrosion Control Chemical Storage & Feed Systems	\$50,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50,000.00
21	Highland Park Membrane Filtration Plant Assessment and Critical Process Improvements	\$150,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$150,000.00
22	Highland Park Microfiltration Plant Improvements Project	\$14,128.00	\$0.00	\$0.00	\$0.00	\$0.00	\$14,128.00
23	Hydraulic Valve Replacement Program	\$89,942.53	\$302,298.85	\$2,144,252.89	\$713,505.75	\$0.00	\$3,250,000.02
24	Lime Slurry System Improvements	\$756,079.00	\$3,548,360.00	\$1,182,787.00	\$0.00	\$0.00	\$5,487,226.00
25	Overhead Crane Modernization	\$0.00	\$375,000.00	\$440,000.00	\$0.00	\$0.00	\$815,000.00
26	Phase 1 Sedimentation Basin Rehabilitation and Water Treatment Plant Gate Valve and 84-inch Coupling Project	\$224,921.63	\$299,895.51	\$448,362.94	\$2,196,447.25	\$1,830,372.70	\$5,000,000.03
27	Phase 2 Sedimentation Basin Rehabilitation Project	\$0.00	\$0.00	\$0.00	\$562,304.08	\$749,738.77	\$1,312,042.85
28	Post-Filter Chemical System Improvements	\$0.00	\$0.00	\$0.00	\$607,288.41	\$809,717.87	\$1,417,006.28
29	Powdered Activated Carbon System Improvements	\$40,588.77	\$0.00	\$0.00	\$0.00	\$0.00	\$40,588.77
30	Ross Pump Station	\$0.00	\$1,249,655.17	\$2,499,310.34	\$1,299,310.34	\$13,232,110.34	\$18,280,386.21
31	Sludge Chamber Pump Project	\$386,721.63	\$869,343.78	\$0.00	\$0.00	\$0.00	\$1,256,065.41
32	Water Treatment Plant Filter Backwash System Improvements	\$740,054.00	\$883,290.00	\$2,996,022.00	\$8,880,634.00	\$0.00	\$13,500,000.00
33	Water Treatment Plant Filter Building Roof	\$0.00	\$3,500,000.00	\$0.00	\$0.00	\$0.00	\$3,500,000.00
34	Water Treatment Plant HVAC Improvements	\$0.00	\$163,333.00	\$358,333.00	\$858,333.00	\$0.00	\$1,379,999.00
35	Water Treatment Plant NPDES Permit Autosamplers and Flow Meters	\$164,400.00	\$124,500.00	\$0.00	\$0.00	\$0.00	\$288,900.00
36	Water Treatment Plant Rail Siding Improvements	\$800,000.00	\$300,000.00	\$300,000.00	\$300,000.00	\$300,000.00	\$2,000,000.00
37	WTP Sodium Hypochlorite Tank Emergency Replacement	\$150,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$150,000.00
38	Water Treatment Plant Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Water Treatment Plant</b>		<b>\$16,030,210.63</b>	<b>\$26,885,665.11</b>	<b>\$24,038,987.61</b>	<b>\$54,790,690.74</b>	<b>\$78,451,718.12</b>	<b>\$200,197,272.21</b>
<b>Project Class: Water Pumping and Storage</b>							
40	Aspinwall Pump Station Improvements	\$4,748,965.78	\$15,197,171.56	\$15,197,171.56	\$15,227,973.56	\$2,548,262.93	\$52,919,545.37
41	Aspinwall Pump Station to Lanpher Reservoir Rising Main	\$2,147,166.98	\$29,622,031.14	\$44,331,726.56	\$44,331,726.56	\$14,777,242.19	\$135,209,893.42
42	Aspinwall WTP Chemical Unloading Area Improvements, Underground Storage Tank Removal & Replacement	\$1,352,161.22	\$0.00	\$0.00	\$0.00	\$0.00	\$1,352,161.22
43	Bruecken Pump Station Concealed Gutters	\$0.00	\$175,000.00	\$0.00	\$0.00	\$0.00	\$175,000.00
44	Bruecken Pump Station Improvements	\$8,653,054.00	\$30,991,126.00	\$30,991,126.00	\$31,037,546.00	\$5,188,398.00	\$106,861,250.00
45	Chlorine Booster Station Improvements	\$311,268.79	\$6,436,147.83	\$7,007,549.12	\$583,962.43	\$0.00	\$14,338,928.16
46	Disinfection By-Products Mitigation	\$5,183,170.61	\$1,426,705.77	\$0.00	\$0.00	\$0.00	\$6,609,876.38
47	Garfield Tank Improvements	\$0.00	\$122,198.00	\$244,397.00	\$314,224.00	\$2,246,121.00	\$2,926,940.00
48	Herron Hill Pump Station Improvements	\$409,195.41	\$818,390.81	\$496,551.73	\$12,275,862.15	\$0.00	\$14,000,000.09
49	Herron Hill Reservoir Improvements	\$198,631.00	\$0.00	\$0.00	\$0.00	\$0.00	\$198,631.00
50	Herron Hill Reservoir Improvements - Sodium Hypochlorite Building	\$828,429.11	\$0.00	\$0.00	\$0.00	\$0.00	\$828,429.11
51	Herron Hill Tank Pump Station Improvements	\$0.00	\$164,077.30	\$195,528.61	\$1,320,197.05	\$1,320,197.05	\$3,000,000.02
52	Highland 1 Reservoir Liner	\$0.00	\$0.00	\$0.00	\$704,981.00	\$0.00	\$704,981.00
53	Highland No. 2 Reservoir Liner and Cover Replacements	\$2,122,235.00	\$6,515,354.50	\$4,072,096.57	\$0.00	\$0.00	\$12,709,686.07
54	Highland Reservoir Pump Station and Rising Main	\$23,789,287.16	\$14,537,145.09	\$8,983,409.85	\$0.00	\$0.00	\$47,309,842.10
55	Howard Pump Station Improvements	\$0.00	\$0.00	\$577,266.93	\$1,154,533.85	\$694,763.73	\$2,426,564.51
56	Inline Pump Station (Coral and Pacific) Improvements	\$0.00	\$32,979.66	\$39,434.13	\$264,367.82	\$263,218.39	\$600,000.00

Project Class: Water Pumping and Storage Cont.							
57	Lanpher Reservoir Improvements	\$2,778,963.09	\$6,370,326.38	\$3,716,023.72	\$0.00	\$0.00	\$12,865,313.19
58	Lincoln Pump Station Improvements	\$288,633.46	\$288,633.46	\$1,258,748.41	\$2,109,323.13	\$1,054,661.57	\$5,000,000.03
59	Lincoln Pump Station: Bypass Pump Station Project	\$2,155,907.00	\$2,164,264.00	\$0.00	\$0.00	\$0.00	\$4,320,171.00
60	Lincoln Tank Improvements	\$337,528.74	\$203,588.76	\$3,680,670.52	\$0.00	\$0.00	\$4,221,788.02
61	Mission Pump Station Improvements	\$0.00	\$0.00	\$577,267.00	\$1,154,534.00	\$694,764.00	\$2,426,565.00
62	Pump Station Architectural	\$0.00	\$0.00	\$0.00	\$2,500,000.00	\$0.00	\$2,500,000.00
63	Saline Pump Station Improvements	\$0.00	\$0.00	\$0.00	\$192,422.00	\$288,633.00	\$481,055.00
64	Spring Hill Tank Improvements	\$0.00	\$62,335.00	\$122,669.00	\$73,819.00	\$933,589.00	\$1,192,412.00
65	Water Pumping and Storage Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Water Pumping and Storage</b>		<b>\$55,304,597.34</b>	<b>\$115,127,475.27</b>	<b>\$121,491,636.70</b>	<b>\$113,245,472.55</b>	<b>\$30,009,850.86</b>	<b>\$435,179,032.71</b>

Project Class: Water Distribution							
67	2019 Large Diameter Water Main Improvements - Rising Main 3/4	\$3,062,142.13	\$240,769.90	\$0.00	\$0.00	\$0.00	\$3,302,912.04
68	2019 Large Diameter Water Main Improvements - Rising Main 4	\$12,529,326.00	\$4,176,441.00	\$0.00	\$0.00	\$0.00	\$16,705,767.00
69	Bus Rapid Transit Water Distribution	\$1,500,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,500,000.00
70	District Metering Program	\$0.00	\$0.00	\$2,600,000.02	\$3,380,000.02	\$3,380,000.02	\$9,360,000.06
71	Hazelwood Backup Feed (formerly Duck Hollow Main Replacement)	\$175,156.10	\$175,156.10	\$1,115,470.61	\$1,534,487.21	\$0.00	\$3,000,270.02
72	Herron Hill - Squirrel Hill Boundary Adjustments	\$0.00	\$0.00	\$52,928.57	\$355,186.81	\$635,884.62	\$1,044,000.00
73	Interconnection Vault Stormwater Removal	\$453,007.96	\$1,225,931.03	\$611,310.34	\$0.00	\$0.00	\$2,290,249.34
74	Intermediate Diameter Water Main Replacement Program	\$0.00	\$0.00	\$2,603,833.08	\$4,488,230.43	\$42,775,187.01	\$49,867,250.52
75	Intermediate Meter Replacement Program	\$143,076.92	\$84,307.69	\$86,538.46	\$87,000.00	\$87,000.00	\$487,923.08
76	Large Diameter Water Main Replacement Program	\$2,980,665.80	\$4,820,095.96	\$23,316,701.96	\$38,087,876.89	\$33,256,579.29	\$102,461,919.89
77	Large Meter Replacement Program	\$1,557,508.32	\$1,341,456.69	\$567,307.69	\$337,000.00	\$337,000.00	\$4,140,272.71
78	Low Pressure Area Remediation	\$0.00	\$0.00	\$23,277.57	\$279,330.90	\$1,393,833.02	\$1,696,441.49
79	Neighborhood Lead Service Line Replacement Program	\$13,582,757.48	\$27,792,500.00	\$55,585,000.00	\$27,792,500.00	\$0.00	\$124,752,757.48
80	North Side Boundary Adjustments	\$0.00	\$0.00	\$79,392.86	\$532,780.22	\$953,826.92	\$1,566,000.00
81	Priority LSLR	\$3,000,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$3,000,000.00
82	Private Lead Service Line Reimbursement	\$400,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$400,000.00
83	Regulator Valve and Vault Replacement Program	\$378,494.08	\$1,839,360.70	\$3,446,738.96	\$4,173,179.80	\$3,439,080.48	\$13,276,854.01
84	Small Diameter Water Main Replacement Program	\$83,515,128.68	\$75,057,893.92	\$57,763,375.00	\$53,807,131.41	\$89,408,775.74	\$359,552,304.75
85	Small Meter Replacement Program	\$1,723,171.54	\$1,351,089.38	\$480,769.23	\$250,000.00	\$291,667.00	\$4,096,697.15
86	South Side Slopes Boundary Adjustments	\$0.00	\$0.00	\$79,392.86	\$532,780.22	\$953,826.92	\$1,566,000.00
87	Unmetered and Flat Rate Properties	\$327,250.00	\$635,250.00	\$0.00	\$0.00	\$0.00	\$962,500.00
88	Urgent Lead Service Line Replacement	\$1,778,653.60	\$1,749,194.10	\$1,670,085.73	\$1,590,751.08	\$1,246,677.20	\$8,035,361.70
89	Valve Replacement Program	\$2,505,485.32	\$2,800,000.00	\$2,674,358.97	\$2,800,000.00	\$2,925,641.03	\$13,705,485.32
90	Water and Wastewater Safety and Security Improvements	\$1,567,547.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,567,547.00
91	Water and Wastewater Safety and Security Improvements (Pennvest)	\$9,978,156.00	\$0.00	\$0.00	\$0.00	\$0.00	\$9,978,156.00
92	Water Relay Program	\$2,145,000.00	\$2,150,000.00	\$2,712,307.69	\$3,254,769.23	\$3,440,140.58	\$13,702,217.50
93	Water Distribution Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Water Distribution</b>		<b>\$143,302,526.93</b>	<b>\$125,439,446.48</b>	<b>\$155,468,789.61</b>	<b>\$143,283,004.22</b>	<b>\$184,525,119.82</b>	<b>\$752,018,887.06</b>

Project Class: Wastewater System							
95	31st Ward Pump Station and Appurtenances - Phase 2	\$958,333.00	\$726,666.67	\$613,666.67	\$7,447,000.00	\$7,447,000.00	\$17,192,666.33
96	6122 and 6150 Mifflin Road Demolition	\$50,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$50,000.00
97	Browns Hill Road Sewer Pump Station Replacement	\$432,000.00	\$1,608,000.00	\$1,880,000.00	\$0.00	\$0.00	\$3,920,000.00
98	Large Diameter Sewer Rehabilitation Program	\$12,774,486.37	\$2,997,238.10	\$4,266,000.00	\$4,897,000.00	\$4,957,000.00	\$29,891,724.46
99	M-29 Outfall Improvements	\$250,000.00	\$0.00	\$0.00	\$0.00	\$0.00	\$250,000.00
100	Maytide Storm and Sanitary Sewer System Improvements	\$118,026.95	\$4,026,497.00	\$1,957,785.00	\$0.00	\$0.00	\$6,102,308.95
101	Queenston Sewer Improvements	\$2,210,550.00	\$243,203.00	\$0.00	\$0.00	\$0.00	\$2,453,753.00
102	Sewer Reconstruction Program	\$2,691,769.00	\$1,810,000.00	\$1,810,000.00	\$1,886,458.21	\$2,701,329.79	\$10,899,557.00
103	Sewers Under Structures Program	\$6,786,029.94	\$2,373,663.24	\$2,422,730.16	\$3,530,382.94	\$3,386,507.35	\$18,499,313.62
104	Small Diameter Sewer Rehabilitation Program	\$24,363,045.00	\$17,657,219.00	\$14,629,597.00	\$27,990,467.53	\$36,426,240.26	\$121,066,568.79
105	Wastewater Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Wastewater System</b>		<b>\$50,634,240.26</b>	<b>\$31,442,487.00</b>	<b>\$27,579,778.83</b>	<b>\$45,751,308.67</b>	<b>\$54,918,077.41</b>	<b>\$210,325,892.16</b>

Project Class: Stormwater							
107	Braywood Stormwater Improvements	\$434,625.00	\$439,375.00	\$0.00	\$0.00	\$0.00	\$874,000.00
108	Bus Rapid Transit Phase 2	\$0.00	\$500,000.00	\$500,000.00	\$500,000.00	\$0.00	\$1,500,000.00
109	Bus Rapid Transit Stormwater Infrastructure Improvements	\$71,382.00	\$785,634.29	\$703,637.86	\$0.00	\$0.00	\$1,560,654.15
110	Catch Basin and Inlet Replacement Program	\$11,539,876.64	\$16,007,303.03	\$14,436,109.17	\$14,867,220.83	\$15,308,750.00	\$72,159,259.67
111	Dragoon Way Stormwater Improvements	\$983,000.00	\$95,625.00	\$0.00	\$0.00	\$0.00	\$1,078,625.00
112	Fleury Way Stormwater Infrastructure Improvements	\$476,212.00	\$0.00	\$0.00	\$0.00	\$0.00	\$476,212.00
113	Four Mile Run Stormwater Infrastructure Improvements	\$645,557.00	\$4,500,108.00	\$8,723,924.00	\$6,171,203.00	\$0.00	\$20,040,792.00
114	Haverhill Street Improvements Project	\$1,003,900.00	\$104,500.00	\$0.00	\$0.00	\$0.00	\$1,108,400.00
115	Lawn and Ophelia	\$203,741.00	\$0.00	\$0.00	\$0.00	\$0.00	\$203,741.00
116	Martin Luther King Field Stormwater Infrastructure Improvements	\$3,096,867.00	\$1,324,108.00	\$0.00	\$0.00	\$0.00	\$4,420,975.00
117	Maryland Avenue Stormwater Infrastructure Improvements	\$6,925.00	\$0.00	\$0.00	\$0.00	\$0.00	\$6,925.00
118	MS4 Permit PRP Plan Sediment Reduction Project	\$173,000.00	\$605,000.00	\$307,500.00	\$0.00	\$0.00	\$1,085,500.00
119	Saw Mill Run Municipal Separate Storm Sewer System Compliance	\$0.00	\$0.00	\$500,000.00	\$1,500,000.00	\$1,500,000.00	\$3,500,000.00
120	Saw Mill Run Watershed Improvements	\$850,000.00	\$150,000.00	\$0.00	\$0.00	\$0.00	\$1,000,000.00
121	Southside Flats Sewer Separation	\$3,327,529.00	\$2,232,587.00	\$0.00	\$0.00	\$0.00	\$5,560,116.00
122	Southside Stormwater Infrastructure Improvements	\$2,029,140.00	\$2,703,667.00	\$0.00	\$0.00	\$0.00	\$4,732,807.00
123	Stewart Avenue Stormwater Infrastructure Project	\$1,400,000.00	\$1,515,389.00	\$894,444.00	\$0.00	\$0.00	\$3,809,833.00
124	Thomas and McPherson Stormwater Infrastructure Improvements	\$854,905.13	\$0.00	\$0.00	\$0.00	\$0.00	\$854,905.13
125	Volunteer's Field Stormwater Infrastructure Improvements	\$413,125.42	\$0.00	\$0.00	\$0.00	\$0.00	\$413,125.42
126	Wet Weather Program Projects	\$500,000.00	\$2,500,000.00	\$10,000,000.00	\$10,000,000.00	\$10,000,000.00	\$33,000,000.00
127	Wightman Park Phase 2 Project	\$182,166.00	\$0.00	\$0.00	\$0.00	\$0.00	\$182,166.00
128	Woodland Road Stormwater Infrastructure Improvements	\$245,256.31	\$0.00	\$0.00	\$0.00	\$0.00	\$245,256.31
129	Woods Run Stream Removal Stormwater Infrastructure Improvements	\$1,385,724.66	\$1,364,127.00	\$819,206.00	\$0.00	\$0.00	\$3,569,057.66
130	Stormwater Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Stormwater</b>		<b>\$29,822,932.16</b>	<b>\$34,827,423.32</b>	<b>\$36,884,821.02</b>	<b>\$33,038,423.83</b>	<b>\$26,808,750.00</b>	<b>\$161,382,350.34</b>
Project Class: Miscellaneous							
132	2023 Capital Project Reclassification	\$8,639,316.00	\$0.00	\$0.00	\$0.00	\$0.00	\$8,639,316.00
133	New Headquarters and Operations Facility	\$2,500,000.00	\$15,000,000.00	\$32,500,000.00	\$0.00	\$0.00	\$50,000,000.00
134	Utility Cost Shares	\$300,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$500,000.00	\$2,300,000.00
135	Miscellaneous Contingency	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
<b>Total: Miscellaneous</b>		<b>\$11,439,316.00</b>	<b>\$15,500,000.00</b>	<b>\$33,000,000.00</b>	<b>\$500,000.00</b>	<b>\$500,000.00</b>	<b>\$60,939,316.00</b>





# Water Treatment Plant



# Water Treatment Plant

## Algae Control for Open Basins

PROJECT NUMBER: 2023-100-100-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Installation of up to 5 ultrasonic buoys in the Sedimentation Basin and Highland 1 Reservoir (open basins) to provide non-chemical control of algae growth in these waters exposed to sunlight. Installation includes solar powered buoy, anchor system, associated instrumentation, and remote monitoring service.

**PROJECT JUSTIFICATION:**  
Open reservoirs subject to sunlight allow for the growth of algae starting in early spring through late fall. Algae can impact water production operations by increasing total organic carbon in the water and physically fouling downstream filters.

**RISK(S):**  
Buoys require maintenance including removal in the winter to avoid ice damage. Instruments require infrequent maintenance.

**IMPACT ON OPERATIONS:**  
Reduced chemical usage at Highland 1 for treating reservoir and reduced filter backwashed water requirements at Aspinwall Pump Station.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$360,000	\$0	\$0	\$0	\$0	\$360,000	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Electrical and Backup Power Improvements

PROJECT NUMBER: 2017-322-100-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

Improvements to electrical systems at the Water Treatment Plant, including provisions for stand-by or backup power systems, upgrades to existing electrical distribution system, replacement of motor control centers, and associated panels, conduit, wiring, and systems.

**PROJECT JUSTIFICATION:**

Electrical systems at the Water Treatment Plant have generally met the end of their useful lives and spare/replacement parts are unavailable.

**RISK(S):**

Electrical power is critical to maintain pumping and treatment of water. Failure of these systems will result in the inability to produce water to meet demand and/or quality requirements.

**IMPACT ON OPERATIONS:**

Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$866,981	\$1,087,515	\$7,794,745	\$14,874,582	\$24,623,823	<b>Debt (Revenue Bonds)</b>

# Water Treatment Plant

## Aspinwall Water Treatment Plant Filter Improvements

PROJECT NUMBER: 2023-100-101-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
Improvements for filters at the Water Treatment Plant to address various recommendations from regulatory agencies including safety issues, improve process control, and monitoring. Project components including providing hand railing around filter basins to facilitate operator inspections, adding components to allow safer performance of required quarterly monitoring and cell entry, moving IFE turbidimeters to locate them within 10 feet of sample points, addressing structural issues, and other electrical and safety updates.

**PROJECT JUSTIFICATION:**  
To meet industry standards and regulatory recommendations, turbidimeters should be located not more than 10 feet away from the sample taps. Currently, meters are located up to 30 feet away, reducing meter response time and data accuracy. Structural deficiencies in the floor and beams of the filter building have been observed as evidenced by cracks and water leakage.

**RISK(S):**  
Violations of permit conditions as a result of turbidimeter locations and sample travel time. Safety and compliance issues with not accessing filter cells for observation during backwash and quarterly/annual inspections. Not properly assessing and repairing areas of structural deficiencies could lead to catastrophic failure. Foundation sagging in the filter building could result in excessive leakage or inability to produce filtered water.

**IMPACT ON OPERATIONS:**  
Relocation of turbidimeters will shorten tubing distance between meter and sample point. Tubing is an annual replacement item, so less distance results in less time and material for replacement. Repair of structure deficiencies will result in less water leakage and maintain the integrity of the facility to reduce operational repairs and water in storage areas.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$123,707	\$164,943	\$246,600	\$1,208,045	\$1,006,705	\$2,750,000	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Filter Building Sodium Hypochlorite Improvements

PROJECT NUMBER: 2017-322-101-8 / 9 / 10 / 11

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
General and mechanical work will include demolition, new filling station, new storage and pumping room, furnishing and installing new storage tanks, feed pumps and piping. HVAC work will include furnishing and installing new HVAC system including air handling unit, condensing unit, exhaust system and ductwork. Plumbing work will include new water service lines inside building, furnishing and installing eyewash stations, hot water units, sanitary drain modifications and installation of a wet sprinkler fire suppression system and fire alarm system. Electrical work will include furnishing and installing power wiring and conduit to new equipment, control wiring to instrumentation and program system integration services to operate the new treatment process.

**PROJECT JUSTIFICATION:**  
To increase storage of sodium hypochlorite solution as required by PADEP and enhance the operational safety and efficiency of the system.

**RISK(S):**  
Not meeting requirements of PADEP if project not completed.

**IMPACT ON OPERATIONS:**  
Operating budget will likely decrease due to efficiencies.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$3,222,925	\$0	\$0	\$0	\$0	\$3,222,925	

# Water Treatment Plant

## Aspinwall Water Treatment Plant Raw Water Intakes - West Intake

PROJECT NUMBER: 2018-322-100-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Regulatory, Quality of Service

**PROJECT DESCRIPTION:**

Project will include condition assessment, renewing or replacing the existing West and East Raw Water Intake Gate House buildings and associated systems, including gates, screens, and associated mechanical equipment as well as the addition of SCADA. Influent piping through the Ross Pump Station will also be addressed.

**PROJECT JUSTIFICATION:**

The West Gate is 90% closed and inoperable. Both gate houses are in need of rehabilitation or replacement. The West Gatehouse is 100 years old, and the East Gate is almost 90 years old.

**RISK(S):**

Both gates have reach the end of their useful life and need replaced. Failure of the East Gate would cause a disruption to the supply of water.

**IMPACT ON OPERATIONS:**

Modernization of systems will require less time spent in operations and maintenance of these facilities.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	<b>\$469,737</b>	<b>\$1,127,368</b>	<b>\$767,368</b>	<b>\$5,747,368</b>	<b>\$8,597,368</b>	<b>\$16,709,209</b>	<b>Debt (Revenue Bonds)</b>

# Water Treatment Plant

## Aspinwall Water Treatment Plant Raw Water Intakes - East Intake

PROJECT NUMBER: 2023-100-102-0

DSIC Eligible: No

<b>PHASE:</b> Design
<b>PRIORITY:</b> Regulatory, Quality of Service
<b>PROJECT DESCRIPTION:</b> Project will include condition assessment, renewing or replacing the existing West and East Raw Water Intake Gate House buildings and associated systems, including gates, screens, and associated mechanical equipment as well as the addition of SCADA. Influent piping through the Ross Pump Station will also be addressed.
<b>PROJECT JUSTIFICATION:</b> The West Gate is 90% closed and inoperable. Both gate houses are in need of rehabilitation or replacement. The West Gatehouse is 100 years old, and the East Gate is almost 90 years old.
<b>RISK(S):</b> Only one gate is operational. Failure of the East Gate would result in a major disruption to the supply of water for the City of Pittsburgh.
<b>IMPACT ON OPERATIONS:</b> Modernization of systems will require less time spent in operations and maintenance of these facilities.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$465,000	\$1,116,000	\$756,000	\$36,000	\$2,373,000	Debt (Revenue Bonds)

# Water Treatment Plant

## Chemical Feed Modernization Project/Rapid Mix and Clarifier Improvements

PROJECT NUMBER: 2023-100-103-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Upgrade of chemical feed systems (equipment, storage, instrumentation, and injection points) to meet current regulatory requirements, improve chemical application, and optimize the water treatment process. Upgrades include ferric chloride, potassium permanganate, and other chemical systems located in the chemical building and possible construction of a new chemical building or repurposing of existing facilities. Assess, design, and construct repairs to structural defects associated with settlement with the pipe bridge between the Chemical Building and Screen Room.

**PROJECT JUSTIFICATION:**  
Chemical feed improvements will address recommendations from both consultants and regulatory agencies. The lack of attention to the pretreatment chemical feed systems could cause over/under dosing of chemicals leading to permit violations or the loss of a chemical system resulting in an emergency project.

**RISK(S):**  
Not addressing these recommendations will put the PWSA at risk for permit violations and failures at the Water Treatment Plant.

**IMPACT ON OPERATIONS:**  
Optimization and flow/residual pacing of chemicals can result in reduced chemical consumption. New storage and chemical feed equipment will result in reduced maintenance costs associated with repairs on the existing pumps, maintaining storage bins and feeders. Improvements to SCADA system and flow/residual pacing will reduce manual adjustments to chemical feed systems.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$1,252,064	\$2,789,028	\$2,936,059	\$16,350,331	\$19,072,484	\$42,399,966	



# Water Treatment Plant

## Clearwell Emergency Response Project

**PROJECT NUMBER:** 2017-323-100-0

**DSIC Eligible:** No

<b>PHASE:</b> Design
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Long-term bypass of the existing 100 + year old clearwell (finished water structure) including the construction of pump wetwells at the Aspinwall and Bruecken Pump Stations, modifications to the clearwell inlet and outlet gate house, and the construction of a bypass line around the clearwell to the outlet gate house.
<b>PROJECT JUSTIFICATION:</b> The clearwell was constructed in 1908 and has not undergone any major modifications or upgrades since. The clearwell has two main functions: providing equalization storage that allows the filters to operate independently of potential fluctuations in system demands and providing sufficient contact time for disinfection agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule. In order to replace the clearwell, a long-term bypass is required in order to provide adequate suction pressure for the pump stations.
<b>RISK(S):</b> Failure of the Clearwell would cause a disruption to the supply of water.
<b>IMPACT ON OPERATIONS:</b> Ability to meet system reliability and water quality regulations.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$2,741,631	\$7,408,660	\$7,408,660	\$7,408,660	\$1,234,457	\$26,202,068	

# Water Treatment Plant

## Clearwell Improvements

**PROJECT NUMBER:** 2023-100-104-0

**DSIC Eligible:** No

**PHASE:**

Planning

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**

Replacement of the existing 100 + year old clearwell (finished water structure) with multi-celled clearwell to allow for maintenance.

**PROJECT JUSTIFICATION:**

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 agents to meet the requirements of the Surface Water Treatment Rule and Long-Term 2 Enhanced Surface Water Treatment Rule.

**RISK(S):**

Failure of the Clearwell would cause a disruption to the supply of water.

**IMPACT ON OPERATIONS:**

Ability to meet system reliability and water quality regulations.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$4,293,312	\$2,448,009	\$107,718	\$107,718	\$16,708,181	\$23,664,938	

# Water Treatment Plant

## Corrosion Control Chemical Storage & Feed Systems

**PROJECT NUMBER:** 2017-322-107-0

**DSIC Eligible:** No

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Regulatory, Quality of Service
<b>PROJECT DESCRIPTION:</b> Installation of three phosphoric acid storage and feed systems located at Aspinwall Pump Station, Bruecken Pump Station, and the Membrane Filtration Plant to provide corrosion control in the distribution system.
<b>PROJECT JUSTIFICATION:</b> Required in order to lower lead levels in water.
<b>RISK(S):</b> Not completing this project will increase the risk of not maintaining lead levels below the PADEP action level.
<b>IMPACT ON OPERATIONS:</b> In order to prevent algae growth in the open Highland No. 1 Reservoir, treatment must occur at three major locations with 7 injection points. This requires additional maintenance of treatment facilities at satellite locations.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$50,000	\$0	\$0	\$0	\$0	\$50,000	

# Water Treatment Plant

## Highland Park Membrane Filtration Plant Assessment and Critical Process Improvements

PROJECT NUMBER: 2017-322-104-0

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals

**PROJECT DESCRIPTION:**  
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.

**PROJECT JUSTIFICATION:**  
Membrane module failure rate has continually increased over the last several years and are more than 5 years beyond the manufacturer’s recommended replacement cycle. To allow module membrane manufacturers to extend a full warranty, a system condition assessment is needed. A detailed condition assessment is needed to address other critical worker safety and degradation of equipment that are essential to maintain the water treatment process. Improvements to the plan are required in order to restart the Membrane Filtration Plant.

**RISK(S):**  
Exposes the Authority to higher costs to address emergency failures and exposes the Highland No. 1 Service Area to a potentially deficient or non-complaint water supply.

**IMPACT ON OPERATIONS:**  
Increase operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$150,000	\$0	\$0	\$0	\$0	\$150,000	

# Water Treatment Plant

## Highland Park Microfiltration Plant Improvements Project

PROJECT NUMBER: 2021-322-100-0

DSIC Eligible: No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Repair damage caused by process water leakage from second floor membrane racks to composite floor deck system and structural steel framing above main floor of Microfiltration Plant (MFP). Construction joints in floor were sealed during the MFP UV Project. This project will repair deterioration to composite deck system and structural steel support system and apply protective coatings. This project will also repair damage to the surface of concrete floor and sump pump in acid storage room caused by leakage from acid storage tanks, piping connections and acid mixing operations.
<b>PROJECT JUSTIFICATION:</b> This project will increase the safety and security of operations in addition to maintaining the integrity of chemical containment in the event of future failure.
<b>RISK(S):</b> The risk of delaying the project could cause potential damage to equipment on the first floor of the MFP from falling concrete or steel deck fragments. With respect to repair of the acid storage room floor, the risk of delaying the project is the lack of integrity in the provisions for chemical containment in the event of tank failure. Acid is able to leak through the damaged sump pump into the subfloor where it could damage underground cast iron plumbing and ductile iron process piping.
<b>IMPACT ON OPERATIONS:</b> This project will mitigate the potential for future emergency repairs to the first floor ceiling components or to the acid room floor that would likely be funded from the Operating Budget.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$14,128	\$0	\$0	\$0	\$0	\$14,128	

# Water Treatment Plant

## Hydraulic Valve Replacement Program

PROJECT NUMBER: 2023-100-105-0

DSIC Eligible: No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> This project is retrofitting the various hydraulic valve actuators primarily in the filters to electric valve actuators.
<b>PROJECT JUSTIFICATION:</b> Improve operational control while modernizing the facility to better align with industry standard practices.
<b>RISK(S):</b> Inefficient operations resulting from an aged facility that do not align with industry standard practices.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$89,943	\$302,299	\$2,144,253	\$713,505	\$0	\$3,250,000	

# Water Treatment Plant

## Lime Slurry System Improvements

PROJECT NUMBER: 2017-322-101-7 / 12 / 13

DSIC Eligible: No

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Lime slurry system capacity expansion improvements to include demolition, installation of additional tanks, chemical feed equipment, minor revisions to the existing lime slurry system, and SCADA communications equipment and SCADA interface.
<b>PROJECT JUSTIFICATION:</b> Adequate lime storage is mandated by PADEP. New system will be more efficient/require less labor to operate and maintain.
<b>RISK(S):</b> The extra storage for liquid lime is critical to the reliable operation of the Water Treatment Plant.
<b>IMPACT ON OPERATIONS:</b> Adequate storage, increased reliability and efficiency, less housekeeping labor.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$756,079	\$3,548,360	\$1,182,787	\$0	\$0	\$5,487,226	

# Water Treatment Plant

## Overhead Crane Modernization

PROJECT NUMBER: 2024-100-100-0

DSIC Eligible: No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Replacement and upgrade of existing cranes at Bruecken, Mission, Aspinwal, and Ross Pump Stations.
<b>PROJECT JUSTIFICATION:</b> The current age of existing overhead cranes are well beyond their useful life and are in need of a replacement.
<b>RISK(S):</b> Inefficient operations resulting from an aged facility that do not align with industry standard practices.
<b>IMPACT ON OPERATIONS:</b> Increase operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$375,000	\$440,000	\$0	\$0	\$815,000	



# Water Treatment Plant

## Phase 1 Sedimentation Basin Rehabilitation and Water Treatment Plant Gate Valve and 84-inch Coupling Project

PROJECT NUMBER: 2023-100-106-0  
DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Phase 1 of the rehabilitation of the existing sedimentation Basins as recommended by the 2019 WTP CIP (Arcadis 2019) and EPA CEP (2017). Projects including regrading around existing sedimentation Basins to mitigate stormwater infiltration, rehabilitation or replacement of existing sluice gates including drain gates, disconnect existing stormwater outfall including related permitting, repair of existing vaults. The WTP portion of the project will include replacement of various isolation valves at the plant and the encasement of an existing 84-inch diameter pipe coupling.

**PROJECT JUSTIFICATION:**  
The sedimentation basins are the only system in the Water Treatment Plant process that is open to the environment. As such, care must be taken to prevent infiltration of contaminants via surface runoff. These repairs and valve replacements were recommended by regulating agencies. Working isolation valves are required in order to properly isolate and maintain treatment. Proactive repair/maintenance will reduce the chance of complete failure of the asset.

**RISK(S):**  
Inability to isolate the sedimentation basins in the event of an emergency and/or uncontrolled runoff into the Basins could cause regulatory violations.

**IMPACT ON OPERATIONS:**  
Ability for staff to quickly isolate the sedimentation basins as part of routine or emergency maintenance.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$224,922	\$299,896	\$448,363	\$2,196,447	\$1,830,372	\$5,000,000	

# Water Treatment Plant

## Phase 2 Sedimentation Basin Rehabilitation Project

PROJECT NUMBER: 2026-100-100-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Phase 2 of this project includes cleaning the sedimentation basins, rehabilitation of weirs, intakes, and associated structures.

**PROJECT JUSTIFICATION:**  
The sedimentation basins serve a role in secondary clarification of water after the clarifiers. This clarification combined with the fact that the basins are uncovered has led to accumulation of sediment in the basins. Secondly, structural defects in the existing concrete structure cannot be detected due to the presence of this sediment. Once the sediment is removed, each basin will be removed from service for a structural inspection and concrete repair. If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

**RISK(S):**  
Possible regulatory violations due to sediment, possible failure of structure due to lack of maintenance.

**IMPACT ON OPERATIONS:**  
Ability for staff to quickly isolate the sedimentation basins as part of routine or emergency maintenance.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$0	\$562,304	\$749,739	\$1,312,043	

# Water Treatment Plant

## Post-Filter Chemical System Improvements

PROJECT NUMBER: 2026-100-101-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Construction of new building for soda ash, fluoride, and phosphoric acid system closer to the feed point providing updated equipment, storage, instrumentation, and injection points. This will result in meeting current regulatory requirements, improve chemical application, and optimize the water treatment process. Portions of this project may be combined with the Clearwell Improvements Project or Aspinwall Pump Station Project.

**PROJECT JUSTIFICATION:**  
The improvements from this project will address the recommendations from various regulatory agencies. In addition, the lack of attention to the post-filter chemical feed systems could cause over/under dosing of chemicals leading to permit violations or the loss of a chemical system resulting in an emergency project.

**RISK(S):**  
Potential violations of permit conditions as a result of improper dosing of chemicals or failure of a chemical system resulting in emergency action.

**IMPACT ON OPERATIONS:**  
Optimization and flow/residual pacing of chemicals can result in reduced chemical consumption. New storage and chemical feed equipment will result in reduced maintenance costs associated with repairs on the existing pumps, maintaining storage bins and feeders. Moving soda ash closer to the point of injection will reduce issues with feeding the chemical from the other end of the plant. Improvements to SCADA system and flow/residual pacing will reduce manual adjustments to chemical feed systems.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$0	\$0	\$607,288	\$809,718	\$1,417,006	

# Water Treatment Plant

## Powdered Activated Carbon System Improvements

PROJECT NUMBER: 2017-322-101-2/ 3

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
Powdered Activated Carbon System Improvements are to include the replacement of a carbon premix tank and existing carbon slurry pumping and dosing pipework.

**PROJECT JUSTIFICATION:**  
Components of the chemical treatment systems can no longer be operated in an effective and reliable manner to meet water quality requirements. The storage and pumping systems associated with these chemicals have reached the end of their useful life and are susceptible to failures.

**RISK(S):**  
Inefficient operation of chemical systems results in increased operating costs, including chemical consumption, labor, solids generation and disposal, and wear on equipment.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and life expectancy and improved safety conditions.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
<b>Annual Allocation</b>	\$40,589	\$0	\$0	\$0	\$0	\$40,589	

# Water Treatment Plant

## Ross Pump Station

**PROJECT NUMBER:** 2018-323-101-0

**DSIC Eligible:** No

**PHASE:**

Design

**PRIORITY:**

Regulatory, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

Replacement of aged pump and valve equipment, meters, SCADA, electrical equipment, HVAC, auxiliary systems, as well as the rehabilitation of the building architectural and energy management systems.

**PROJECT JUSTIFICATION:**

Pump station is in need of rehabilitation. Pumps and ancillary systems are beyond their design life.

**RISK(S):**

Exposes the Authority to higher capital costs to address emergency failures, and exposes customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**

Increased operating efficiency, flexibility, reliability, life expectancy, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$1,249,655	\$2,499,310	\$1,299,310	\$13,232,110	\$18,280,385	Debt (Revenue Bonds)

# Water Treatment Plant

## Sludge Chamber Pump Project

PROJECT NUMBER: 2021-322-102-0

DSIC Eligible: No

<b>PHASE:</b> Design
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b>  Replacement of existing Sludge Pump and related components to the sludge chamber.
<b>PROJECT JUSTIFICATION:</b> The submersible pumps are not operational because they are not capable of handling the type of sludge coming from the clarifier drainage. The pump system needs to be designed to ensure the proper pump size and selection suitable for sludge handling is utilized.
<b>RISK(S):</b> Inefficient operations resulting from an aged facility that do not align with industry standard practices.
<b>IMPACT ON OPERATIONS:</b> Increased operating efficiency, flexibility, reliability, and life expectancy,.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	<b>\$386,722</b>	<b>\$869,343</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,256,065</b>	<b>Debt (Revenue Bonds)</b>

# Water Treatment Plant

## Water Treatment Plant Filter Backwash System Improvements

**PROJECT NUMBER:** 2023-100-107-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Improvements to filter backwash system to increase capacity and provide greater high backwash flow rates and addressing issues.
<b>PROJECT JUSTIFICATION:</b> The backwash system cannot attain high wash flow rates recommended by regulators, which may be impacting filter performance/backwash frequency. In addition, the backwash system has areas that can be improved to help with operations including resolving pump vibration and shutdown issues at low flow rates.
<b>RISK(S):</b> Potential noncompliance with permitted design of filter system and water quality issues.
<b>IMPACT ON OPERATIONS:</b> Improved operating efficiency.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$740,054	\$883,290	\$2,996,022	\$8,880,634	\$0	\$13,500,000	

# Water Treatment Plant

## Water Treatment Plant Filter Building Roof

PROJECT NUMBER: 2024-100-101-0

DSIC Eligible: No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Roof and parapet flashing replacement at the Water Treatment Plant filter building.
<b>PROJECT JUSTIFICATION:</b> The existing roof is aged and in need of replacement.
<b>RISK(S):</b> Continued deterioration of the roof could result in a emergency replacement.
<b>IMPACT ON OPERATIONS:</b> Decrease in yearly maintenance for the existing roof.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$3,500,000	\$0	\$0	\$0	\$3,500,000	



# Water Treatment Plant

## Water Treatment Plant HVAC Improvements

PROJECT NUMBER: 2024-100-102-0

DSIC Eligible: No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Improvements to aged HVAC systems at the Water Treatment Plant.
<b>PROJECT JUSTIFICATION:</b> The HVAC systems at the Water Treatment Plant are at risk for failure due to its age.
<b>RISK(S):</b> Failure of HVAC systems.
<b>IMPACT ON OPERATIONS:</b> Reduction in future maintenance costs associated with aging equipment and multiple HVAC units.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$163,333	\$358,333	\$858,333	\$0	\$1,379,999	

# Water Treatment Plant

## Water Treatment Plant NPDES Permit Autosamplers and Flow Meters

PROJECT NUMBER: 2023-100-108-0

DSIC Eligible: No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Purchase and installation of autosamplers to improve the ability of DEP required sampling.
<b>PROJECT JUSTIFICATION:</b> This project is necessary to ensure that all of the required DEP sampling gets performed in a safe and efficient manner.
<b>RISK(S):</b> The risks with not completing or delaying this project would be potentially missing sampling deadlines for DEP required sampling.
<b>IMPACT ON OPERATIONS:</b> Improved operating efficiency.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Cash (Rates)
<b>Annual Allocation</b>	\$164,400	\$124,500	\$0	\$0	\$0	\$288,900	

# Water Treatment Plant

## Water Treatment Plant Rail Siding Improvements

**PROJECT NUMBER:** 2023-100-109-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Replacement of failed railroad ties, missing aggregate, and switch/track/stop repairs or removal for the rail siding at Aspinwall Pump Station.
<b>PROJECT JUSTIFICATION:</b> Rail siding is required to maintain an alternate means of chemical delivery to Aspinwall Pump Station. This project will allow for the annual replacement of rail siding in order to meet rail standards.
<b>RISK(S):</b> Failure to pass rail inspection and loss of alternate chemical delivery means.
<b>IMPACT ON OPERATIONS:</b> Improved operating efficiency.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$800,000	\$300,000	\$300,000	\$300,000	\$300,000	\$2,000,000	

# Water Treatment Plant

## WTP Sodium Hypochlorite Tank Emergency Replacement

PROJECT NUMBER: 2022-322-101-0

DSIC Eligible: No

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Regulatory Compliance, Safety, Quality of Service
<b>PROJECT DESCRIPTION:</b> The project includes the replacement of three Sodium Hypochlorite storage tanks.
<b>PROJECT JUSTIFICATION:</b> This is an urgent project to maintain adequate treatment capabilities.
<b>RISK(S):</b> The project includes the emergency replacement of three Sodium Hypochlorite storage tanks. There are four existing storage tanks. Two of the storage tanks will be removed from service in 2022 due to leakage and the age of the other two is such that they are at the end of their useful life. They will be replaced with three new tanks in kind to maintain the required storage capacity.
<b>IMPACT ON OPERATIONS:</b> Maintain adequate treatment capabilities.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$150,000	\$0	\$0	\$0	\$0	\$150,000	<b>Debt (Revenue Bonds)</b>

# Water Treatment Plant

## Water Treatment Plant Contingency

PROJECT NUMBER: 2023-100-110-0

DSIC Eligible: No

<b>PHASE:</b> Not Applicable
<b>PRIORITY:</b> Not Applicable
<b>PROJECT DESCRIPTION:</b> Water Treatment Plant contingency pass-through project.
<b>PROJECT JUSTIFICATION:</b> Improved efficiency of capital improvement plan fund management.
<b>RISK(S):</b> No identified risks.
<b>IMPACT ON OPERATIONS:</b> Improved efficiency of capital improvement plan management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$0	\$0	\$0	\$0	\$0	



# Water Pumping and Storage



# Water Pumping and Storage

## Aspinwall Pump Station Improvements

**PROJECT NUMBER:** 2017-323-104-0

**DSIC Eligible:** No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems at the Bruecken and Aspinwall Pump Stations or replacement with a single high service pump station at the Water Treatment Plant.

**PROJECT JUSTIFICATION:**  
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 staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, and allow the pumps to operate over a wide range of flow, allow the pumps to operate while the clearwell is being replaced. Alternately, a new high service pump station to replace the existing pump stations is also being investigated.

**RISK(S):**  
Exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
Annual Allocation	\$4,748,966	\$15,197,172	\$15,197,170	\$15,227,974	\$2,548,263	\$52,919,545	WIFIA/PENN VEST

# Water Pumping and Storage

## Aspinwall Pump Station to Lanpher Reservoir Rising Main

PROJECT NUMBER: 2018-323-100-0

DSIC Eligible: No

**PHASE:**

Design – Project Close

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

Construction of a new, redundant rising main from Aspinwall Pump Station to Lanpher Reservoir.

**PROJECT JUSTIFICATION:**

The existing 60" 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 the 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" supply main.

**RISK(S):**

Failure of the rising main could impact up to half of PWSA's customers.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$2,147,167	\$29,622,031	\$44,331,727	\$44,331,727	\$14,777,241	\$135,209,893	<b>WIFIA/PENN VEST</b>



# Water Pumping and Storage

## Aspinwall WTP Chemical Unloading Area Improvements and Underground Storage Tank Removal and Replacement

PROJECT NUMBER: 2022-322-100-0

DSIC Eligible: No

**PHASE:**  
Design – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Design and construction of secondary spill containment around railcar and truck chemical unloading areas. A nearby tunnel underdrain must also be disconnected from the combined sewers, and will be completed as part of the work in the area.

**PROJECT JUSTIFICATION:**  
Required as part of PADEP regulatory recommendations.

**RISK(S):**  
Not completing the work could lead to future environmental incidents and potential violations from regulatory agencies due to chemical spills.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved environmental conditions.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$1,352,161	\$0	\$0	\$0	\$0	\$1,352,161	<b>Debt (Revenue Bonds)</b>

# Water Pumping and Storage

## Bruecken Pump Station Concealed Gutters

**PROJECT NUMBER:** 2024-300-100-0

**DSIC Eligible:** No

**PHASE:**  
Planning – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Concealed gutter replacement and related improvements at Bruecken Pump Station.

**PROJECT JUSTIFICATION:**  
The existing concealed gutters backup with water and can cause leakage inside of the building.

**RISK(S):**  
Continued leaks will eventually damage roof substrate and interior and exterior masonry.

**IMPACT ON OPERATIONS:**  
Reduced service repair needs and improved efficiency of operations.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$175,000	\$0	\$0	\$0	\$175,000	<b>Debt (Revenue Bonds)</b>

# Water Pumping and Storage

## Bruecken Pump Station Improvements

PROJECT NUMBER: 2017-323-106-0

DSIC Eligible: No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems.

**PROJECT JUSTIFICATION:**  
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 staff. Additionally, installation of variable frequency drives will reduce water pressure surges during start-up, allow the pumps to operate more efficiently over a wide range of flow demands, and will reduce the required size of the new Clearwell.

**RISK(S):**  
Exposes PWSA to higher capital costs to address emergency facility failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$8,653,054	\$30,991,126	\$30,991,126	\$31,037,546	\$5,188,398	\$106,861,250	WIFIA/PENN VEST

# Water Pumping and Storage

## Chlorine Booster Station Improvements

**PROJECT NUMBER:** 2019-323-101-0

**DSIC Eligible:** No

**PHASE:**  
Design – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of existing chlorine injection facilities at reservoirs and tanks for chlorine residual.

**PROJECT JUSTIFICATION:**  
PWSA boosts chlorine residual at a majority of its storage facilities. Recent changes to PADEP regulations require an increase in minimum chlorine residual levels in the distribution system. All chlorine booster facilities need to be upgraded in order to meet these requirements.

**RISK(S):**  
Exposes the Authority's customers to poor water quality.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$311,269	\$6,436,148	\$7,007,549	\$583,962	\$0	\$14,338,928	

# Water Pumping and Storage

## Disinfection By-Products Mitigation

PROJECT NUMBER: 2020-323-101-0

DSIC Eligible: No

**PHASE:**  
Design – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of existing trihalomethane (THM) removal systems at Allentown tanks, Squirrel Hill tank, and Brashears tanks.

**PROJECT JUSTIFICATION:**  
Repair of the existing system to improve the level of service provided to customers.

**RISK(S):**  
Delaying the replacement of the existing systems will result in increased downtime of the existing systems that need to be repaired. This will lead to possible regulatory violations for exceeding THM levels.

**IMPACT ON OPERATIONS:**  
Decrease in yearly maintenance for the existing system.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$5,183,171	\$1,426,705	\$0	\$0	\$0	\$6,609,876	<b>Debt (Revenue Bonds)</b>

# Water Pumping and Storage

## Garfield Tank Improvements

PROJECT NUMBER: 2024-300-101-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Rehabilitation or replacement of the existing tank. Increase of tank capacity may be necessary.

**PROJECT JUSTIFICATION:**  
The Garfield Elevated Storage Tank was constructed in 1959 and last rehabilitated in 1992. The existing tank does not have sufficient capacity to meet PADEP's requirements for sizing, which states that a tank must have sufficient capacity to meet average day demand plus fire flow demand. This project will provide adequate storage through system redundancy to meet the pressure district's demand and fire flow conditions.

**RISK(S):**  
Exposes PWSA customers to poor water quality from coating problems or a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$0	\$122,198	\$244,397	\$314,224	\$2,246,121	\$2,926,940	

# Water Pumping and Storage

## Herron Hill Pump Station Improvements

**PROJECT NUMBER:** 2023-300-100-0

**DSIC Eligible:** No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in the late 1890's. 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 staff.

**RISK(S):**  
Lack of facility planning exposes PWSA to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	<b>\$409,195</b>	<b>\$818,391</b>	<b>\$496,552</b>	<b>\$12,275,862</b>	<b>\$0</b>	<b>\$14,000,000</b>	<b>Debt (Revenue Bonds)</b>

# Water Pumping and Storage

## Herron Hill Reservoir Improvements

PROJECT NUMBER: 2019-323-100-0

DSIC Eligible: No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system. Project close-out phase in 2023.

**PROJECT JUSTIFICATION:**  
The existing cover has reached the end of its useful life and must be replaced. Existing chlorine feed systems are beyond their useful life and must be replaced.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$198,631	\$0	\$0	\$0	\$0	\$198,631	



# Water Pumping and Storage

## Herron Hill Reservoir Improvements - Sodium Hypochlorite Building

**PROJECT NUMBER:** 2019-323-100-1 / 2 / 3 / 4

**DSIC Eligible:** No

<b>PHASE:</b> Construction – Project Close
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Replacement of existing chlorine injection system.
<b>PROJECT JUSTIFICATION:</b> Existing chlorine feed systems are beyond their useful life and must be replaced.
<b>RISK(S):</b> Exposes the Authority's customers to poor water quality and possible PADEP violations due to inadequate booster disinfection.
<b>IMPACT ON OPERATIONS:</b> Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$828,429	\$0	\$0	\$0	\$0	\$828,429	Debt (Revenue Bonds)

# Water Pumping and Storage

## Herron Hill Tank Pump Station Improvements

PROJECT NUMBER: 2024-300-102-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
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 staff.

**RISK(S):**  
Lack of facility planning exposes PWSA to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
Annual Allocation	\$0	\$164,077	\$195,529	\$1,320,197	\$1,320,197	\$3,000,000	Debt (Revenue Bonds)

# Water Pumping and Storage

## Highland 1 Reservoir Liner

PROJECT NUMBER: 2026-300-100-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of existing Highland 1 Reservoir liner.

**PROJECT JUSTIFICATION:**  
The reservoir liner is past it's useful design life and is in need of replacement.

**RISK(S):**  
Failure to replace the liner could result an emergency repairs or replacement.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and life expectancy,.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$0	\$0	\$0	\$704,981	\$0	\$704,981	

# Water Pumping and Storage

## Highland No. 2 Reservoir Liner and Cover Replacements

PROJECT NUMBER: 2019-323-102-0 / 1

DSIC Eligible: No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system and an upgrade of the reservoir outlet structure.

**PROJECT JUSTIFICATION:**  
The Highland No. 2 Reservoir will be used as a temporary Clearwell while the new Clearwell is being constructed. Existing chlorine feed facilities must be upgraded to meet PADEP regulatory requirements for distribution chlorine residual. Existing reservoir outlet structure must be upgraded to accommodate new Highland Reservoir Pump Station.

**RISK(S):**  
Exposes PWSA customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$2,122,235	\$6,515,355	\$4,072,096	\$0	\$0	\$12,709,686	WIFIA/Debt (Revenue Bonds)

# Water Pumping and Storage

## Highland Reservoir Pump Station and Rising Main

**PROJECT NUMBER:** 2017-323-101-0/ 5

**DSIC Eligible:** No

**PHASE:**

Design – Project Close

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

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.

**PROJECT JUSTIFICATION:**

All water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the MFP. There is no other source water supply for the Highland No. 1 Service Area. In addition to providing alternate supply, this project is to 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 could also be designed to service the Garfield pressure district, thus eliminating the rehabilitation of the Highland Pump Station.

**RISK(S):**

Failure of the two rising mains (No. 1 or No. 2), MFP, or Bruecken Pump Station would result in significant service disruption.

**IMPACT ON OPERATIONS:**

Increased operation and maintenance labor and expenses. Increased operating flexibility in the future.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$23,789,287	\$14,537,145	\$8,983,410	\$0	\$0	\$47,309,842	

# Water Pumping and Storage

## Howard Pump Station Improvements

PROJECT NUMBER: 2025-300-100-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed between 1900 and 1904. 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.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
Annual Allocation	\$0	\$0	\$577,267	\$1,154,534	\$694,764	\$2,426,565	Debt (Revenue Bonds)

# Water Pumping and Storage

## Inline Pump Station (Coral and Pacific) Improvements

PROJECT NUMBER: 2024-300-103-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
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 staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, reliability, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
Annual Allocation	\$0	\$32,980	\$39,434	\$264,368	\$263,218	\$600,000	Debt (Revenue Bonds)

# Water Pumping and Storage

## Lanpher Reservoir Improvements

**PROJECT NUMBER:** 2017-323-105-0 / 1 / 2 / 3

**DSIC Eligible:** No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system.

**PROJECT JUSTIFICATION:**  
The existing cover failed and had to be replaced on an emergency basis as part of the PADEP October 2017 Administrative Order. Existing chlorine feed systems are beyond their useful life and must be replaced.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from reservoir failure and inadequate booster disinfection.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability, system compliance, and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$2,778,963	\$6,370,326	\$3,716,024	\$0	\$0	\$12,865,313	



# Water Pumping and Storage

## Lincoln Pump Station Improvements

**PROJECT NUMBER:** 2023-300-101-0

**DSIC Eligible:** No

**PHASE:**  
Planning – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, and auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in 1952. 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 staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$288,633	\$288,633	\$1,258,748	\$2,109,323	\$1,054,663	\$5,000,000	

# Water Pumping and Storage

## Lincoln Pump Station: Bypass Pump Station Project

PROJECT NUMBER: 2020-323-100-0/ 1/ 2

DSIC Eligible: No

**PHASE:**  
Construction – Project Close

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Construction of a temporary bypass pump station that will be used at the Lincoln Pump Station and Saline Pump Station. This pump station will allow for the existing pump station to be taken off line completely for rehabilitation.

**PROJECT JUSTIFICATION:**  
Repair of existing pump station while trying to keep it online increases the cost and construction time. This is a cost effective way to provide temporary pumping.

**RISK(S):**  
Delaying the construction of this pump station will delay the renewal of existing pump stations that are in need of upgrades.

**IMPACT ON OPERATIONS:**  
Decrease in yearly maintenance for the existing system.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$2,155,907	\$2,164,264	\$0	\$0	\$0	\$4,320,171	

# Water Pumping and Storage

## Lincoln Tank Improvements

**PROJECT NUMBER:** 2023-300-102-0

**DSIC Eligible:** No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Rehabilitation or replacement of the existing tank.

**PROJECT JUSTIFICATION:**  
Constructed in 1939, this tank is nearing the end of its useful life. The last inspection, which was performed in 2018, noted deficiencies that need to be addressed to ensure water quality standards are met.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability and system compliance.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$337,529	\$203,589	\$3,680,670	\$0	\$0	\$4,221,788	

# Water Pumping and Storage

## Mission Pump Station Improvements

PROJECT NUMBER: 2025-300-101-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The Mission Pump Station is the only pumping station located south of the Monongahela River and was originally constructed between 1910 and 1912. 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 staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$0	\$0	\$577,267	\$1,154,534	\$694,764	\$2,426,565	

# Water Pumping and Storage

## Pump Station Architectural

PROJECT NUMBER: 2026-300-101-0

DSIC Eligible: No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Rehabilitate exterior and interior masonry, glazing, and roof of existing pump stations

**PROJECT JUSTIFICATION:**  
Existing building façade, roof, and window systems are in need of upgrade to protect interior pumps and electrical equipment from the elements. Rehabilitation of these pump stations has not occurred within the past 40 years for most facilities.

**RISK(S):**  
Façade collapse, leaking roof and windows could lead to equipment failures

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$0	\$0	\$0	\$2,500,000	\$0	\$2,500,000	

# Water Pumping and Storage

## Saline Pump Station Improvements

**PROJECT NUMBER:** 2026-300-102-0

**DSIC Eligible:** No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Replacement of aged pump and valve equipment, electrical equipment, HVAC, auxiliary systems, and rehabilitation of the building architectural and energy management systems as prioritized by the recommended Finished Water Pump Stations Condition Assessment Project.

**PROJECT JUSTIFICATION:**  
The pump station was originally constructed in 1935. 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 staff.

**RISK(S):**  
Lack of facility planning exposes the Authority to higher capital costs to address emergency failures and its customers to a potentially deficient water supply.

**IMPACT ON OPERATIONS:**  
Increased operating efficiency, flexibility, and reliability and improved safety conditions for staff.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
Annual Allocation	\$0	\$0	\$0	\$192,422	\$288,633	\$481,055	Debt (Revenue Bonds)

# Water Pumping and Storage

## Spring Hill Tank Improvements

**PROJECT NUMBER:** 2024-300-104-0

**DSIC Eligible:** No

**PHASE:**  
Not Started – Project Close

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Perform a comprehensive inspection of the existing storage tanks and rehabilitation or replacement of the existing tanks.

**PROJECT JUSTIFICATION:**  
Constructed in 1929 of riveted steel, the coatings and structure of these tanks need to be rehabilitated due to corrosion.

**RISK(S):**  
Exposes the Authority's customers to poor water quality from coating problems or a potentially deficient water supply in the event of tank failure.

**IMPACT ON OPERATIONS:**  
Increased flexibility and reliability and system compliance.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$62,335	\$122,669	\$73,819	\$933,589	\$1,192,412	<b>Debt (Revenue Bonds)</b>

# Water Pumping and Storage

## Water Pumping and Storage Contingency

**PROJECT NUMBER:** 2023-300-103-0

**DSIC Eligible:** No

**PHASE:**  
Not Applicable – Project Close

**PRIORITY:**  
Not Applicable

**PROJECT DESCRIPTION:**  
Water Pumping and Storage contingency pass-through project.

**PROJECT JUSTIFICATION:**  
Improved efficiency of capital improvement plan fund management.

**RISK(S):**  
No identified risks.

**IMPACT ON OPERATIONS:**  
Improved efficiency of capital improvement plan management.

### CASH FLOW SUMMARY

### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$0	\$0	\$0	\$0	\$0	<b>Debt (Revenue Bonds)</b>





# Water Distribution



# Water Distribution System

## 2019 Large Diameter Water Main Improvements - Rising Main 3/4

PROJECT NUMBER: 2019-325-103-0

DSIC Eligible: No

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Regulatory Compliance, Safety Operating Efficiency, Quality of Service,
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> Maintaining a proactive approach to replacing large mains will ensure that large mains are replaced before the end of their useful life.
<b>RISK(S):</b> The consequences of failure for larger mains are much greater than for smaller distribution mains, which typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	WIFIA/Debt (Revenue Bonds)
<b>Annual Allocation</b>	\$3,062,142	\$240,770	\$0	\$0	\$0	\$3,302,912	

# Water Distribution System

## 2019 Large Diameter Water Main Improvements - Rising Main 4

**PROJECT NUMBER:** 2019-325-103-1

**DSIC Eligible:** No

<b>PHASE:</b> Procurement
<b>PRIORITY:</b> Regulatory Compliance, Safety Operating Efficiency, Quality of Service,
<b>PROJECT DESCRIPTION:</b> 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.
<b>PROJECT JUSTIFICATION:</b> Maintaining a proactive approach to replacing large mains will ensure that large mains are replaced before the end of their useful life.
<b>RISK(S):</b> The consequences of failure for larger mains are much greater than for smaller distribution mains, which typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$12,529,326	\$4,176,441	\$0	\$0	\$0	\$16,705,767	WIFIA/PENNV EST

# Water Distribution System

## Bus Rapid Transit Water Distribution

PROJECT NUMBER: 2020-325-102-0

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
The City of Pittsburgh is making roadway improvements on Fifth Ave and Forbes Ave from downtown through Oakland, with full depth reconstruction planned on Forbes from Crosstown Blvd to Craft Ave and on Fifth between Crosstown Blvd and the Birmingham Bridge. The City's work, in partnership with the Port Authority, will include signal pole upgrades, traffic redesign, sidewalk bumpouts, and new bus shelters. The full depth reconstruction portion of the project has the potential to affect existing 15-inch, 16-inch, 20-inch, and 6-inch mains that are 80-100+ years old. The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains. These mains should be replaced as part of this project.

**PROJECT JUSTIFICATION:**  
The full depth replacement of the roadway along with lowering of the roadway could result in damage to these mains.

**RISK(S):**  
Replacement of water mains along the Fifth and Forbes corridor reduces the risk of service outages due to breaks, reduces the potential for inadequate capacity for firefighting activities, and improves water quality.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
<b>Annual Allocation</b>	\$1,500,000	\$0	\$0	\$0	\$0	\$1,500,000	<b>Debt (Revenue Bonds)</b>

# Water Distribution System

## District Metering Program

PROJECT NUMBER: 2025-200-100-0, Unidentified

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Installation of system flow meters to track the flow of water and compare to area consumption to determine where leaks are the greatest.

**PROJECT JUSTIFICATION:**  
The district metering is intended to gather additional information on areas with suspected leakage and then prioritize areas for rehabilitation and replacement.

**RISK(S):**  
Failure to track water loss will result in loss of revenue.

**IMPACT ON OPERATIONS:**  
Decreased water loss.

<u>Program Years</u>	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	\$0	\$0	\$2,600,000	\$3,380,000	\$3,380,000	\$9,360,000	Debt (Revenue Bonds)
2025 District Metering	\$0	\$0	\$2,600,000	\$780,000	\$0	\$3,380,000	
2026 District Metering	\$0	\$0	\$0	\$2,600,000	\$780,000	\$3,380,000	
2027 District Metering	\$0	\$0	\$0	\$0	\$2,600,000	\$2,600,000	

# Water Distribution System

## Hazelwood Backup Feed

**PROJECT NUMBER:** 2023-200-100-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Either repair the existing failed 16" main or abandon and provide interconnections with the Squirrel Hill system.
<b>PROJECT JUSTIFICATION:</b> The Duck Hollow 16" main failed as a result of a landslide in 2018. The main will need to either be abandoned and replaced with emergency interconnections.
<b>RISK(S):</b> Existing failed 16" main does not provide any backup water supply leading to a loss of resiliency.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$175,156	\$175,156	\$1,115,471	\$1,534,487	\$0	\$3,000,270	<b>Debt (Revenue Bonds)</b>

# Water Distribution System

## Herron Hill - Squirrel Hill Boundary Adjustments

**PROJECT NUMBER:** 2025-200-101-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Main and valve adjustments to move the boundary between the Herron Hill Reservoir and Squirrel Hill pressure districts.
<b>PROJECT JUSTIFICATION:</b> Herron Hill and Squirrel Hill operate on similar hydraulic gradients. There are areas where these two systems intertwine, which has resulted in long dead end lines as well as frequent opening and altering of dividing pressure valves. Moving the boundary of the two zones to incorporate more of the Herron Hill system into the Squirrel Hill system will alleviate these issues as well as alleviate demand on the Herron Hill Reservoir.
<b>RISK(S):</b> Existing long dead ends can cause water quality issues.
<b>IMPACT ON OPERATIONS:</b> Decreased leakage between pressure districts.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$52,928	\$355,187	\$635,885	\$1,044,000	

# Water Distribution System

## Interconnection Vault Stormwater Removal

**PROJECT NUMBER:** 2022-325-102-0

**DSIC Eligible:** No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> The purpose of this project is to install permanent sump pumps for stormwater dewatering at all of our interconnection vault locations. This project is required by a Consent Order Agreement.
<b>PROJECT JUSTIFICATION:</b> This project is required by a Consent Order Agreement.
<b>RISK(S):</b> Failure to maintain regulatory compliance.
<b>IMPACT ON OPERATIONS:</b> Improved system efficiency.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$453,008	\$1,225,931	\$611,310	\$0	\$0	\$2,290,249	



# Water Distribution System

## Intermediate Diameter Water Main Replacement Program

**PROJECT NUMBER:** 2025-200-102-0

**DSIC Eligible:** No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will focus on 16" to 36" diameter mains.

**PROJECT JUSTIFICATION:**  
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.

**RISK(S):**  
Customers may be subject to service outages or the potential for inadequate pressure.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability, decrease in non-revenue water due to leaks.

<u>Program Years</u>	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	\$0	\$0	\$2,603,833	\$4,488,230	\$42,775,187	\$49,867,251	
2025 Intermediate Main Replacement	\$0	\$0	1,283,549	1,541,899	20,364,552	\$23,190,000	<b>Debt (Revenue Bonds)</b>
2026 Intermediate Main Replacement	\$0	\$0	\$1,320,284	\$1,584,614	20,774,834	\$23,679,732	
2027 Intermediate Main Replacement	\$0	\$0	\$0	\$1,361,717	\$1,635,801	\$2,997,518	

# Water Distribution System

## Intermediate Meter Replacement Program

**PROJECT NUMBER:** 2021-325-100-0

**DSIC Eligible:** No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Operating Efficiency, Quality of Service, Organizational Goals
<b>PROJECT DESCRIPTION:</b> Replacement of customer meters size 1.5" to 2".
<b>PROJECT JUSTIFICATION:</b> Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.
<b>RISK(S):</b> Failure to replace meters annually could result in lost revenue or violate regulatory requirements.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$143,077	\$84,308	\$86,538	\$87,000	\$87,000	\$487,923	

# Water Distribution System

## Large Diameter Water Main Replacement Program

**PROJECT NUMBER:** 2019-325-103-0, 2019-323-103-1, 2020-325-109-0, 2023-200-101-0, 2024-200-100-0, 2025-200-103-0, 2026-200-100-0, 2027-200-100-0, Unidentified

**DSIC Eligible:** No

**PHASE:**  
Construction / Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Strategic replacement or rehabilitation of large diameter water mains (16" and larger) and appurtenances to improve system reliability and hydraulics, including internal and external inspections.

**PROJECT JUSTIFICATION:**  
The Authority's water system has approximately 122 miles of large diameter water mains. Maintaining a proactive approach to replacing large mains will ensure that large mains are replaced before the end of their useful life.

**RISK(S):**  
The consequences of failure for larger mains are much greater than for smaller distribution mains, which typically include significant service outages (larger area and longer time frame impacts).

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

Program Year	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	Debt (Revenue Bonds)
	\$2,980,666	\$4,820,096	\$23,316,702	\$38,087,877	\$33,256,579	\$102,461,920	
2020 Large Diameter Main Replacement – Four Mile Run	\$801,877	\$850,000	\$7,156,250	\$17,175,000	\$10,018,750	\$36,001,877	
2023 Large Diameter Main Replacement	\$1,244,067	\$1,137,890	\$11,464,181	\$5,713,862	\$0	\$19,560,000	
2024 Large Diameter Main Replacement	\$934,721	\$1,869,443	\$1,779,098	\$10,361,857	\$8,634,881	\$23,580,000	
2025 Large Diameter Main Replacement	\$0	962,763	1,925,526	1,832,471	10,672,713	\$15,393,473	
2026 Large Diameter Main Replacement	\$0	\$0	\$991,646	\$1,983,292	\$1,887,445	\$4,862,383	
2027 Large Diameter Main Replacement	\$0	\$0	\$0	\$1,021,395	\$2,042,791	\$3,064,186	

# Water Distribution System

## Large Meter Replacement Program

**PROJECT NUMBER:** 2023-200-102-0

**DSIC Eligible:** No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Annual replacement of water meters larger than 1".
<b>PROJECT JUSTIFICATION:</b> Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.
<b>RISK(S):</b> Failure to replace meters annually could result in lost revenue.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
Annual Allocation	\$1,557,508	\$1,341,457	\$567,308	\$337,000	\$337,000	\$4,140,273	Debt (Revenue Bonds)

# Water Distribution System

## Low Pressure Area Remediation

**PROJECT NUMBER:** 2021-325-101-0

**DSIC Eligible:** No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.
<b>PROJECT JUSTIFICATION:</b> This project is in response to the low pressure monitors required by the October 2017 Administrative Order.
<b>RISK(S):</b> Customers may experience temporary service outages as a result of the work on this project.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$23,278	\$279,331	\$1,393,832	\$1,696,441	

# Water Distribution System

## Neighborhood Lead Service Line Replacement Program

**PROJECT NUMBER:** 2021-325-109-0

**DSIC Eligible:** Yes

<b>PHASE:</b> Planning/Construction
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Neighborhood Lead Service Line Replacement (LSLR) program to replace all remaining public and private lead service lines within the PWSA water service area. Program will be developed once 2023-2026 Small Diameter Water Main Replacement program is fully planned.
<b>PROJECT JUSTIFICATION:</b> Comply with PWSA goals in the Lead Infrastructure Plan approved by PUC.
<b>RISK(S):</b> Compliance with PWSA goals and regulatory recommendations.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability and water quality.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$13,582,757	\$27,792,500	\$55,585,000	\$27,792,500	\$0	\$124,752,757	ARPA/PEN NVEST

# Water Distribution System

## North Side Boundary Adjustments

**PROJECT NUMBER:** 2025-200-104-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Operating Efficiency, Quality of Service, Organizational Goals
<b>PROJECT DESCRIPTION:</b> Main and valve installation to move some low pressure areas from the McNaugher Pressure District to the Brashears Pressure District.
<b>PROJECT JUSTIFICATION:</b> Areas within the McNaugher Pressure District that are near the Brashears Pressure District could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.
<b>RISK(S):</b> Existing services are near or below minimum standards (20 psi).
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$79,393	\$532,780	\$953,827	\$1,566,000	

# Water Distribution System

## Priority LSLR

**PROJECT NUMBER:** 2021-325-107-0

**DSIC Eligible:** No

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Provide for LSLR at Priority sides including childcare facilities and exceedance locations.
<b>PROJECT JUSTIFICATION:</b> Comply with PWSA goals in the Lead Infrastructure Plan approved by PUC.
<b>RISK(S):</b> Failure to replace private lead service lines poses a public health risk.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability and water quality.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
<b>Annual Allocation</b>	<b>\$3,000,000</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$3,000,000</b>	<b>PENNVEST</b>



# Water Distribution System

## Private Lead Service Line Reimbursement Program

**PROJECT NUMBER:** 2023-200-103-0

**DSIC Eligible:** Yes

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Reimbursement of private line lead service line costs.
<b>PROJECT JUSTIFICATION:</b> Replacing both private and public lead service lines is required to eliminate lead in the water system.
<b>RISK(S):</b> Failure to replace private lead service lines poses a public health risk.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
Annual Allocation	\$400,000	\$0	\$0	\$0	\$0	\$400,000	Debt (Revenue Bonds)

# Water Distribution System

## Regulator Valve and Vault Replacement Program

PROJECT NUMBER: 2021-325-102-0, 2023-200-104-0, 2024-200-101-0, 2025-200-105-0, 2026-200-101-0, 2027-325-200-0

DSIC Eligible: No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Replacement of pressure zone interconnection vaults including new pressure regulators, flow meters, pressure transmitters, and SCADA communications.
<b>PROJECT JUSTIFICATION:</b> Existing regulator stations are in need of replacement. This will also aid in identification of non-revenue water.
<b>RISK(S):</b> Failure to fix could result in failure of the vault.
<b>IMPACT ON OPERATIONS:</b> Decreased leakage will result in decrease of pumping energy.

Program Years	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
	\$378,494	\$1,839,361	\$3,446,739	\$4,173,180	\$3,439,080	\$13,276,854	
2021 Regulator Valve and Vault Replacement	\$233,422	\$933,717	914,264	\$0	\$0	\$2,081,403	Debt (Revenue Bonds)
2022 Regulator Valve and Vault Replacement	\$89,723	\$517,050	\$257,850	\$292,720	\$0	\$1,157,343	
2023 Regulator Valve and Vault Replacement	\$55,349	\$305,570	\$1,760,920	\$878,161	\$0	\$3,000,000	
2024 Regulator Valve and Vault Replacement	\$0	\$83,024	\$458,355	\$2,641,379	\$1,317,242	\$4,500,000	
2025 Regulator Valve and Vault Replacement	\$0	\$	\$55,349	\$305,570	\$1,760,920	\$2,121,839	
2026 Regulator Valve and Vault Replacement	\$0	\$0	\$0	\$55,350	\$305,570	\$360,920	
2027 Regulator Valve and Vault Replacement	\$0	\$0	\$0	\$0	55,349	\$55,349	

# Water Distribution System

## Small Diameter Water Main Replacement Program

**PROJECT NUMBER:** 2020-325-106-0 / 1 / 2, 2021-325-104-0/ 1/ 2, 2022-325-113-0/ 2/ 3, 2023-200-105-0, 2024-200-102-0, 2025-200-106-0, 2026-200-102-0, Unidentified

**DSIC Eligible:** Yes

<b>PHASE:</b> Construction / Design / Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> Strategic replacement of water mains to improve system reliability as well as improve water pressure, maintain water quality, and minimize disturbance to the community. Program will initially focus on replacing existing 4" and 6" unlined cast iron mains and mains with a history of frequent breaks.
<b>PROJECT JUSTIFICATION:</b> By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving overall replacement cost. Additionally, projects will be coordinated with other utilities to minimize disturbance to the community and street surface restoration costs. Water quality will also improve by removing tuberculated mains.
<b>RISK(S):</b> Customers may be subject to service outages.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

Program Year	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	<b>\$83,515,129</b>	<b>\$75,057,894</b>	<b>\$57,763,375</b>	<b>\$53,807,131</b>	<b>\$89,408,776</b>	<b>\$359,552,305</b>	
2021 Small Main Replacement	\$27,077,320	\$0	\$0	\$0	\$0	\$27,077,320	Debt (Revenue Bonds) / PENNVEST
2022 Small Main Replacement	\$47,405,571	\$33,861,122	\$0	\$0	\$0	\$81,266,693	
2023 Small Main Replacement	\$7,982,472	\$26,104,038	\$8,701,346	\$0	\$0	\$42,787,856	
2024 Small Main Replacement	\$1,049,756	\$14,287,293	\$37,846,331	\$9,461,583	\$0	\$62,644,963	
2025 Small Main Replacement	\$0	\$805,441	\$10,109,849	\$26,498,219	\$6,624,555	\$44,038,064	
2026 Small Main Replacement	\$0	\$0	\$1,105,849	\$14,431,097	\$38,033,034	\$53,569,980	
2027 Small Main Replacement	\$0	\$0	\$0	\$3,416,232	\$44,751,187	\$48,167,419	

# Water Distribution System

## Small Meter Replacement Program

**PROJECT NUMBER:** 2023-200-106-0

**DSIC Eligible:** No

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Annual replacement of water meters 1" or less.
<b>PROJECT JUSTIFICATION:</b> Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.
<b>RISK(S):</b> Failure to replace meters annually could result in lost revenue or violate regulatory requirements.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
<b>Annual Allocation</b>	\$1,723,172	\$1,351,089	\$480,769	\$250,000	\$291,667	\$4,096,697	<b>Debt (Revenue Bonds)</b>

# Water Distribution System

## South Side Slopes Boundary Adjustments

**PROJECT NUMBER:** 2025-200-107-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Operating Efficiency, Quality of Service, Organizational Goals
<b>PROJECT DESCRIPTION:</b> Main and valve adjustments to move the boundary between the Highland No. 2 and Allentown Pressure Districts.
<b>PROJECT JUSTIFICATION:</b> Areas within the Highland No. 2 pressure district that are near the Allentown pressure district could have increased pressure by moving the pressure zone boundary through main improvements and valve adjustments.
<b>RISK(S):</b> Existing services are near or below minimum standards (20 psi).
<b>IMPACT ON OPERATIONS:</b> Increased system reliability and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
<b>Annual Allocation</b>	\$0	\$0	\$79,393	\$532,780	\$953,827	\$1,566,000	<b>Debt (Revenue Bonds)</b>

# Water Distribution System

## Unmetered and Flat Rate Properties

**PROJECT NUMBER:** 2021-325-103-0

**DSIC Eligible:** No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Regulatory Compliance, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Metering unmetered and flat rate properties as required by regulations.
<b>PROJECT JUSTIFICATION:</b> Required per the PUC regulations. The impact of not installing meters is the loss of revenue and lack of ability to accurately estimate water loss in the system.
<b>RISK(S):</b> Failure to comply with PUC regulations and the potential of lost revenue.
<b>IMPACT ON OPERATIONS:</b> Increased system reliability, reliability, and improved system management.

### CASH FLOW SUMMARY

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>FUNDING SOURCE(S)</u>
<b>Annual Allocation</b>	\$327,250	\$635,250	\$0	\$0	\$0	\$962,500	Debt (Revenue Bonds)

# Water Distribution System

## Urgent Lead Service Line Replacement

**PROJECT NUMBER:** 2021-325-112-0, 2023-200-107-0, 2024-200-103-0, 2025-200-108-0, 2026-200-103-0, 2027-200-102-0

**DSIC Eligible:** Yes

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact
<b>PROJECT DESCRIPTION:</b> This project involves the private side Lead Service Line Replacements (LSLR) associated with operations public side replacements. It includes provisions for some full line replacements when operations requests both sides be completed due to their workload or other factors.
<b>PROJECT JUSTIFICATION:</b> Compliance with the Lead Infrastructure Plan approved by the PUC. PUC requires termination if a private side lead service line is not replaced the same time the public service line is replaced. Not completing this project would lead to water service terminations.
<b>RISK(S):</b> Required to terminate service if property owners do not replace their private side lead service lines after operations replaces a public side service line.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability and water quality.

Program Year	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	<b>\$1,778,654</b>	<b>\$1,749,194</b>	<b>\$1,670,086</b>	<b>\$1,590,751</b>	<b>\$1,246,677</b>	<b>\$8,035,362</b>	
2022 Urgent Lead Service Line Replacement	\$762,720	\$0	\$0	\$0	\$0	\$762,720	DSIC - Water
2023 Urgent Lead Service Line Replacement	\$1,015,934	\$721,566	\$0	\$0	\$0	\$1,737,500	
2024 Urgent Lead Service Line Replacement	\$0	\$1,027,628	\$729,872	\$0	\$0	\$1,757,500	
2025 Urgent Lead Service Line Replacement	\$0	\$0	940,214	\$667,786	\$0	\$1,578,500	
2026 Urgent Lead Service Line Replacement	\$0	\$0	\$0	\$922,965	\$655,535	\$1,578,500	
2027 Urgent Lead Service Line Replacement	\$0	\$0	\$0	\$0	591,142	\$591,142	

# Water Distribution System

## Valve Replacement Program

PROJECT NUMBER: 2021-325-113-0, 2023-200-108-0, 2024-200-104-0, 2025-200-109-0, 2026-200-104-0, 2027-200-103-0

DSIC Eligible: Yes

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during waterline relays.
<b>PROJECT JUSTIFICATION:</b> Increasing the number of operable valves in the system will reduce the number of valves that would need to be closed during emergency conditions, and therefore the number of customers that may be impacted.
<b>RISK(S):</b> A larger number of customers may be subject to service outages.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

Program Year	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
	\$2,505,485	\$2,800,000	\$2,674,359	\$2,800,000	\$2,925,641	\$13,705,485	
2021 Valve Replacement	\$150,000	\$0	\$0	\$0	\$0	\$150,000	DSIC - Water
2022 Valve Replacement	\$722,152	\$0	\$0	\$0	\$0	\$722,152	
2023 Valve Replacement	\$1,633,333	\$1,166,667	\$0	\$0	\$0	\$2,800,000	
2024 Valve Replacement	\$0	\$1,633,333	\$1,166,667	\$0	\$0	\$2,800,000	
2025 Valve Replacement	\$0	\$0	\$1,507,692	\$1,292,308	\$0	\$2,800,000	
2026 Valve Replacement	\$0	\$0	\$0	\$1,507,692	\$1,292,308	\$2,800,000	
2027 Valve Replacement	\$0	\$0	\$0	\$0	\$1,633,333	\$1,633,333	



# Water Distribution System

## Water and Wastewater Safety and Security Improvements

**PROJECT NUMBER:** 2022-325-101-0

**DSIC Eligible:** No

<b>PHASE:</b> Construction / Not Started
<b>PRIORITY:</b> Safety, Operating Efficiency
<b>PROJECT DESCRIPTION:</b> Safety and security improvements throughout PWSA facilities.
<b>PROJECT JUSTIFICATION:</b> Failure to implement safety and security measures will increase the likelihood of a security breach causing harm to PWSA employees and customers.
<b>RISK(S):</b> Security breaches.
<b>IMPACT ON OPERATIONS:</b> Increased safety and security at all PWSA facilities.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<b>Debt (Revenue Bonds)</b>
<b>Annual Allocation</b>	\$1,567,547	\$0	\$0	\$0	\$0	\$1,567,547	

# Water Distribution System

## Water and Wastewater Safety and Security Improvements (Pennvest)

**PROJECT NUMBER:** 2023-200-109-0

**DSIC Eligible:** No

<b>PHASE:</b> Design
<b>PRIORITY:</b> Safety, Operating Efficiency
<b>PROJECT DESCRIPTION:</b> Safety and security improvements throughout PWSA facilities.
<b>PROJECT JUSTIFICATION:</b> Failure to implement safety and security measures will increase the likelihood of a security breach causing harm to PWSA employees and customers.
<b>RISK(S):</b> Security breaches.
<b>IMPACT ON OPERATIONS:</b> Increased safety and security at all PWSA facilities.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$9,978,156	\$0	\$0	\$0	\$0	\$9,978,156	PENNVEST

# Water Distribution System

## Water Relay Program

**PROJECT NUMBER:** 2021-325-110-0, 2023-200-110-0, 2024-200-105-0, 2025-200-110-0, 2026,200-105-0, 2027-200-104-0

**DSIC Eligible:** Yes

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Safety, Operating Efficiency, Quality of Service
<b>PROJECT DESCRIPTION:</b> Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.
<b>PROJECT JUSTIFICATION:</b> The existing water distribution system is aging and updates are required to address failures that could be significant public safety hazards.
<b>RISK(S):</b> Customers will be subject to service outages or inadequate pressure.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

Program Year	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
	<b>\$2,145,000</b>	<b>\$2,150,000</b>	<b>\$2,712,308</b>	<b>\$3,254,769</b>	<b>\$3,440,141</b>	<b>\$13,702,218</b>	
2022 Water Relay	\$1,500,000	\$0	\$0	\$0	\$0	\$1,500,000	
2023 Water Relay	\$645,000	\$1,290,000	\$0	\$0	\$0	\$1,935,000	
2024 Water Relay	\$0	\$860,000	\$1,720,000	\$0	\$0	\$2,580,000	
2025 Water Relay	\$0	\$0	\$992,308	\$2,232,692	\$0	\$3,225,000	
2026 Water Relay	\$0	\$0	\$0	\$1,022,077	\$2,299,673	\$3,321,750	
2027 Water Relay	\$0	\$0	\$0	\$0	\$1,140,468	\$1,140,468	

# Water Distribution System

## Water Distribution Contingency

PROJECT NUMBER: 2023-200-111-0

DSIC Eligible: No

<b>PHASE:</b> Not Applicable
<b>PRIORITY:</b> Not Applicable
<b>PROJECT DESCRIPTION:</b> Water Distribution System contingency pass-through project.
<b>PROJECT JUSTIFICATION:</b> Improved efficiency of capital improvement plan fund management.
<b>RISK(S):</b> No identified risks.
<b>IMPACT ON OPERATIONS:</b> Improved efficiency of capital improvement plan management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$0	\$0	\$0	\$0	



# Wastewater System



# Wastewater System

## 31st Ward Pump Station and Appurtenances - Phase 2

**PROJECT NUMBER:** 2022-424-108-0

**DSIC Eligible:** No

**PHASE:**

Planning

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

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 JUSTIFICATION:**

Both sewage pump stations and the force main that convey flow to the Streets Run Sanitary Trunk Sewer were constructed in the late 1940's and are reaching the end of their useful life. Additionally, past studies suggest this sewershed may be significantly impacted by high levels of infiltration/inflow.

**RISK(S):**

Increased combined sewer overflows and pump station system failures.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

**CASH FLOW SUMMARY**

**FUNDING SOURCE(S)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$958,333	\$726,667	\$613,667	\$7,447,000	\$7,447,000	\$17,192,667	

# Wastewater System

## 6122 and 6150 Mifflin Road Demolition

PROJECT NUMBER: 2022-424-104-0

DSIC Eligible: No

**PHASE:**

Planning

**PRIORITY:**

Safety, Quality of Service

**PROJECT DESCRIPTION:**

This project associated with 31st Ward Pump Station and Appurtences - Phase 2 - providing for the demolition of 6122 and 6150 Mifflin Road.

**PROJECT JUSTIFICATION:**

This project is essential to the completion of the 31st Ward Pump Station and Appurtences project.

**RISK(S):**

Decreased ability to complete existing projects.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$50,000	\$0	\$0	\$0	\$0	\$50,000	

# Wastewater System

## Browns Hill Road Sewer Pump Station Replacement

PROJECT NUMBER: 2022-424-109-0

DSIC Eligible: No

**PHASE:**

Planning

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

Construction of a replacement 160 GPM sanitary sewer pump station, including standby power, safer ingress and egress for routine maintenance, a water supply for equipment wash down and odor control facilities, if required. Additionally, perform a condition assessment of the 4" force main ( approx. 790 l.f.) constructed in 2007, but not utilized and confirm sanitary sewer separation occurred. Additional sewer separation may need to occur prior to modifying the existing diversion chamber.

**PROJECT JUSTIFICATION:**

The existing sanitary sewer pump station has reached the end of its useful life. The replacement station will provide increased operating efficiency and resiliency and improved safety conditions for staff.

**RISK(S):**

If the station is not replaced, pump or wet well failures could occur, which would result in sanitary sewer overflows. Sanitary sewer overflows could result in fines and notice of violations from regulating agencies.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$432,000	\$1,608,000	\$1,880,000	\$0	\$0	\$3,920,000	



# Wastewater System

## Large Diameter Sewer Rehabilitation Program

**PROJECT NUMBER:** 2020-424-101-0, 2020-424-107-0, 2021-424-105-0, 2022-424-110-0, 2024-400-100-0, 2025-400-100-0, 2026-400-100-0, 2027-400-100-0

**DSIC Eligible:** No

**PHASE:**  
Design / Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
Proactive, trenchless rehabilitation of 36" diameter or greater sewer mains to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.

**PROJECT JUSTIFICATION:**  
Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.

**RISK(S):**  
If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

Program Year	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	<b>\$12,774,486</b>	<b>\$2,997,238</b>	<b>\$4,266,000</b>	<b>\$4,897,000</b>	<b>\$4,957,000</b>	<b>\$29,891,724</b>	
2020 Large Diameter Sewer Rehabilitation	\$623,290	\$0	\$0	\$0	\$0	\$623,290	Debt (Revenue Bonds) / DSIC – Wastewater
2021 Large Diameter Sewer Rehabilitation	\$7,136,911	\$0	\$0	\$0	\$0	\$7,136,911	
2022 Large Diameter Sewer Rehabilitation	\$4,536,190	\$522,000	\$0	\$0	\$0	\$5,058,190	
2023 Large Diameter Sewer Rehabilitation	\$478,095	\$1,935,238	\$0	\$0	\$0	\$2,413,333	
2024 Large Diameter Sewer Rehabilitation	\$0	\$540,000	\$3,706,000	\$414,000	\$0	\$4,660,000	
2025 Large Diameter Sewer Rehabilitation	\$0	\$0	\$560,000	\$3,903,000	\$437,000	\$4,900,000	
2026 Large Diameter Sewer Rehabilitation	\$0	\$0	\$0	\$580,000	\$4,100,000	\$4,680,000	
2027 Large Diameter Sewer Rehabilitation	\$0	\$0	\$0	\$0	\$420,000	\$420,000	

# Wastewater System

## M-29 Outfall Improvements

PROJECT NUMBER: 2018-424-103-0

DSIC Eligible: No

<b>PHASE:</b> Construction
<b>PRIORITY:</b> Regulatory Compliance, Quality of Service
<b>PROJECT DESCRIPTION:</b> Modifying diversion chamber, rehabilitating culvert, constructing an endwall, and installing flapgate associated with the M-29 outfall structure.
<b>PROJECT JUSTIFICATION:</b> The M-29 outfall structure is critical infrastructure that has been in jeopardy of failing for several years due to significant structural defects in the existing culvert.
<b>RISK(S):</b> Project close-out phase. The M-29 outfall structure could have failed if not addressed through this project.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$250,000	\$0	\$0	\$0	\$0	\$250,000	

# Wastewater System

## Maytide Storm and Sanitary Sewer System Improvements

**PROJECT NUMBER:** 2017-424-109-0

**DSIC Eligible:** No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue and the realignment of the 10" sanitary sewer on Maytide (Sanderson to Valline).

**PROJECT JUSTIFICATION:**

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, an inspection of the 10" sanitary sewer on Maytide Street revealed structural and construction defects.

**RISK(S):**

Continual degradation to a steep slope could result in property damage and an increased cost to stabilize.

**IMPACT ON OPERATIONS:**

Increased operating reliability.

### CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$118,027	\$4,026,497	\$1,957,785	\$0	\$0	\$6,102,309	

# Wastewater System

## Queenston Sewer Improvements

**PROJECT NUMBER:** 2019-424-103-2

**DSIC Eligible:** No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Quality of Service

**PROJECT DESCRIPTION:**

Removal of a combined sewer diversion chamber and installation of new sewer infrastructure, which will result in the separation of the sewershed.

**PROJECT JUSTIFICATION:**

The existing sewer infrastructure (both storm and sanitary) have significant structural defects, which are located under a large structure in a paper street over 40 feet deep.

**RISK(S):**

The existing sewer infrastructure (both storm and sanitary) have significant structural defects, which if not mitigated, could result in property damage and increased costs.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

**FUNDING  
SOURCE(S)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$2,210,550	\$243,203	\$0	\$0	\$0	\$2,453,753	<b>Debt (Revenue Bonds)</b>

# Wastewater System

## Sewer Reconstruction Program

**PROJECT NUMBER:** 2022-424-100-0, 2023-400-100-0, 2024-400-101-0, 2025-400-101-0, 2026-400-101-0, 2027-400-101-0

**DSIC Eligible:** Yes

**PHASE:**  
Construction / Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Quality of Service

**PROJECT DESCRIPTION:**  
Reconstruction of existing sewers, manholes, catch basins, and inlets due to emergency situations or pipe failures.

**PROJECT JUSTIFICATION:**  
The existing sewer system is aging and immediate repairs are required.

**RISK(S):**  
The Authority may be subject to related fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

Program Year	<u>CASH FLOW SUMMARY</u>						<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	<b>\$2,691,769</b>	<b>\$1,810,000</b>	<b>\$1,810,000</b>	<b>\$1,886,458</b>	<b>\$2,701,330</b>	<b>\$10,899,557</b>	
2021 Sewer Reconstruction	\$200,000	\$0	\$0	\$0	\$0	\$200,000	Debt (Revenue Bonds) / DSIC – Wastewater
2022 Sewer Reconstruction	\$1,456,849	\$0	\$0	\$0	\$0	\$1,456,849	
2023 Sewer Reconstruction	\$1,034,920	\$775,080	\$0	\$0	\$0	\$1,810,000	
2024 Sewer Reconstruction	\$0	\$1,034,920	\$775,080	\$0	\$0	\$1,810,000	
2025 Sewer Reconstruction	\$0	\$0	\$1,034,920	\$775,080	\$775,080	\$2,585,080	
2026 Sewer Reconstruction	\$0	\$0	\$0	\$1,111,378	\$833,622	\$1,945,000	
2027 Sewer Reconstruction	\$0	\$0	\$0	\$0	\$1,092,628	\$1,092,628	

# Wastewater System

## Sewers Under Structures Program

**PROJECT NUMBER:** 2017-424-110-0,  
 2020-424-104-0 / 1,  
 2022-424-107-0, 2023-400-101-0, 2024-400-102-0, 2025-400-102-0, 2026-400-102-0, 2027-400-102-0  
**DSIC eligible** No

<b>PHASE:</b> Design / Not Started
<b>PRIORITY:</b> Regulatory Compliance, Safety, Quality of Service
<b>PROJECT DESCRIPTION:</b> Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.
<b>PROJECT JUSTIFICATION:</b> In recent years, there has been an increasing rate of failure of this asset type due to limited accessibility and pipe age. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.
<b>RISK(S):</b> Failure of this asset type could result in increased replacement cost, and increased service outages or bypass pumping.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

<u>Program</u> <u>Year</u>	<u>CASH FLOW SUMMARY</u>						<u>FUNDING</u> <u>SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	<b>\$6,786,030</b>	<b>\$2,373,663</b>	<b>\$2,422,730</b>	<b>\$3,530,383</b>	<b>\$3,386,507</b>	<b>\$18,499,314</b>	
2018 Sewers Under Structures	\$1,030,897	\$1,300,707	\$0	\$0	\$0	\$2,331,604	Debt (Revenue Bonds) / DSIC – Wastewater
2020 Sewers Under Structures	\$5,480,280	\$672,368	\$0	\$0	\$0	\$6,152,648	
2022 Sewers Under Structures	\$226,103	\$117,647	\$2,028,730	\$831,270	\$0	\$3,203,750	
2023 Sewers Under Structures	\$48,750	\$234,191	\$111,059	\$2,303,238	\$672,762	\$3,370,000	
2024 Sewers Under Structures	\$0	\$48,750	\$234,191	\$111,059	\$2,303,238	\$2,697,238	
2025 Sewers Under Structures	\$0	\$0	\$48,750	\$234,191	\$111,059	\$394,000	
2026 Sewers Under Structures	\$0	\$0	\$0	\$50,625	\$243,199	\$293,824	
2027 Sewers Under Structures	\$0	\$0	\$0	\$0	\$56,250	\$56,250	

# Wastewater System

## Small Diameter Sewer Rehabilitation Program

**PROJECT NUMBER:** 2020-424-108-0, 2020-424-106-0 / 1 / 2, 2021-424-101-0 / 1/ 2, 2021-424-108-0/ 1/ 2/ 3, 2024-400-103-0, 2025-400-102-0, 2026-400-103-0, 2027-400-103-0, Unidentified

**DSIC Eligible:** Yes

**PHASE:**  
Design, Construction, Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**  
Proactive, trenchless rehabilitation of sewer mains (36" diameter and less) to restore structural integrity, reduce root intrusion, and reduce infiltration and inflow; including cleaning and pre and post construction CCTV inspections.

**PROJECT JUSTIFICATION:**  
Provides the Authority with a means to address several moderate/major structural defects in pipe segments prior to complete failure. This trenchless pipe renewal method renews the asset, eliminates disruptive excavation, and is more cost effective than replacement.

**RISK(S):**  
If moderate/major structural defects are not proactively addressed, complete failure will eventually occur and excavation will be required. Any complete failure that occurs will result in dramatically increased expenditures for repair.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

Program Year	CASH FLOW SUMMARY						FUNDING SOURCE(S)
	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total	
	<b>\$24,363,045</b>	<b>\$17,657,219</b>	<b>\$14,629,597</b>	<b>\$27,990,468</b>	<b>\$36,426,240</b>	<b>\$121,066,569</b>	
2020 Small Diameter Sewer Rehabilitation Contract 2 Defined Sites	\$731,123	\$0	\$0	\$0	\$0	\$731,123	Debt (Revenue Bonds) / PENNVEST
2021 Small Diameter Rehabilitation	\$1,928,755	\$0	\$0	\$0	\$0	\$1,928,755	
2022 Small Diameter Rehabilitation	\$7,469,189	\$0	\$0	\$0	\$0	\$7,469,189	
2023 Small Diameter Rehabilitation	\$11,723,978	\$5,736,816	\$0	\$0	\$0	\$17,460,794	
2024 Small Diameter Rehabilitation	\$2,510,000	\$11,920,403	\$9,339,597	\$0	\$0	\$23,770,000	
2025 Small Diameter Rehabilitation	\$0	\$0	\$2,590,000	\$12,236,474	\$9,583,526	\$24,410,000	
2026 Small Diameter Rehabilitation	\$0	\$0	\$2,700,000	\$12,813,994	\$10,046,006	\$25,560,000	
2027 Small Diameter Rehabilitation	\$0	\$0	\$0	\$2,940,000	\$13,796,708	\$16,736,708	
2028 Small Diameter Rehabilitation	\$0	\$0	\$0	\$0	\$3,000,000	\$3,000,000	

# Wastewater System

## Wastewater Contingency

PROJECT NUMBER: 2023-400-102-0

DSIC Eligible: No

**PHASE:**  
Not Applicable

**PRIORITY:**  
Not Applicable

**PROJECT DESCRIPTION:**  
Wastewater contingency pass-through project.

**PROJECT JUSTIFICATION:**  
Improved efficiency of capital improvement plan fund management.

**RISK(S):**  
No identified risks.

**IMPACT ON OPERATIONS:**  
Improved efficiency of capital improvement plan management.

### CASH FLOW SUMMARY

### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$0	\$0	\$0	\$0	\$0	\$0	





# Stormwater



# Stormwater System

## Braywood Stormwater Improvements

PROJECT NUMBER: 2022-424-105-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service,

**PROJECT DESCRIPTION:**

Stormwater detention system in the right-of-way in and around Braywood Way to increase stormwater control and mitigate flooding experienced by residents. Infrastructure could include permeable pavement, bioswales, subsurface detention, etc. depending on design determinations. This project is subject to a cost share between the Pittsburgh Water and Sewer Authority and City of Pittsburgh.

**PROJECT JUSTIFICATION:**

There's a low point on Braywood Way that experiences persistent, severe flooding. This system is undersized and deteriorating, keeping up with minor precipitation events but the majority cause flooding.

**RISK(S):**

Risks associated with not completing this project include poor level of service.

**IMPACT ON OPERATIONS:**

This project would decrease the need for persistent catch basin cleaning in this location.

### CASH FLOW SUMMARY

**FUNDING  
SOURCE(S)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$434,625	\$439,375	\$0	\$0	\$0	\$874,000	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Bus Rapid Transit Phase 2

PROJECT NUMBER: 2023-500-100-0

DSIC Eligible: No

**PHASE:**

Planning

**PRIORITY:**

Safety, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**

The betterments in phase 2 currently includes the stormwater/green infrastructure (GI) improvements in the Uptown Neighborhood.

**PROJECT JUSTIFICATION:**

The construction of the BRT Project requires that certain facilities owned and/or operated by PWSA be removed, replaced, and/or relocated.

**RISK(S):**

Could result in PWSA being 100% responsible for the removal, replacement, and/or relocation of certain facilities owned and/or operated by PWSA.

**IMPACT ON OPERATIONS:**

Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$500,000	\$500,000	\$500,000	\$0	\$1,500,000	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Bus Rapid Transit Stormwater Infrastructure Improvements

PROJECT NUMBER: 2020-GI-100-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Safety, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**

A cost share with the City of Pittsburgh'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.

**PROJECT JUSTIFICATION:**

This project will help slow or reduce runoff into the combined sewer system during wet weather events.

**RISK(S):**

Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could cause issues during wet weather events.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

### CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$71,382	\$785,634	\$703,638	\$0	\$0	\$1,560,654	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Catch Basin and Inlet Replacement Program

**PROJECT NUMBER:** 2020-424-107-0, 2020-424-106-0/ 1/ 2, 2021-424-107-0, 2022-424-106-0, 2024-500-100-0, 2025-500-100-0, 2026-500-100-0, 2027-500-100-0, Unidentified

**DSIC Eligible:** No

**PHASE:**  
Construction / Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Strategic replacement of catch basins and storm inlets throughout the system to replace failed units, stormwater control reliability, and minimize disturbance to the community.

**PROJECT JUSTIFICATION:**  
By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus saving in overall replacement cost.

**RISK(S):**  
Overland and street flooding could occur due to a defective or undersized catch basin or storm inlet, creating a public health and safety hazard during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased operating reliability.

<u>Program</u> <u>Year</u>	<u>CASH FLOW SUMMARY</u>						<u>FUNDING</u> <u>SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
	\$11,539,877	\$16,007,303	\$14,436,109	\$14,867,221	\$15,308,750	\$72,159,260	PENNVEST /Debt (Revenue Bonds)
2022 Catch Basin and Inlet Replacement	\$2,803,513	\$0	\$0	\$0	\$0	\$2,803,513	
2023 Catch Basin and Inlet Replacement	\$8,736,364	\$4,963,636	\$0	\$0	\$0	\$13,700,000	
2024 Catch Basin and Inlet Replacement	\$0	\$11,043,667	\$3,067,333	\$0	\$0	\$14,111,000	
2025 Catch Basin and Inlet Replacement	\$0	\$0	\$11,368,776	\$3,165,554	\$0	\$14,534,330	
2026 Catch Basin and Inlet Replacement	\$0	\$0	\$0	\$11,701,667	\$3,248,333	\$14,950,000	
2027 Catch Basin and Inlet Replacement	\$0	\$0	\$0	\$0	\$12,060,417	\$12,060,417	

# Stormwater System

## Dragoon Way Stormwater Improvements

**PROJECT NUMBER:** 2020-424-103-0

**DSIC Eligible:** No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

This would involve upsizing stormwater infrastructure as well as road paving on Dragoon Way. This project is subject to a cost share between the Pittsburgh Water and Sewer Authority and City of Pittsburgh.

**PROJECT JUSTIFICATION:**

This area experiences significant roadway and property flooding. Runoff flows down Dragoon Way and through multiple Adelphia Street properties, flooding Adelphia Street. PWSA currently owns stormwater infrastructure on Adelphia Street that is undersized and deteriorating.

**RISK(S):**

Risks associated with not completing this project include poor level of service.

**IMPACT ON OPERATIONS:**

Reduced need for catch basin cleaning after significant precipitation events.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$983,000	\$95,625	\$0	\$0	\$0	\$1,078,625	Debt (Revenue Bonds)

# Stormwater System

## Fleury Way Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2021-424-102-0

**DSIC Eligible:** No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Construction of storm sewer infrastructure to address persistent and severe street flooding and roadway damage. Project will include installing approximately 500 ft of 18" storm sewers and 4 new catch basins as well as inverting the crown of the road and adding proper curbing for optimal drainage. This project is subject to a cost share between the Pittsburgh Water and Sewer Authority and City of Pittsburgh.

**PROJECT JUSTIFICATION:**  
After field assessment and review, the stormwater group ranked this issue as a "high priority" because of the severity of road degradation and persistent street flooding caused by lack of stormwater infrastructure and improper road design. This issue is located in the A-42 Green First sewershed.

**RISK(S):**  
Continued road degradation and persistent flooding.

**IMPACT ON OPERATIONS:**  
4 additional inlets, operations will need to be added to the cleaning schedule.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$476,212	\$0	\$0	\$0	\$0	\$476,212	

# Stormwater System

## Four Mile Run Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-102-0

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
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.

**PROJECT JUSTIFICATION:**  
This project will separate wet weather flow being directly discharged into the Authority's combined sewer system.

**RISK(S):**  
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could create issues during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$645,557	\$4,500,108	\$8,723,924	\$6,171,203	\$0	\$20,040,792	



# Stormwater System

## Haverhill Street Improvements Project

PROJECT NUMBER: 2022-424-102-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

This project will capture and redirect an existing nuisance groundwater seep into retention/slow release subsurface infrastructure, either in the form of a perforated pipe and gravel bed or a retention tank. The project will also involve landslide stabilization to prevent current persistent sediment accumulation in the downstream sewer and green infrastructure as well as associated roadway restoration. This project is subject to a cost share between the Pittsburgh Water and Sewer Authority and City of Pittsburgh.

**PROJECT JUSTIFICATION:**

There is currently an unmanaged groundwater seep flowing down Haverhill Street, flooding properties, depositing significant amounts of sediment into PWSA's sewer system and a PWSA green infrastructure site (Oakwood and Batavia). This project would decrease private property flooding, reduce the amount of sediment entering the sewer system, save PWSA maintenance costs involved with removing sediment from nearby catch basins and green infrastructure and stop continued green infrastructure system degradation caused by this seep.

**RISK(S):**

Risk of persistent depositing of sediment into PWSA's sewer system.

**IMPACT ON OPERATIONS:**

This would decrease maintenance needs for both the green infrastructure maintenance contract as well as the catch basin cleaning contract.

CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$1,003,900	\$104,500	\$0	\$0	\$0	\$1,108,400	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Lawn and Ophelia

**PROJECT NUMBER:** 2017-424-104-0

**DSIC Eligible:** No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Regulatory Compliance, Organizational Goals

**PROJECT DESCRIPTION:**  
Project is located in the South Oakland neighborhood in the City of Pittsburgh and is a tributary to the M-19B outfall. This project is intended to be a community gathering space combined with stormwater management features.

**PROJECT JUSTIFICATION:**  
It is anticipated that 1.9 impervious acres from neighboring roads and roofs can be managed.

**RISK(S):**  
Risk of service disruption.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$203,741	\$0	\$0	\$0	\$0	\$203,741	

# Stormwater System

## Martin Luther King Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-104-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

Installation of regenerative bioswale and underground detention facilities to capture and detain impervious acres from the adjacent streets and upstream separate storm sewers, which currently discharges into the combined sewer located in M-19.

**PROJECT JUSTIFICATION:**

This project will help slow or reduce runoff into the combined sewer system during wet weather events.

**RISK(S):**

Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could cause issues during wet weather events.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$3,096,867	\$1,324,108	\$0	\$0	\$0	\$4,420,975	

# Stormwater System

## Maryland Avenue Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2017-424-101-0

**DSIC Eligible:** No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Permeable paver based GSI project to manage approximately 5.3 acres of impervious acres for 1.5" runoff event.

**PROJECT JUSTIFICATION:**  
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

**RISK(S):**  
Risk of flooding and service disruption.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$6,925	\$0	\$0	\$0	\$0	\$6,925	Debt (Revenue Bonds)

# Stormwater System

## MS4 Permit PRP Plan Sediment Reduction Project

PROJECT NUMBER: 2023-500-101-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
Pollutant Reduction Plan (PRP) project to reduce sediment and phosphate levels from entering designated impaired streams per the MS4 permit.

**PROJECT JUSTIFICATION:**  
The MS4 permit requires a reduction of sediment and phosphate loading from baseline levels.

**RISK(S):**  
Failure to meet future regulatory requirements.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	Debt (Revenue Bonds)
Annual Allocation	\$173,000	\$605,000	\$307,500	\$0	\$0	\$1,085,500	

# Stormwater System

## Saw Mill Run Municipal Separate Storm Sewer System Compliance

PROJECT NUMBER: 2025-500-101-0

DSIC Eligible: No

**PHASE:**

Planning

**PRIORITY:**

Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**

Identifying and completing projects related to Municipal Separate Storm Sewer System (MS4) compliance.

**PROJECT JUSTIFICATION:**

This project is necessary to become compliant with MS4 regulatory requirements.

**RISK(S):**

The timeline to complete the MS4 compliance projects could take longer than expected.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

### CASH FLOW SUMMARY

FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$0	\$500,000	\$1,500,000	\$1,500,000	\$3,500,000	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Saw Mill Run Watershed Improvements

PROJECT NUMBER: 2020-424-109-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

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.

**PROJECT JUSTIFICATION:**

This project will help to comply with regulatory obligations by reducing pollutants and controlling CSO/SSOs.

**RISK(S):**

It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$850,000	\$150,000	\$0	\$0	\$0	\$1,000,000	

# Stormwater System

## Southside Flats Sewer Separation

PROJECT NUMBER: 2021-424-106-0

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

Separation of 17 acres of combined sewer through the construction of storm drain along Wharton Street to 18th Street.

**PROJECT JUSTIFICATION:**

This project will help slow or reduce runoff into the combined sewer system during wet weather events.

**RISK(S):**

Community members are concerned about disruptions during construction and potential rooftop disconnect costs.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

### CASH FLOW SUMMARY

**FUNDING SOURCE(S)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$3,327,529	\$2,232,587	\$0	\$0	\$0	\$5,560,116	<b>Debt (Revenue Bonds)</b>



# Stormwater System

## Southside Stormwater Infrastructure Improvements

**PROJECT NUMBER:** 2019-GI-100-0

**DSIC Eligible:** No

**PHASE:**

Design

**PRIORITY:**

Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

The Southside Green / Stormwater project is located in the M-16 sewershed, which discharges approximately 103MG of CSOs in a typical year as it is defined in the current system model. Additionally, there are 15 known surface streams/seeps within the park that appear to connect into the combined sewer system. The project will focus on stormwater management source control opportunities within Southside Park. The project will look at separating the stormwater runoff from the park and road right-of-way areas. It will connect through a new storm sewer discharge to be built under South 21st Street to the Monongahela River. The project will detain and slowly return the stormwater runoff to the combined sewer system.

**PROJECT JUSTIFICATION:**

This project will help comply with regulatory requirements by reducing CSOs.

**RISK(S):**

It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

**CASH FLOW SUMMARY**

**FUNDING SOURCE(S)**

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$2,029,140	\$2,703,667	\$0	\$0	\$0	\$4,732,807	<b>Debt (Revenue Bonds)</b>

# Stormwater System

## Stewart Avenue Stormwater Infrastructure Project

PROJECT NUMBER: 2022-424-1010

DSIC Eligible: No

**PHASE:**

Design

**PRIORITY:**

Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**

Overland stormwater runoff during larger precipitation events in the Stewart Avenue area contribute to downstream flooding along Saw Mill Run Blvd, flooding of nearby private properties, street flooding, and roadway damage. Catch basins and storm inlets once discharged to an open drainage channel along Stewart Avenue, however this is no longer operational as the road was recently paved and widened, eliminating the channel. Recognizing that the Saw Mill Run stream corridor is overwhelmed during relatively small rainfall events, PWSA desires to evaluate alternatives with an emphasis toward source control measures and other green strategies where peak flows from the Stewart Avenue runoff area can be possibly detained and mitigated. This project is subject to a cost share between the Pittsburgh Water and Sewer Authority and City of Pittsburgh.

**PROJECT JUSTIFICATION:**

This project is necessary to increase stormwater service and control in the area, which is currently lacking adequate stormwater infrastructure.

**RISK(S):**

Failing to complete this project will lead to persistent private property and roadway flooding, chronic depreciation of roadway conditions, and continued worsening flooding and impairment of Saw Mill Run.

**IMPACT ON OPERATIONS:**

Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$1,400,000	\$1,515,389	\$894,444	\$0	\$0	\$3,809,833	

# Stormwater System

## Thomas and McPherson Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-106-0

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
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 a tributary to the A-42 combined sewer outfall.

**PROJECT JUSTIFICATION:**  
This project will help slow or reduce runoff into the combined sewer system during wet weather events.

**RISK(S):**  
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$854,905	\$0	\$0	\$0	\$0	\$854,905	

# Stormwater System

## Volunteer's Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-104-0/ 1

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Project is located in the Carrick neighborhood of the City of Pittsburgh and is a tributary to Saw Mill Run. Installation of green infrastructure within the park to reduce sediment and other pollutant loads.

**PROJECT JUSTIFICATION:**  
Required for compliance with the MS4 permit and EPA TMDL requirements. Project will also detain stormwater to reduce downstream flooding in Saw Mill Run.

**RISK(S):**  
It may be difficult to comply with certain regulatory obligations prior to the completion of the project.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$413,125	\$0	\$0	\$0	\$0	\$413,125	

# Stormwater System

## Wet Weather Program Projects

PROJECT NUMBER: 2023-500-102-0

DSIC Eligible: No

**PHASE:**  
Not Started

**PRIORITY:**  
Regulatory Compliance, Safety, Operating Efficiency, Quality of Service, Organizational Goals, Social Impact

**PROJECT DESCRIPTION:**  
This project is for improvements to the sewer system facilities to bring combined sewer overflows into compliance with the negotiated consent decree and to remediate sanitary sewer overflows.

**PROJECT JUSTIFICATION:**  
This project is required to ensure PWSA meets regulatory requirements related to wet weather flow being directly discharged into the PWSA's combined sewer system.

**RISK(S):**  
Failure to meet future regulatory requirements.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$500,000	\$2,500,000	\$10,000,000	\$10,000,000	\$10,000,000	\$33,000,000	

# Stormwater System

## Wightman Park Phase 2 Project

PROJECT NUMBER: 2017-424-105-0 / 1

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service, Social Impact

**PROJECT DESCRIPTION:**  
Project is located in the Squirrel Hill neighborhood of the City of Pittsburgh and is a tributary to the M-29 outfall. Stormwater management within the park itself as well as the necessary piping or inlet work to direct up to 3.25 impervious acres from the adjacent streets into the park. The Wightman Park project along with future street bioswale projects are expected to increase the impervious acres captured as well as alleviate reported sewer basement backups in the neighborhood around Wightman Park.

**PROJECT JUSTIFICATION:**  
2.24 million gallons of stormwater runoff will be managed through this project in a typical year, producing downstream CSO reduction. The project will also improve the performance of adjacent, downstream sewers through peak flow reduction.

**RISK(S):**  
Risk of fines due to sewer overflows or for non-compliance as outlined in the Consent Order and Agreement.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$182,166	\$0	\$0	\$0	\$0	\$182,166	

# Stormwater System

## Woodland Road Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-108-0

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
Bioretention based GSI project to manage approximately 7 acres of impervious acres for 1.5" runoff event. Project location is in A-22 sewershed on the campus of Chatham University adjacent to Woodland Road

**PROJECT JUSTIFICATION:**  
The project purpose is to reduce combined sewer overflows at the downstream A-22 outfall while also improving performance of the local combined sewer system that has experienced surcharge and flooding during intense rain events in downstream areas of Shadyside.

**RISK(S):**  
Risk of service disruption.

**IMPACT ON OPERATIONS:**  
Increased system reliability and improved system management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$245,256	\$0	\$0	\$0	\$0	\$245,256	Debt (Revenue Bonds)

# Stormwater System

## Woods Run Stream Removal Stormwater Infrastructure Improvements

PROJECT NUMBER: 2017-424-108-0 / 1

DSIC Eligible: No

**PHASE:**  
Construction

**PRIORITY:**  
Safety, Operating Efficiency, Quality of Service

**PROJECT DESCRIPTION:**  
This project will redirect an existing stream inflow location into a detain and slow release subsurface storage facility. The stream base and wet weather flow currently discharge directly into a 36" diameter combined sewer on Mairdale Avenue.

**PROJECT JUSTIFICATION:**  
This project will separate wet weather flow being directly discharged into the PWSA's combined sewer system.

**RISK(S):**  
Wet weather flow may continue to flow into the combined sewer system prior to the completion of the project, which could in issues during wet weather events.

**IMPACT ON OPERATIONS:**  
Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	<u>Debt (Revenue Bonds)</u>
<b>Annual Allocation</b>	\$1,385,725	\$1,364,127	\$819,206	\$0	\$0	\$3,569,058	



# Stormwater System

## Stormwater Contingency

PROJECT NUMBER: 2023-500-103-0

DSIC Eligible: No

**PHASE:**  
Not Applicable

**PRIORITY:**  
Not Applicable

**PROJECT DESCRIPTION:**  
Stormwater contingency pass-through project.

**PROJECT JUSTIFICATION:**  
Improved efficiency of capital improvement plan fund management.

**RISK(S):**  
No identified risks.

**IMPACT ON OPERATIONS:**  
Improved efficiency of capital improvement plan management.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$0	\$0	\$0	\$0	\$0	Debt (Revenue Bonds)



# Miscellaneous



# Miscellaneous

## 2023 Capital Project Reclassification

PROJECT NUMBER: 2023-600-100-0

DSIC Eligible: No

<b>PHASE:</b> Not Applicable
<b>PRIORITY:</b> Operating Efficiency, Organizational Goals
<b>PROJECT DESCRIPTION:</b> Annual capital project reclassification project.
<b>PROJECT JUSTIFICATION:</b> This project is required to reclassify operating costs related to urgent water replacements, urgent sewer replacements, and manhole and point repairs.
<b>RISK(S):</b> Failure to fully capitalize PWSA assets.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

<u>CASH FLOW SUMMARY</u>							<u>FUNDING SOURCE(S)</u>
	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$8,639,316	\$0	\$0	\$0	\$0	\$8,639,316	<b>Debt (Revenue Bonds)</b>

# Miscellaneous

## New Headquarters and Operations Facility

PROJECT NUMBER: 2023-600-101-0

DSIC Eligible: No

<b>PHASE:</b> Planning
<b>PRIORITY:</b> Operating Efficiency, Quality of Service, Organizational Goals
<b>PROJECT DESCRIPTION:</b> PWSA is searching for an area to build a new headquarters location that would also include a space for the operations division.
<b>PROJECT JUSTIFICATION:</b> A new location would provide additional space that is needed as a result of increased operations.
<b>RISK(S):</b> Increased operational challenges.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

#### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$2,500,000	\$15,000,000	\$15,000,000	\$32,500,000	\$0	\$50,000,000	<b>Debt (Revenue Bonds)</b>

# Miscellaneous

## Utility Cost Shares

**PROJECT NUMBER:** 2023-600-102-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Started
<b>PRIORITY:</b> Operating Efficiency, Quality of Service, Organizational Goals
<b>PROJECT DESCRIPTION:</b> This project will fund future cost sharing projects.
<b>PROJECT JUSTIFICATION:</b> Cost sharing projects can provide a savings to the Authority.
<b>RISK(S):</b> Cost sharing projects have the potential to be delayed due to coordination issues.
<b>IMPACT ON OPERATIONS:</b> Increased operating flexibility and reliability.

### CASH FLOW SUMMARY

#### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	<b>\$300,000</b>	<b>\$500,000</b>	<b>\$500,000</b>	<b>\$500,000</b>	<b>\$500,000</b>	<b>\$2,300,000</b>	<b>Debt (Revenue Bonds)</b>

# Miscellaneous

## Miscellaneous Contingency

**PROJECT NUMBER:** 2023-600-103-0

**DSIC Eligible:** No

<b>PHASE:</b> Not Applicable
<b>PRIORITY:</b> Not Applicable
<b>PROJECT DESCRIPTION:</b> Miscellaneous contingency pass-through project.
<b>PROJECT JUSTIFICATION:</b> Improved efficiency of capital improvement plan fund management.
<b>RISK(S):</b> No identified risks.
<b>IMPACT ON OPERATIONS:</b> Improved efficiency of capital improvement plan management.

### CASH FLOW SUMMARY

### FUNDING SOURCE(S)

	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>Total</u>	
<b>Annual Allocation</b>	\$0	\$0	\$0	\$0	\$0	\$0	<b>Debt (Revenue Bonds)</b>

# Exhibit EB-5



## Financial Management Policy

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### **PURPOSE:**

This policy provides a framework to maintain the PWSA's financial integrity, while serving the long-term interests of its customers and other constituencies. The PWSA recognizes that maintaining financial integrity is critical to accomplishing its goals and discharging the PWSA's customer and public service responsibilities. This policy establishes processes to be used by the PWSA Board of Directors to define the strategic financial plans for the PWSA and to approve specific financial program goals, objectives, and associated budgets.

### **SCOPE:**

This Financial Management Policy applies to all financial practices within the PWSA.

### **POLICY:**

In seeking to fulfill its customer and public service objectives, the PWSA will maintain a high level of financial stability and will seek not to compromise long-term financial integrity to achieve short-term benefits. This philosophy will ensure the sustainable financial health of the organization.

The Chief Executive Officer is authorized to engage financial service providers and other related professional service providers, if deemed necessary and appropriate by the Chief Executive Officer in consultation with the Chief Financial Officer or designee, considering the expertise and cost of any such service provider. The engagement of professional service providers will adhere to applicable policies regarding procurements enacted by the PWSA. The Executive Director will provide an annual report to the Board listing all contracts into which the PWSA entered pursuant to this paragraph.

**Debt Service Coverage:** To provide a margin of safety and flexibility in the PWSA's financial affairs, revenue levels will be set to target a minimum debt service coverage ratio of 1.35x on the total debt service for all senior debt obligations and 1.15x on the annual debt service for all subordinate debt obligations. In the event overall debt service coverage is projected to be below 1.35x for any fiscal year, the Board will promptly implement a plan, to be recommended by staff, which could include rate increases, cost reductions or other means to achieve a debt service coverage ratio of 1.35x over a maximum three-year (3) time period. The plan will take into consideration approved and pending rate increases with the Pennsylvania Public Utilities Commission.

**Rates and Prices:** The PWSA will design rates and prices that are intended to ensure the PWSA meets its financial obligations, recovers reasonable costs in a timely manner, and maintains financial integrity as required by regulatory and contractual requirements. These rates will provide a stable and predictable flow of revenues to maintain appropriate levels of revenue to achieve the PWSA's goals. Revenue levels will be evaluated in consideration of, but not limited to, bond ratings, capital funding requirements, current business conditions, economic



projections, and consumption estimates, delays inherent in the regulatory process, and the projected size and frequency of necessary rate adjustments. These revenues will be adequate to cover operating and maintenance expenses, debt service, covenanted debt service reserves, liquidity requirements, and equity funding for the capital program. Rates and Prices for the PWSA's water and wastewater services will be based on the current tariff filing with the Public Utility Commission (PUC).

**Sources of Financing:** The PWSA may use a combination of equity and debt to finance capital additions to the system such that both current and future customers are allocated an equitable portion of the costs. The PWSA may borrow for capital projects when it is appropriate to spread the costs of capital assets over an approximation of their useful lives.

- Capital market considerations require an equity base to support financing. The PWSA will build equity during those periods when major capital projects are not being undertaken by financing capital projects from revenues. In this way, the PWSA will build equity sufficient to maintain financial integrity, ensure access to the debt markets, and provide for the growing needs of customers.
- As appropriate, the PWSA will evaluate mechanisms to restructure or refinance debt. PWSA will continually evaluate financing opportunities that achieve the objective of lowering the overall cost of capital for ratepayers while also not increasing risks within the debt portfolio.

**Pay-As-You-Go Funding and Cash Reserves:** The PWSA will adopt the following financial goals to reduce the long-term borrowing requirements of capital projects in addition to providing for maximum liquidity flexibility.

- As part of the annual capital budgeting process, financial performance will be evaluated with the goal of funding at least ten (10) percent of capital expenditures not supported by grants or intergovernmental aid from pay-as-you-go funding as measured on a five-year basis.
- Maintain cash reserves, including the operating reserves, rate stabilization fund, and revenue fund at a level of 100 days cash on hand with the goal of increasing to over 300 days over the next five (5) years.

**Variable-Rate Financing:** The variable-rate debt limit is ten percent (10%) of total capitalization, long-term debt plus capital employed as presented periodically in the PWSA's financial statements. Variable-rate debt that is hedged by derivative products, such as interest rate swap agreements, will not be considered variable-rate debt when calculating the variable-rate limit. The PWSA will be very cautious about using variable-rate debt because of its increased risk potential. Variable-rate debt will only be used to provide flexibility in its overall capital program and to manage its overall interest rate exposure. In these instances, the Board must be educated on why the use of variable-rate is preferred over fixed rate debt. The Board must ultimately approve the use of variable-rate debt.

**Debt Service Reserves:** The amount of debt service requirements for each bond issuance will be governed by the existing Bond Indenture and will support the marketing goals of the bond issue. As allowed in the Restated and Amended Indenture, the PWSA can either secure bonds as a part of the Common Debt Service Reserve Fund or with a Series Debt

Service Reserve Fund after considering the financial and market implications.

**PLANNING:**

**Business Plan/Budget Planning:** The PWSA will prepare a business plan/budget to be submitted for Board approval before the start of each fiscal year. The business plan/budget will include the organization's goals and objectives and will describe the projects, products and services that comprise a five-year (5) forecast for the capital improvement plan and a three-year (3) forecast for the operating budget:

- Operating and maintenance expenses.
- Capital expenditures.
- Capital funding sources.
- Operating and other reserve requirements.
- Debt service requirements.

This information will be provided in appropriate detail to the PWSA staff.

Adoption of the business plan/budget authorizes the Chief Executive Officer to complete work plans and make associated expenditures within budgets as provided for in accordance with Board policies. The resolution adopting the business plan/budget will establish the capital and operating budgets for the upcoming fiscal year. Such amounts may not be exceeded without Board approval. Approval of the business plan constitutes authorization to proceed with capital projects included in year one (1) of the plan and establishes the projects' respective lifetime budgets. The resolution adopting the business plan/budget also will include guidelines for authorizing capital spending and reporting requirements for business plan/budget results.

**Quarterly Business Plan/Budget Update:** The Chief Executive Officer will provide quarterly updates that include indicators of year-to-date operational and financial performance, progress toward key goals, and financial performance projections.

# Exhibit EB-6

**The Pittsburgh Water and Sewer Authority Debt Summary  
Outstanding Bonds and Loans Payable (\$000's)**



As of February 1, 2023

	A	B	C	D	E	F	G	H	I	J	K	L
<b>Senior Lien</b>												
Series Name	Date of Issue	Date of Maturity	Amount Issued	Amount Outstanding	Coupon Rate / Bank Index	Fixed Rate Swap (Paid)	Variable Swap Rate (Received)	Net Rate	Discount at Issuance	Premium at Issuance	Issuance Expenses <sup>1</sup>	Net Proceeds
Series B of 1998 <sup>2</sup>	Mar-1998	9/1/2030	\$ 36,440	\$ 70,011	5.18%	N/A	N/A	N/A	\$ -	\$ -	\$ -	\$ 32,400
Series 2013A	Dec-2013	9/1/2033	130,215	59,230	0.75%-5.00%	N/A	N/A	N/A	-	10,903	798	127,682
Series 2013B	Dec-2013	9/1/2040	86,695	38,760	3.00%-5.25%	N/A	N/A	N/A	-	3,926	553	90,068
Series 2017A	Dec-2017	9/1/2032	159,795	115,960	3.00%-5.00%	N/A	N/A	N/A	-	23,374	1,778	181,391
Series 2017C-1 (JPM Swap) <sup>3,4</sup>	Dec-2017	9/1/2039	72,748	72,748	SIFMA + .65%	3.784% + 0.118%	SIFMA	4.5520%	-	-	693	72,054
Series 2017C-2 (MLCS Swap) <sup>3,4</sup>	Dec-2017	9/1/2039	72,748	72,748	SIFMA + .65%	3.77% + 0.118%	SIFMA	4.5380%	-	-	693	72,054
Series 2017C-3 (JPM Swap) <sup>3,4</sup>	Dec-2017	9/1/2040	71,225	71,225	SIFMA + .65%	3.826% + 0.118%	SIFMA	4.5935%	-	-	679	70,546
Series 2017C-4 (Unhedged) <sup>5</sup>	Dec-2017	9/1/2035	2,085	2,085	SIFMA + .65%	N/A	N/A	2.5000%	-	-	20	2,065
Series 2019A	July-2019	9/1/2044	109,855	105,145	5.00%	N/A	N/A	N/A	-	22,468	1,123	131,200
Series 2020B	Dec-2020	9/1/2050	91,520	91,520	3.00%-5.00%	N/A	N/A	N/A	-	16,665	1,185	107,000
Series 2022A	Nov-2022	9/1/2052	44,550	44,550	5.00%-5.50%	N/A	N/A	N/A	-	986	537	45,537
<b>Total Senior</b>				<b>\$ 743,982</b>								

<b>Subordinate Lien</b>												
Series Name	Date of Issue	Final Maturity	Issue Size	Outstanding Principal	Coupon Rate / Bank Index	Fixed Rate Swap (Paid)	Variable Swap Rate (Received)	Net Rate	Discount at Issuance	Premium at Issuance	Issuance Expenses <sup>1,6</sup>	Net Proceeds
Series 2019B	July-2019	9/1/2035	104,290	104,290	4.00%-5.00%	N/A	N/A	N/A	-	22,621	28,952	103,660
<b>Total Subordinate</b>				<b>\$ 104,290</b>								

<b>Third Lien</b>												
Series Name	Date of Issue	Final Maturity	Issue Size	Outstanding Principal	Coupon Rate / Bank Index	Fixed Rate Swap (Paid)	Variable Swap Rate (Received)	Net Rate	Discount at Issuance	Premium at Issuance	Issuance Expenses	Net Proceeds
Pennvest Loans	Various	4/1/2045	588,970	546,387	1.00% - 2.97%	N/A	N/A	N/A	-	-	-	-
PNC Capital Line of Credit <sup>7</sup>	June-2022	6/23/2025	150,000	131,712	SIFMA + 0.39%	N/A	N/A	N/A	-	-	-	-
<b>Total Third Lien</b>				<b>\$ 678,099</b>								

<sup>1</sup> Includes legal and professional costs, underwriters' discount, bond insurance premium, surety premium and/or swap termination payments, if applicable, to respective series of bonds.  
<sup>2</sup> Column C is the Initial Stated Amount (Capital Appreciation Bonds); Column D is based on accreted value as of 02/01/2023 and Column E is the total amount paid and/or refunded as of 02/01/2023.  
<sup>3</sup> Column C represents the portion of the Series C of 2017 which is connected to certain swap agreements or is unhedged.  
<sup>4</sup> The Authority entered into a SIFMA vs. 70% of 1M LIBOR overlay basis swap with Merrill Lynch Capital Services to manage variable rate interest payments associated with the 2017C Bonds. The overlay basis swap effectively converts the floating leg receipts of the Authority's three fixed payer swaps from 70% of 1M LIBOR to SIFMA in order to match the floating leg payment of the remarketed 2017C Bonds for the three year remarketed period. The overlay basis swap also contains a fixed leg component, payable by the Authority to the swap counterparty, of 0.1180% which effectively increases the fixed rates paid by the Authority on its three fixed payer swaps while the overlay basis swap is outstanding.  
<sup>5</sup> Net rate is assumed of 2.50% for the purposes of this summary.  
<sup>6</sup> Issuance expense includes \$27.605 million for a swap termination payment.  
<sup>7</sup> Has unutilized fee of 0.40% if less than 50% is drawn on the LOC and an unutilized fee of 0.25% if more than 50% is drawn on the LOC.

# Exhibit EB-7

**2024 ABT Calculations - Existing Rates**

2022 Rate Covenant Net Revenues	\$70,465,678.00
Plus Transfer to Rate Stabilization Fund	1,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$71,465,678.00</b>
2022 Rate Covenant First Lien Debt Service	61,663,907.00
Series A of 2023 Maximum Annual Debt Service	9,054,184.00
First Lien Debt Service for Additional Bonds Test	70,718,091.00
First Lien Debt Service for Additional Bonds Test * 125%	88,397,613.75
<b>First Lien Revenue Surplus / (Deficiency)</b>	<b>(\$16,931,935.75)</b>
2022 Rate Covenant Subordinate Lien Debt Service	18,516,886.00
Additional PENNVEST	3,964,098.00
WIFIA Maximum Annual Debt Service	3,639,101.00
Subordinate Lien Debt Service for Additional Bonds Test	26,120,085.00
2022 Rate Covenant Subordinate Lien Debt Service * 110%	28,732,093.50
125% First + 110% Subordinate Lien Rate Covenant Debt Service	117,129,707.25
<b>Subordinate Lien Revenue Surplus / (Deficiency)</b>	<b>(\$45,664,029.25)</b>
Total Debt Service for Additional Bonds Test (100%)	96,838,176.00
<b>Total Revenue Surplus / (Deficiency)</b>	<b>(\$25,372,498.00)</b>

**2025 ABT Calculations - Existing Rates**

2022 Rate Covenant Net Revenues	\$61,443,453.00
Plus Transfer to Rate Stabilization Fund	7,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$68,443,453.00</b>
2022 Rate Covenant First Lien Debt Service	70,718,091.00
Series A of 2023 Maximum Annual Debt Service	9,054,184.00
First Lien Debt Service for Additional Bonds Test	79,772,275.00
First Lien Debt Service for Additional Bonds Test * 125%	99,715,343.75
<b>First Lien Revenue Surplus / (Deficiency)</b>	<b>(\$31,271,890.75)</b>
2022 Rate Covenant Subordinate Lien Debt Service	26,120,085.00
Additional PENNVEST	12,315,133.00
WIFIA Maximum Annual Debt Service	8,020,184.00
Subordinate Lien Debt Service for Additional Bonds Test	46,455,402.00
2022 Rate Covenant Subordinate Lien Debt Service * 110%	51,100,942.20
125% First + 110% Subordinate Lien Rate Covenant Debt Service	150,816,285.95
<b>Subordinate Lien Revenue Surplus / (Deficiency)</b>	<b>(\$82,372,832.95)</b>
Total Debt Service for Additional Bonds Test (100%)	126,227,677.00
<b>Total Revenue Surplus / (Deficiency)</b>	<b>(\$57,784,224.00)</b>

**2026 ABT Calculations - Existing Rates**

2022 Rate Covenant Net Revenues	\$47,586,183.00
Plus Transfer to Rate Stabilization Fund	17,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$64,586,183.00</b>
2022 Rate Covenant First Lien Debt Service	79,772,275.00
Series A of 2023 Maximum Annual Debt Service	12,072,245.00
First Lien Debt Service for Additional Bonds Test	91,844,520.00
First Lien Debt Service for Additional Bonds Test * 125%	114,805,650.00
<b>First Lien Revenue Surplus / (Deficiency)</b>	<b>(\$50,219,467.00)</b>
2022 Rate Covenant Subordinate Lien Debt Service	46,455,402.00
Additional PENNVEST	468,243.00
WIFIA Maximum Annual Debt Service	2,084,569.00
Subordinate Lien Debt Service for Additional Bonds Test	49,008,214.00
2022 Rate Covenant Subordinate Lien Debt Service * 110%	53,909,035.40
125% First + 110% Subordinate Lien Rate Covenant Debt Service	168,714,685.40
<b>Subordinate Lien Revenue Surplus / (Deficiency)</b>	<b>(\$104,128,502.40)</b>
Total Debt Service for Additional Bonds Test (100%)	140,852,734.00
<b>Total Revenue Surplus / (Deficiency)</b>	<b>(\$76,266,551.00)</b>

# Exhibit EB-8

**2024 ABT Calculations - Proposed Rates**

2024 Rate Covenant Net Revenues	\$116,855,868.00
Plus Transfer to Rate Stabilization Fund	1,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$117,855,868.00</b>
2024 Rate Covenant First Lien Debt Service	61,663,907.00
Series A of 2024 Maximum Annual Debt Service	9,054,184.00
First Lien Debt Service for Additional Bonds Test	70,718,091.00
First Lien Debt Service for Additional Bonds Test * 125%	88,397,613.75
First Lien Revenue Surplus / (Deficiency)	\$29,458,254.25
2024 Rate Covenant Subordinate Lien Debt Service	18,516,886.00
Additional PENNVEST	3,964,098.00
WIFIA Maximum Annual Debt Service	3,639,101.00
Subordinate Lien Debt Service for Additional Bonds Test	26,120,085.00
2024 Rate Covenant Subordinate Lien Debt Service * 110%	28,732,093.50
125% First + 110% Subordinate Lien Rate Covenant Debt Service	117,129,707.25
Subordinate Lien Revenue Surplus / (Deficiency)	\$726,160.75
Total Debt Service for Additional Bonds Test (100%)	96,838,176.00
Total Revenue Surplus / (Deficiency)	\$21,017,692.00

**2025 ABT Calculations - Proposed Rates**

2025 Rate Covenant Net Revenues	\$151,277,680.00
Plus Transfer to Rate Stabilization Fund	7,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$158,277,680.00</b>
2025 Rate Covenant First Lien Debt Service	70,718,091.00
Series A of 2025 Maximum Annual Debt Service	9,054,184.00
First Lien Debt Service for Additional Bonds Test	79,772,275.00
First Lien Debt Service for Additional Bonds Test * 125%	99,715,343.75
First Lien Revenue Surplus / (Deficiency)	\$58,562,336.25
2025 Rate Covenant Subordinate Lien Debt Service	26,120,085.00
Additional PENNVEST	12,315,133.00
WIFIA Maximum Annual Debt Service	8,020,184.00
Subordinate Lien Debt Service for Additional Bonds Test	46,455,402.00
2025 Rate Covenant Subordinate Lien Debt Service * 110%	51,100,942.20
125% First + 110% Subordinate Lien Rate Covenant Debt Service	150,816,285.95
Subordinate Lien Revenue Surplus / (Deficiency)	\$7,461,394.05
Total Debt Service for Additional Bonds Test (100%)	126,227,677.00
Total Revenue Surplus / (Deficiency)	\$32,050,003.00

**2026 ABT Calculations - Proposed Rates**

2026 Rate Covenant Net Revenues	\$190,146,359.00
Plus Transfer to Rate Stabilization Fund	17,000,000.00
Less Grant Revenues	0.00
Less Proceeds from Business Interruption Insurance	0.00
Less Earnings on Construction/Rate Stabilization Fund	0.00
Additional Authorized Net Revenues	0.00
<b>Additional Indebtedness Test Net Revenues</b>	<b>\$207,146,359.00</b>
2026 Rate Covenant First Lien Debt Service	79,772,275.00
Series A of 2026 Maximum Annual Debt Service	12,072,245.00
First Lien Debt Service for Additional Bonds Test	91,844,520.00
First Lien Debt Service for Additional Bonds Test * 125%	114,805,650.00
First Lien Revenue Surplus / (Deficiency)	\$92,340,709.00
2026 Rate Covenant Subordinate Lien Debt Service	46,455,402.00
Additional PENNVEST	468,243.00
WIFIA Maximum Annual Debt Service	2,084,569.00
Subordinate Lien Debt Service for Additional Bonds Test	49,008,214.00
2022 Rate Covenant Subordinate Lien Debt Service * 110%	53,909,035.40
125% First + 110% Subordinate Lien Rate Covenant Debt Service	168,714,685.40
Subordinate Lien Revenue Surplus / (Deficiency)	\$38,431,673.60
Total Debt Service for Additional Bonds Test (100%)	140,852,734.00
Total Revenue Surplus / (Deficiency)	\$66,293,625.00



# Exhibit EB-9

**The Pittsburgh Water and Sewer Authority**  
**Cost-Benefit Analysis - Arrearage Forgiveness Program**

**Exhibit EB-9**

As of February, 2022

	2022	2023	2024
<b>Current Charges*</b>			
Water - Residential 5/8"	\$ 602,406	677,341	677,341
Water - Residential 5/8" (<50% FPL)	106,044	119,915	119,915
Water - Residential 3/4"	4,091	4,600	4,600
Water - Residential 3/4" (<50% FPL)	703	795	795
Water - Residential 1"	5,114	5,750	5,750
Water - Residential 1" (<50% FPL)	528	597	597
Wastewater - Residential 5/8"	181,153	155,827	155,827
Wastewater - Residential 5/8" (<50% FPL)	-	-	-
Wastewater - Residential 3/4"	561	482	482
Wastewater - Residential 3/4" (<50% FPL)	-	-	-
Wastewater - Residential 1"	187	161	161
Wastewater - Residential 1" (<50% FPL)	-	-	-
<b>Total Current Charges:</b>	<b>\$ 900,785</b>	<b>965,468</b>	<b>965,468</b>
<b>Arrearages</b>			
Water - Residential 5/8"	\$ 525,655	525,655	525,655
Water - Residential 5/8" (<50% FPL)	221,022	221,022	221,022
Water - Residential 3/4"	2,182	2,182	2,182
Water - Residential 3/4" (<50% FPL)	2,887	2,887	2,887
Water - Residential 1"	3,531	3,531	3,531
Water - Residential 1" (<50% FPL)	438	438	438
Wastewater - Residential 5/8"	475,518	475,518	475,518
Wastewater - Residential 5/8" (<50% FPL)	-	-	-
Wastewater - Residential 3/4"	348	348	348
Wastewater - Residential 3/4" (<50% FPL)	-	-	-
Wastewater - Residential 1"	141	141	141
Wastewater - Residential 1" (<50% FPL)	-	-	-
<b>Total Arrearages Forgiven:</b>	<b>\$ 1,231,722</b>	<b>1,231,722</b>	<b>1,231,722</b>
<b>Net Cost/Benefit</b>			
Water	\$ (36,830)	53,282	53,282
Wastewater	(294,107)	(319,537)	(319,537)
<b>Net Benefits (Cost):</b>	<b>\$ (330,937)</b>	<b>(266,255)</b>	<b>(266,255)</b>

\* Assumes residential customer using 3,000 gal. per month and tier 2 stormwater customer

**VERIFICATION**

I, Edward Barca hereby state that: (1) I am Director of Finance of The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C.S. § 4904 (relating to unsworn falsification to authorities).

05/03/2023 | 7:44 AM PDT

Dated

DocuSigned by:  
*Edward Barca*  
415E545AD9514E4...

Edward Barca, Director of Finance  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**WILLIAM J. MCFADDIN**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Valve Maintenance

Meter Replacement

Flushing Distribution System

May 9, 2023

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1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND POSITION FOR THE RECORD.**

3 A. My name is William J. McFaddin and I am the Director of Operations for The Pittsburgh  
4 Water and Sewer Authority (“PWSA”).

5 **Q. WHEN DID YOU ASSUME THIS ROLE?**

6 A. I assumed the Director role in November 2021.

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

8 A. I received my Bachelor of Science degree in Management and Accounting from the  
9 University of Pittsburgh in 1997.

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

11 A. Over the last five years, I have been progressively responsible for Field Operations and  
12 Production Operations. I started with PWSA as a Deputy Director of Field Operations,  
13 and was then promoted to Deputy Director of Operations, before becoming Director of  
14 Operations.

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

16 A. As Director of Operations, I oversee the operations team. The team is responsible for  
17 operation of the treatment plant, which produces about 65 to 70 million gallons of water  
18 per day. The team also oversees the field of operations of the water and sewer systems,  
19 including any incidents in the streets involving water mains and fire hydrants.

20 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA  
21 PUBLIC UTILITY COMMISSION (“PUC” OR “COMMISSION”)?**

22 A. Yes. I provided testimony before the Commission in *Musgrave v. The Pittsburgh Water  
23 and Sewer Authority*, Docket No. C-2020-3020714, on February 9, 2023 regarding a  
24 variety of issues, including private ownership of lines and PWSA’s overall obligations

1 and operations regarding the repair and maintenance of such lines. In addition, during the  
 2 last two base rate case proceedings filed by PWSA, in 2020 at Docket Nos. R-2020-  
 3 3017951 and R-2020-3017970, and in 2021 at Docket Nos. R-2021-3024773, R-2021-  
 4 3024774 and R-2021-3024779, I provided support through contributing information for  
 5 written testimony and responses to discovery requests on the topics that I am addressing  
 6 in this Direct Testimony.

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

8 A. The purpose of my testimony is to provide information regarding PWSA’s continued  
 9 compliance with obligations in prior settlements in the areas of valve maintenance, the  
 10 replacement of meters and flushing of the distribution system.

11 **II. UPDATE REGARDING PRIOR RATE CASE SETTLEMENT OBLIGATIONS**

12 **A. Valve Maintenance**

13 **Q. DID PWSA MAKE A COMMITMENT IN THE PRIOR RATE CASE**  
 14 **SETTLEMENTS REGARDING VALVE MAINTENANCE?**

15 A. Yes. In the 2020 Settlement, PWSA committed to exercising approximately 5,000  
 16 isolation valves per year and to repair the isolation valves that are found to be  
 17 inoperable.<sup>1</sup> The 2021 Settlement obligates PWSA to continue its current practice of  
 18 repairing or replacing isolation valves at the time they are found to be inoperable, and  
 19 recognizing that valves 16” or greater may require additional time to repair or replace,  
 20 document the planned date for repair and replacement.<sup>2</sup>

---

<sup>1</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2020-3017951 and R-2020-3017970 (Order entered December 3, 2020), approving Joint Petition for Settlement (“2020 Joint Petition for Settlement”). 2020 Joint Petition for Settlement, III.H.2.

<sup>2</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773, R-2021-3024774, and R-2021-3024779 (Order entered November 18, 2021), approving Joint Petition for Settlement (“2021 Joint Petition for Settlement”). 2021 Joint Petition for Settlement, III.E.2.



1 **Q. WHAT IS THE STATUS OF FULFILLING THOSE COMMITMENTS?**

2 A. As to the commitment to exercising 5,000 valves per year and repairing or replacing  
 3 those that are inoperable, PWSA implemented this valve maintenance program in 2021  
 4 and has continued to date. In addition, PWSA has made an internal commitment to  
 5 exercise 1/5 of the valves or approximately 5,200 each year. In 2021, the Authority  
 6 inspected 5,400 valves. In 2022, PWSA inspected 5,169 valves, and as of April 26, 2023,  
 7 has inspected 1,786 valves in 2023. Therefore, PWSA is on track to meet its annual goal  
 8 in 2023.

9 When a valve is located and found to be inoperable, an order is created in the  
 10 SpryMobile application, which is the PWSA work order system, for the repair and  
 11 replacement of that valve. Since the same process applies regardless of the size of the  
 12 valve, no separate or additional steps are taken for valves that are 16” and larger. All  
 13 repairs and replacements are completed as quickly as possible.

14 **Q. PLEASE SET FORTH THE COMMITMENTS CONCERNING VALVE**  
 15 **MAINTENANCE AND RECORD-KEEPING THAT PWSA MADE IN THE 2021**  
 16 **SETTLEMENT.**

17 A. In the 2021 Settlement, PWSA made the following commitments with respect to record  
 18 keeping, ownership and exercising valves:<sup>3</sup>

- 19 i. Subject to the discussion pursuant to Section III.E.1.a.iii below,  
 20 PWSA will create a plan to implement a record-keeping procedure  
 21 for valve maintenance, including valve location (GPS  
 22 coordinates), age, size manufacturer, serial number (when  
 23 available from the manufacturer), number of rotations to fully  
 24 open and fully close valve, and overall condition of valves for all  
 25 new valve installations beginning in 2022.
- 26 ii. PWSA will endeavor to incorporate information about existing  
 27 valves to the extent such information is attainable as part of  
 28 PWSA’s normal operating processes.

---

<sup>3</sup> 2021 Joint Petition for Settlement, III.E.1.a.

- 1                   iii.   PWSA will meet with I&E’s Safety Division and interested  
2                                   parties within 30 days of the final filing of this Settlement  
3                                   Agreement and Statements in Support for the purposes of:
  - 4                                   (a) Discussing PWSA’s plan to implement a record-keeping  
5    procedure for valve maintenance, including valve location  
6    (GPS coordinates), age, size, number of rotations to fully open  
7    and fully close valve, and overall condition of valves for all  
8    existing valves.
  - 9                                   (b) At the meeting, if any portion of the identified information is  
10   not available to PWSA, PWSA will convey that information,  
11   including the reason why it is not available, to I&E’s Safety  
12   Division and interested parties.
  - 13                                   (c) PWSA will provide more detail about its recent determination  
14   that 6,000 valves in the PWSA system are privately owned,  
15   including the identity of the private owner and how the  
16   determination of ownership was made.
  - 17                                   (d) PWSA will provide information relative to whether and how  
18   PWSA’s system is impacted by such private ownership,  
19   including but not limited the following:
    - 20    (1) identification of who has the right to operate the privately  
21    owned valves;
    - 22    (2) confirmation of whether PWSA has investigated if it needs  
23    additional valves to ensure safety;
    - 24    (3) an explanation of how PWSA is able to isolate valves as  
25    may be required if it is reliant upon on others to operate  
26    valves on its system.
  - 27                                   (e) PWSA will continue its current valve exercising program,  
28   under which it attempts to exercise 5,000 isolation valves per  
29   calendar year, pending the discussion and outcome of this  
30   meeting.
- 31                   iv.    By January 31, 2022, PWSA will file a report for calendar year  
32                                   2021 identifying each valve that it attempted to exercise and  
33                                   whether it was broken or operable.

34 **Q.   PLEASE SPECIFICALLY ADDRESS PWSA’S RECORDKEEPING**  
35 **COMMITMENTS.**

36 A.    Pursuant to Section III.E.1.a.i of the Settlement, PWSA agreed to create a plan to  
37           implement a record-keeping procedure for valve maintenance for all new valve  
38           installations beginning in 2022. Further, PWSA committed to incorporating information

1 about existing valves to the extent such information is attainable as part of PWSA's  
2 normal operating processes. To facilitate these efforts, PWSA agreed in Section  
3 III.E.1.a.iii of the Settlement to meet with the parties to discuss the feasibility of  
4 recording information for new and existing valves. The meeting was held on September  
5 29, 2021 with a follow-up meeting on October 29, 2021.

6 As to new valve installations, PWSA committed during those discussions to  
7 record the following information:

- 8 • Valve Location (GPS Coordinates)
- 9 • Age
- 10 • Size
- 11 • Manufacturer
- 12 • Model Number
- 13 • Installed Date
- 14 • Number of Rotations to Fully Open and Fully Close Valve
- 15 • Overall Condition of Valves

16  
17 The recordkeeping plan for new valve installations will not include serial numbers  
18 because the manufacturers have indicated that they do not provide them. When new  
19 valves are being installed, PWSA agreed to identify surrounding valves and gather the  
20 following data points to include in its recordkeeping plan for existing valves:

- 21 • Size
- 22 • Number of Rotations to Fully Open and Fully Close Valve
- 23 • Overall Condition of Valves

24  
25 At that time, PWSA explained that it already maintains locations of existing valves in its  
26 geographic information system by asset identification. The manufacturer will not  
27 included because it is either not available or not readily accessible. In addition, for the  
28 same reason as with new valves, serial numbers will not be recorded because they are not  
29 provided by the manufacturer. As to age, this data point cannot be determined through a

1 visual inspection of the valve, and therefore will not be included in the recordkeeping  
 2 plan.

3 **Q. WHAT HAS PWSA DONE TO FULFILL THE RECORDKEEPING**  
 4 **COMMITMENTS?**

5 PWSA staff has created work orders in SpryMobile application to capture the information  
 6 for new/replaced valves, valve inspections and hydrant flushing/inspections. Senior  
 7 Management in Field Operations are working with staff to make sure that the appropriate  
 8 fields are marked mandatory so that field operations capture the required information.

9 **Q. HAS PWSA PROVIDED THE REPORT REQUIRED BY THE 2021 RATE CASE**  
 10 **SETTLEMENT IDENTIFYING EACH VALVE THAT IT ATTEMPTED TO**  
 11 **EXERCISE AND WHETHER IT WAS BROKEN OR OPERABLE?**

12 A. Yes. On April 8, 2022, PWSA filed this Report for calendar year 2021 identifying each  
 13 valve that it attempted to exercise and whether it was broken or operable. The report  
 14 included the condition of the valve if known and reported at the time the valve was  
 15 exercised. In 2021, PWSA did not record this information for each valve exercised and,  
 16 therefore, the information is unavailable for some of the valves. However, since then,  
 17 PWSA has taken steps to ensure that the condition of the valve at the time it is exercised  
 18 is recorded for all work orders.

19 **Q. PLEASE ADDRESS THE PRIVATE OWNERSHIP COMMITMENTS IN THE**  
 20 **2021 RATE CASE SETTLEMENT.**

21 A. In Section III.9.E.1.a.iii of the 2021 Rate Case Settlement, PWSA agreed to meet with  
 22 the parties to provide more detail about privately-owned isolation valves. This  
 23 provision in the Settlement was triggered by a change made by PWSA during the base  
 24 rate proceeding to the total number of isolation valves that it must exercise. The

1 meeting was held on September 29, 2021 with a follow-up meeting on October 29,  
 2 2021.

3 **Q. WHAT DID PWSA EXPLAIN DURING THOSE MEETINGS?**

4 A. During those meetings, PWSA explained the discrepancy in the number of isolation  
 5 valves it must exercise. PWSA had originally indicated that it was responsible for  
 6 maintenance of a total of 26,344 isolation valves. Upon further review, PWSA  
 7 discovered that although 26,344 isolation valves are recorded in the Authority’s  
 8 geographic information system (“GIS”), it is responsible for exercising only 19,265  
 9 isolation valves. Although PWSA was at all times fully aware of the abandoned and  
 10 privately-owned valves recorded in its GIS, the Authority had mistakenly provided the  
 11 total number of valves without subtracting them. PWSA further explained to the  
 12 parties that the private valves are not part of Authority’s distribution system, that PWSA  
 13 does not rely on these valves to operate it system and that its system is not impacted by  
 14 the private ownership of isolation valves. This information, along with a breakdown of  
 15 PWSA’s valves, was provided in a Post Rate Case Quarterly Report filed with the  
 16 Commission on April 1, 2022 at Docket Nos. R-2021-3024773, R-2021-3024774 and  
 17 R-2021-3024779.

18 **Q. PLEASE DESCRIBE PWSA’S COMMITMENTS IN THE 2021 RATE CASE**  
 19 **SETTLEMENT REGARDING VALVE PRIORITIZATION.**

20 A. In the 2021 Rate Case Settlement, PWSA made the following commitments regarding  
 21 valve prioritization:

- 22 i. PWSA will work with a third party expert for assistance with any  
 23 necessary modeling, GIS layers, Standard Operating Procedures  
 24 (SOPs) and planning efforts to develop a prioritization plan to be  
 25 implemented in 2022.

1 (a) PWSA will file a progress report once a formal timeline has  
2 been developed.

3 (b) With at least 30 days advance notice, PWSA will coordinate a  
4 meeting with interested parties to discuss the final plan and to  
5 ensure that members of I&E's Safety Division will be able to  
6 attend.  
7

8 **Q. PLEASE DESCRIBE PWSA'S COMPLIANCE WITH THESE COMMITMENTS.**

9 A. PWSA has a prioritization plan for all valves. In the Post Rate Case Quarterly Report  
10 filed on January 3, 2023 for the quarter ending on December 31, 2022, PWSA noted that  
11 staff members have finalized the list of critical valves and are working to determine the  
12 frequency of inspections. The Authority is now in the process of setting the critical  
13 valves aside for their own exercising programs on an accelerated basis.

14 **B. Meter Replacement**

15 **Q. PLEASE DESCRIBE THE 2021 SETTLEMENT'S PROVISION CONCERNING**  
16 **METER REPLACEMENT.**

17 A. Subject to the willingness of customers to permit PWSA access to their meters given  
18 concerns about social distancing associated with the pandemic, PWSA agreed in the 2021  
19 Settlement that it would strive to test or replace 8,000 meters per calendar year beginning  
20 in 2022 until all undocumented meters are either tested or replaced.<sup>4</sup>

21 **Q. PLEASE PROVIDE THE NUMBER OF METERS PWSA REPLACED IN 2021,**  
22 **2022 AND 2023 TO DATE.**

23 A. In 2021, PWSA processed 6,972 meter changes on customer accounts, and in 2022,  
24 PWSA replaced an additional 5,865 meters. For the first four months of 2023, PWSA  
25 has completed 1,630 meter upgrades.

---

<sup>4</sup> 2021 Joint Petition for Settlement, III.E.3.

1 **Q. PLEASE EXPLAIN WHY THE NUMBER OF METER REPLACEMENTS IN**  
2 **2022 HAS NOT MET THE 8,000 TARGET IN THE 2021 SETTLEMENT.**

3 A. Although customers in 2022 became generally less concerned about the need for social  
4 distancing due to the pandemic than they were in 2020 and 2021, PWSA encountered  
5 delays in restarting the non-access process following the launch of its Enterprise  
6 Resource Planning system in August 2022. This is the automated process that sends  
7 regulated notices to customers to facilitate meter upgrade appointments, and it could not  
8 be fully tested until after the go-live date of the new system. In addition, the vendor  
9 experienced turnover in their resources, which greatly delayed their ability to  
10 troubleshoot and resolve bugs in the code.

11 More recently, PWSA Field Operations has had some unexpected reductions in  
12 the staff in the Plumbing section, with three plumbers on long-term leave due to personal  
13 issues. This section also has some openings for plumbers, for which PWSA is actively  
14 recruiting and hopes to fill soon. As these new hires come on board, the Authority  
15 expects to ramp up the number of meter replacements.

16 **C. Flushing Distribution System**

17 **Q. WHAT WERE PWSA'S SETTLEMENT COMMITMENTS REGARDING**  
18 **FLUSHING THE DISTRIBUTION SYSTEM?**

19 A. In the 2020 Settlement, PWSA agreed that within 90 days after entry of the  
20 Commission's Order approving the Settlement, it would implement a program to flush  
21 one-third of the distribution system each year so that one-third of the distribution system  
22 is flushed during 2021. The 90-day period ended on March 3, 2021.<sup>5</sup> In the 2021

---

<sup>5</sup> 2020 Joint Petition for Settlement, III.H.4.

1 Settlement, PWSA committed to continue to flush one-third of its distribution system  
2 each year.<sup>6</sup>

3 **Q. PLEASE EXPLAIN PWSA’S COMPLIANCE WITH THESE COMMITMENTS.**

4 A. As of the filing of the 2021 base rate case, the distribution system flushing program had  
5 been implemented. PWSA inspected and flushed 2,624 hydrants in 2021, which met the  
6 goal of inspecting and flushing one-third of the system. In 2022, PWSA inspected and  
7 flushed 2,552 hydrants, which also met the annual goal. As of April 26, 2023, PWSA has  
8 inspected and flushed 418 hydrants. This number is on track for this time of year since  
9 the inspection of hydrants significantly ramps up during warmer weather.

10 **III. CONCLUSION**

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

12 A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate.

---

<sup>6</sup> 2021 Joint Petition for Settlement, III.E.4.



**VERIFICATION**

I, William J. McFaddin, hereby state that: (1) I am the Director of Operations for The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Dated: 05/03/2023 | 7:58 AM PDT

DocuSigned by:  
*William McFaddin*  
90912C6707E04D9...

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William J. McFaddin  
Director of Operations  
The Pittsburgh Water and Sewer Authority

4

BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**BARRY KING, PE**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Capital Projects  
Wastewater Laterals  
Minimum Warranty

May 9, 2023

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BK-3	First Amendment of 2019 Consent Order and Agreement
BK-4	Second Amendment of 2019 Consent Order and Agreement

1 **I. INTRODUCTION**

2 **Q. PLEASE STATE YOUR NAME AND POSITION FOR THE RECORD.**

3 A. My name is Barry King and I am the Director of Engineering and Construction for The  
4 Pittsburgh Water and Sewer Authority (“PWSA”).

5 **Q. WHEN DID YOU ASSUME THIS ROLE?**

6 A. I assumed this role in June 2016, filling the role of Interim Director of Engineering and  
7 Construction for the PWSA, and subsequently selected as the permanent Director of  
8 Engineering and Construction in April 2019.

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

10 A. I received my Bachelor of Science in Environmental Engineering from Rensselaer  
11 Polytechnic Institute. I am currently completing my Master of Science in Environmental  
12 Engineering from Worcester Polytechnic Institute in 2021.

13 **Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.**

14 A. Over the last 28 years, I have been progressively responsible for engineering, project  
15 management, leadership, and administration in the fields of water supply, treatment,  
16 storage, and distribution; wastewater conveyance and treatment; and other civil/  
17 environmental engineering-related projects and roles within both the public and private  
18 sectors. I have served in a range of capacities including Director of Engineering and  
19 Construction, Program Manager, Utilities Bureau Chief, Assistant Director of Public  
20 Works, Design Manager, Principal Engineer, Project Engineer, Design Engineer, Project  
21 Manager, and QA/QC Reviewer. With respect to employment in the public sector, I have  
22 over 10 years of experience working directly for water and sewer municipal authorities in  
23 primary leadership roles. I am a licensed Professional Engineer in the State of  
24 Pennsylvania, as well as current registrations in New York, Maryland, and Delaware.

1 With specific respect to water and sewer infrastructure and facilities, I have performed,  
2 coordinated, managed, and/or supervised technical studies, evaluations, and site  
3 assessments; planning; engineering conceptualization and design; cost estimating;  
4 permitting; bidding; construction project management and contract administration; water  
5 and sewer rate and fee studies and adoption; conducted public hearings and informational  
6 meetings; performed staff management and program administration; supported full  
7 proposal/bid procurement processes; and completed consultant and contractor selections.

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

9 A. Since 2016, I have been involved in the daily design and construction of PWSA’s  
10 infrastructure projects, as well as coordinating staff and consultant activities. I utilize my  
11 extensive hands-on experience in the fields of water and wastewater to manage PWSA’s  
12 engineering endeavors.

13 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA**  
14 **PUBLIC UTILITY COMMISSION (“PUC” OR “COMMISSION”)?**

15 A. Yes. In PWSA’s base rate case in 2020 at Docket Nos. R-2020-3017951 and R-2020-  
16 3017970, I submitted Direct Testimony on March 6, 2020, Supplemental Direct  
17 Testimony on May 15, 2020 and Rebuttal Testimony on August 18, 2020. In PWSA’s  
18 base rate case in 2021 at Docket Nos. R-2021-3024773, R-2021-3024774 and R-2021-  
19 3024779, I submitted Direct Testimony on April 13, 2021, Rebuttal Testimony on July  
20 28, 2021 and Rejoinder Testimony on August 10, 2021.

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

22 A. The purpose of my testimony is to: (1) describe PWSA’s Capital Improvement Plan  
23 (“CIP”), with an emphasis on the total capital requirements of over \$1.8 billion for fiscal

1 years 2023-2027; and (2) provide updates regarding prior rate case settlement  
2 commitments.

3 **Q. HOW IS PWSA’S CIP ORGANIZED?**

4 A. PWSA’s five-year CIP is organized into three primary project classes, which consists of  
5 water (further broken down under treatment plant, pumping and storage, and distribution  
6 subclasses), wastewater, and stormwater classes. PWSA undertakes the same  
7 programmatic approach for the identifying, planning, designing, and constructing  
8 stormwater capital projects as it undertakes for water and wastewater capital projects.  
9 My testimony will primarily focus on the water and wastewater project classes. Mr. Tony  
10 Igwe’s and Mr. Keith Readling’s direct testimonies address the stormwater program in  
11 detail.

12 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

13 A. Yes. I am sponsoring PWSA Exhibit BK-1, which is the 2019 Consent Order and  
14 Agreement issued by the Pennsylvania Department of Environmental Protection  
15 (“DEP”); PWSA Exhibit BK-2, which is DEP’s COVID Extension Letter; PWSA Exhibit  
16 BK-3, which is DEP’s First Amendment of the 2019 Consent Order and Agreement; and  
17 PWSA Exhibit BK-4, which is DEP’s Second Amendment of the 2019 Consent Order  
18 and Agreement.

19 **II. CAPITAL PROJECTS**

20 **(A) General Overview**

21 **Q. PLEASE PROVIDE A GENERAL OVERVIEW OF PWSA’S CIP.**

22 A. As a result of about 30 years of little to no investment in our water, sewer and stormwater  
23 systems, PWSA’s CIP focuses on restoring and sustaining cost-effective operations that  
24 comply with all regulatory requirements, while optimizing the system’s asset

1 performance and life expectancy in accordance with accepted utility metrics. The 2023-  
2 2027 CIP invests in programs that balance risk and consequence of asset failure and  
3 levels of service benefits, with overall customer affordability.

4 **Q. PLEASE DESCRIBE YOUR OVERALL VISION FOR PWSA'S SYSTEM.**

5 A. My vision for PWSA is to build a sustainable program of operation, maintenance and  
6 capital activities and investments to sustain performance of safe, affordable and  
7 manageable water, sewer and stormwater systems for the City of Pittsburgh and  
8 surrounding populations. PWSA needs to restore full operational resiliency and  
9 redundancy of our water and sewer systems to meet our current and future challenges.

10 PWSA's Engineering Department recognizes that we are responsible to provide our  
11 customers with safe, reliable, and uninterrupted water, sewer and stormwater services that  
12 are in full compliance with quality and regulatory requirements. We continue striving to  
13 build a team of dedicated Engineers, Scientists, and Project Managers to solidify a strong,  
14 competent, effective and stable work force with the requisite education, initiative and  
15 innovation to undertake this work either directly or as project managers, and identify  
16 projects that balance the cost of the project, ensuring just and reasonable rates, with the  
17 scope and outcome of the project. We will continue to embrace technology, where  
18 appropriate and cost effective. With a considerable number of significant, complex, and  
19 large-scale projects required over the next 5 to 7 years, we will seek to build the  
20 necessary technical and skilled workforce to undertake projects, and to complement the  
21 responsibilities and actions of other PWSA Departments.



1 **Q. PLEASE EXPLAIN PWSA’S PROCESS TO IDENTIFY CAPITAL PROJECTS**  
 2 **THAT NEED TO BE COMPLETED.**

3 A. PWSA’s CIP process begins each year in the second quarter when project nominations  
 4 are solicited from the entire organization. At the completion of the nomination period,  
 5 the department group managers (engineering, finance, operations and executive  
 6 departments) screen and evaluate the nominated projects and recommend which projects  
 7 should be considered for further planning, design or construction. A Project Sheet is  
 8 prepared to provide more detailed information on a project’s potential scope, risks,  
 9 schedule and preliminary cost estimate. This process takes several months and  
 10 culminates with the presentation of the updated CIP to PWSA’s Board of Directors.  
 11 Projects that are not selected for implementation are re-assessed during the next year’s  
 12 CIP process.

13 **Q. WHAT CRITERIA ARE USED TO EVALUATE AND PRIORITIZE CAPITAL**  
 14 **PROJECTS?**

15 A. Due to funding limitations and the need to renew or replace a significant amount of aging  
 16 infrastructure, PWSA uses the following criteria to evaluate and prioritize capital  
 17 projects:

- 18 1) Regulatory Compliance – Ranking a project’s relative importance for  
 19 maintaining current compliance levels or mitigating future compliance impacts;  
 20
- 21 2) Safety – Ranking a project’s relative importance in maintaining or improving  
 22 employee or public health & safety; the relative impact of failing to complete the  
 23 project has on health & safety;  
 24
- 25 3) Operating Efficiency – Ranking the level of operating efficiency (i.e. operating  
 26 budget savings through increased efficiencies or increased revenues as a result of  
 27 quality replacements, such as meter or aged line replacements);  
 28
- 29 4) Quality of Service – Ranking a project’s role in maintaining or improving  
 30 current quality of services;  
 31

1 5) Organizational Goals – Ranking how well a project addresses one or more of  
 2 the stated PWSA organizational goals; and  
 3

4 6) Social Impact – Ranking a project’s relative importance to customer quality of  
 5 life, education, shared community goals, environmental sustainability, etc.  
 6

7 **Q. WHAT ARE PWSA’S FUNDING SOURCES FOR ITS CIP?**

8 A. PWSA’s CIP is funded through several primary sources to which specific programs and  
 9 projects are allocated. These capital project funding sources basically result from  
 10 revenues received through rates paid by PWSA’s customers. Capital Funds for Capital  
 11 works primarily originate from Authority market-solicited Bond indebtedness from  
 12 leading institutions state and federal grants. Subsidized loans are also a component of  
 13 our Bond portfolio, as well as cost shares with other utilities and public grants. PWSA is  
 14 dedicated to identifying and pursuing funding from all potential sources to offset planned  
 15 capital investments. More detail about funding is set forth in the direct testimony of Ed  
 16 Barca, Director of Finance.

17 **Q. HOW IS PWSA’S CIP ORGANIZED?**

18 A. The CIP is organized into six project classes: 1) Water Treatment Plant; 2) Water  
 19 Pumping and Storage; 3) Water Distribution System (including lead service line  
 20 replacements); 4) Wastewater System; 5) Stormwater System; and 6) Miscellaneous. The  
 21 project class designated as “Miscellaneous” consists of Utility Cost Shares, Capital  
 22 Project Reclassification, and New Headquarters and Operations Facility. Each project  
 23 class is then made up of individual projects, which are defined based upon current  
 24 information and range from annual allowances for asset renewal and/or replacement  
 25 activities to major, multiple phase facility renewal projects.

1 **Q. PLEASE DESCRIBE THE INFORMATION THAT IS PROVIDED FOR EACH**  
 2 **PROJECT.**

3 A. Each project is identified by type (project class) and a descriptive name given to it. Other  
 4 information includes the DSIC eligibility, current phase (in the project’s life cycle),  
 5 priority, project description, project justification, risk(s), impact on Operations, estimated  
 6 five-year cash flow summary, and proposed funding source(s). Once approved and  
 7 opened in our project management software, unique project numbers are assigned to track  
 8 the project from inception to completion.

9 **(B) CIP for Fiscal Years 2023-2027**

10 **Q. FOR THE CAPITAL PROJECTS APPROVED BY THE BOARD, WHAT IS**  
 11 **PWSA’S TOTAL CAPITAL REQUIREMENT FOR THE CIP FOR FISCAL**  
 12 **YEARS 2023-2027?**

13 A. The total capital requirement for Fiscal Years 2023-2027 is approximately \$1.8 billion.  
 14 This amount is broken out by project class and by fiscal year, as shown on page 5 of the  
 15 CIP. As shown in the table below, the capital requirements by fiscal year are:

16 *Figure 4. Capital Requirements*

	FY 2023	FY 2024	FY 2025	FY 2026	FY 2027	Total
Water Treatment Plant	\$ 16,030,211	26,885,665	24,038,988	54,790,691	78,451,718	\$ 200,197,272
Water Pumping and Storage	55,304,597	115,127,475	121,491,637	113,245,473	30,009,851	435,179,033
Water Distribution	143,302,527	125,439,446	155,468,790	143,283,004	184,525,120	752,018,887
Wastewater System	50,634,240	31,442,487	27,579,779	45,751,309	54,918,077	210,325,892
Stormwater	29,822,932	34,827,423	36,884,821	33,038,424	26,808,750	161,382,350
Miscellaneous	11,439,316	15,500,000	33,000,000	500,000	500,000	60,939,316
<b>Total Capital Requirements</b>	<b>\$ 306,533,823</b>	<b>349,222,497</b>	<b>398,464,014</b>	<b>390,608,900</b>	<b>375,213,516</b>	<b>\$ 1,820,042,750</b>

18 **Q. PLEASE IDENTIFY THE PROJECTS THAT HAVE BEEN APPROVED.**  
 19

20 A. The entire list of projects approved by the 2023-2027 CIP are listed on pages 7-9 of the  
 21 CIP, which is attached to Mr. Barca’s testimony as PWSA Exhibit EB-4, or available  
 22 electronically [here](#).  
 23

1           (C)    Prioritization of Capital Projects

2   **Q.    HOW DOES PWSA PRIORITIZE ITS CAPITAL PROJECTS?**

3    A.    PWSA uses the aforementioned criteria to evaluate and prioritize capital projects, except  
4           when a legal mandate has been issued. PWSA prioritizes its capital projects based on  
5           legal mandates such that it places the highest priority on non-negotiable regulatory  
6           requirements. Three such directives issued by DEP have established PWSA’s priorities  
7           in recent years, which I discuss below.

8                   On October 25, 2017, DEP issued an Administrative Order (“Safe Drinking Water  
9           Order”), requiring PWSA to address the following items: (a) installation of ultraviolet  
10          (UV) disinfection at the Membrane Filtration Plant (“MFP”) as a condition to reinstate  
11          operation of Highland No. 1 Reservoir; (b) replace the cover and liner of the Lanpher  
12          Reservoir; (c) address reliability deficiencies at the Bruecken Pump Station; (d) install  
13          pressure sensors in the distribution system; and (e) establish a schedule for other capital  
14          improvements to the system.

15                   PWSA has completed all required actions to address the stipulated items in the  
16          Safe Drinking Water Order. The MFP improvements project was completed in June  
17          2020, having received the Public Water Supply Operating Permit on June 17, 2020. The  
18          MFP was restored to full operation on September 14, 2020. The Lanpher Reservoir cover  
19          and liner replacement were completed in June 2019, receiving the Public Water Supply  
20          Operating Permit on June 19, 2019. The Bruecken Pump Station Standby Power  
21          Generators were installed and commissioned on April 21, 2020. The installation of the  
22          24 continuous recording pressure monitors, located throughout the PWSA water  
23          distribution system (System) was completed on July 8, 2018. These 24 monitors were  
24          located in coordination with the DEP in 10 of PWSA’s total 17 System pressure zones.

1 Finally, the full detailed listing of Capital Improvement Projects (CIP) was provided to  
 2 PA-DEP on January 23, 2018, with a presentation on the CIP conducted for PA-DEP and  
 3 EPA staff on January 23, 2018 in Harrisburg PA. All requirements under the Safe  
 4 Drinking Water Order were completed on or before June 17, 2020.

5 Additionally, to comply with the Commission’s regulations at 52 Pa. Code  
 6 §65.6(b), the PWSA completed the installation of an additional 37 pressure monitors on  
 7 January 21, 2021, ensuring that there is at least one or more continuous recording  
 8 pressure monitors in each separate pressure zone throughout the PWSA Distribution  
 9 System. A total of 61 continuous recording pressure monitors is now operational in  
 10 PWSA’s system.

11 On November 17, 2017, DEP issued a Consent Order and Agreement (“Lead  
 12 Consent Order”) containing a series of mandates related to lead service line replacement.  
 13 PWSA has fulfilled all the requirements of the Lead Consent Order to date.

14 On September 6, 2019, DEP issued a Consent Order and Agreement (“2019  
 15 COA”). The 2019 COA, which is attached as Exhibit BK-1, fully resolved a DEP  
 16 investigation and avoided litigation.

17 **Q. WHAT ARE PWSA’S SPECIFIC OBLIGATIONS UNDER THE 2019 COA?**

18 A. Under the 2019 COA, PWSA is required to construct a clearwell bypass system to enable  
 19 the Authority to remove the existing single cell clearwell from service and replace it with  
 20 a new multi-celled clearwell.<sup>1</sup> As a result of the existing single-cell clearwell basin  
 21 condition and design, a clearwell bypass system is essential to ensure uninterrupted water  
 22 supply service should the existing clearwell should prematurely fail.

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<sup>1</sup> 2019 COA Ordering ¶ 3.a.-b.

PWSA is also required by the 2019 COA to: (i) rehabilitate or replace Rising Main #3 (from the Bruecken Pump Station) to PWSA’s Highland No. 2 Reservoir;<sup>2</sup> (ii) rehabilitate or replace Rising Main #4 (from the Bruecken Pump Station) to PWSA’s Highland No. 2 Reservoir;<sup>3</sup> (iii) construct a new redundant rising main from the Aspinwall Pump Station to the Lanpher Reservoir to replace the existing 100 year old transmission main which has suffered 3 major failures in the past 5 years;<sup>4</sup> (iv) replace the cover and liner of the Highland No. 2 Reservoir to comply with existing regulatory standards, and facilitate the clearwell bypass system construction;<sup>5</sup> and (v) replace or rehabilitate the existing Aspinwall and Bruecken pump stations.<sup>6</sup>

**Q. IN 2021, YOU TESTIFIED AS TO THE STATUS OF EACH OF THESE PROJECTS. PLEASE PROVIDE UPDATES.**

A. At the outset, I note that construction on the following two projects has been completed: (i) Rising Main #3 Rehabilitation Project (November 18, 2022); and (ii) Highland No. 2 Reservoir Improvements (Liner and Cover Replacement) Project (December 30, 2022). The status of each project is shown below.

On May 13, 2020, DEP issued a COVID Extension Letter, a copy of which is attached as Exhibit BK-2, which provided 90-day extensions of the deadlines for submitting Construction Permit Applications for the following projects:

- Provision 3.c.i: Rising Main #3 Rehabilitation Project

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<sup>2</sup> 2019 COA Ordering ¶ 3.c.-d.

<sup>3</sup> 2019 COA Ordering ¶ 3.e.-f.

<sup>4</sup> 2019 COA Ordering ¶ 3.g.-h.

<sup>5</sup> 2019 COA Ordering ¶ 3.i.-j.

<sup>6</sup> 2019 COA Ordering ¶ 3.k.

1           ○ Was due "on or before September 1, 2020", but with the 90-day extension,  
 2           the revised date was "11/30/20". PWSA submitted the application by the  
 3           revised deadline, on November 30, 2020.

4           • Provision 3.g: Aspinwall Pump Station to Lanpher Reservoir Rising Main Project:

5           ○ Was due "on or before December 30, 2020", but with the 90-day extension,  
 6           the revised date was "3/31/21". PWSA submitted the application by the  
 7           revised deadline, on March 29, 2021.

8           • Provision 3.k.ii: Aspinwall and Bruecken Pump Station Improvements Projects:

9           ○ Was due "on or before January 1, 2021", but with the 90-day extension, the  
 10          revised date was "4/1/21".<sup>7</sup>

11          • Provision 3.q: Washout Disconnection:

12          ○ Was due "on or before June 1, 2020", but with the 90-day extension, the  
 13          revised date was "8/31/20". PWSA met this deadline by submitting the  
 14          application on August 31, 2020.

15          On May 7, 2021, DEP issued the first Amendment of the 2019 COA

16          ("Amendment #1"), a copy of which is attached as Exhibit BK-3, which provided  
 17          extensions for submitting Construction Permit Applications for the following projects:

18          • Provision 3.a: Clearwell and Related Projects:

19          ○ Specifically, for the Clearwell Bypass System, the original due date for  
 20          submission of a "complete and technically sufficient application for  
 21          construction permit" was "on or before January 1, 2023". Amendment #1  
 22          revised the due date for the application for the construction permit to be "No

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<sup>7</sup> Please see below for an updated status due to DEP amendment of the 2019 COA.

1 later than September 30, 2021", which PWSA achieved, submitting the  
2 Application on September 30, 2021.

- 3 • Provision 3.k.ii: Aspinwall and Bruecken Pump Station Improvements Projects:
  - 4 ○ The submission of a “complete and technically sufficient application for  
5 construction permit” was originally due “on or before January 1, 2021” for  
6 both Aspinwall and Bruecken Pump Station Improvements. The May 13,  
7 2020 authorized 90-day COVID extension revised the due date to be "on or  
8 before April 1, 2021". Amendment #1 further revised the due date to be “No  
9 later than September 30, 2021", which PWSA achieved, submitting the  
10 Application on September 30, 2021 for both Aspinwall and Bruecken Pump  
11 Station Improvements Projects.

12 Amendment #1 also modified the Stipulated Civil Penalties provision of the 2019 COA,  
13 as follows:

- 14 • Provision 4: Stipulated Civil Penalties:
  - 15 ○ Amendment #1 of the 2019 COA modified the Stipulated Civil Penalties for  
16 failure “to meet the corrective action deadline of September 30, 2021, as  
17 specified in Paragraphs 3a. and 3.k.”, providing that if PWSA were to miss a  
18 deadline, it “shall pay a one-time civil penalty in the amount of Twenty  
19 Thousand Dollars (\$20,000)”, as well as providing as follows: “In addition  
20 to the one-time payment, PWSA shall pay a civil penalty in the amount of  
21 One Thousand Dollars (\$1,000) per day for each violation until the  
22 requirements specified in Paragraphs 3a. and 3.k., above, are fulfilled.” This



1 revised the original 2019 COA requirement for PWSA to “pay a civil penalty  
2 in the amount of One Hundred Dollars (\$100.00) per day for each violation”.

3 On August 4, 2022, DEP issued a Second Amendment of the 2019 COA  
4 (“Amendment #2”), a copy of which is attached as Exhibit BK-4, which provided  
5 extensions of the submission of Construction Completion Forms for the following  
6 projects:

7 • Provision 3.d: Rising Main #3 Rehabilitation Project:

- 8 ○ The original 2019 COA required that the PWSA “shall complete the  
9 authorized work” and submit a “signed “Certificate of  
10 Construction/Modification Completion” form” "within one (1) year of the  
11 Department’s issuance of a construction permit authorizing the rehabilitation  
12 or replacement of Rising Main #3”. As the Construction Permit was issued  
13 on March 10, 2021, the Original COA required that the “Certificate of  
14 Construction/Modification Completion” form be submitted by March 10,  
15 2022. Amendment #2 changed the requirement from a stated duration to a  
16 specific date, stating the due date was “no later than December 31, 2022.”  
17 PWSA achieved the construction deadline by completing the project on  
18 November 18, 2022.

19 • Provision 3.j: Highland No. 2 Reservoir Improvements (Liner and Cover  
20 Replacement) Project:

- 21 ○ The original deadline for submitting a “signed “Certificate of  
22 Construction/Modification Completion” form” was changed from a stated  
23 duration of "within one (1) year of the Department’s issuance of a

1 construction permit authorizing the rehabilitation or replacement”, to a  
2 specific date, “no later than December 31, 2022“. For reference, as the  
3 Construction Permit was issued on January 8, 2021, the original 2019 COA  
4 would have required that the “Certificate of Construction/Modification  
5 Completion” form be submitted by January 8, 2022. PWSA achieved the  
6 construction deadline by completing the project on December 30, 2022.

7 Amendment #2 also modified the Stipulated Civil Penalties provision of the 2019 COA,  
8 as follows:

- 9 • Provision 4.b: Stipulated Civil Penalties:
  - 10 ○ Amendment #2 of the 2019 COA modified the Stipulated Civil Penalties for  
11 failure “to meet the corrective action deadline of December 31, 2022, as  
12 specified in Paragraphs 3.d. and 3.j.”, again providing that if PWSA were to  
13 miss a deadline, it “shall pay a one-time civil penalty in the amount of  
14 Twenty Thousand Dollars (\$20,000)” for this failure, as well as providing as  
15 follows: “In addition to the one-time payment, PWSA shall pay a civil  
16 penalty in the amount of One Thousand Dollars (\$1,000) per day for each  
17 violation until the requirements specified in Paragraphs 3d. and 3.j., above,  
18 are fulfilled.” This revised the original 2019 COA requirement for PWSA to  
19 “pay a civil penalty in the amount of One Hundred Dollars (\$100.00) per day  
20 for each violation”.

21 To date (as of May 8, 2023), PWSA has met each of the deadlines stipulated in the 2019  
22 COA, as amended in the two subsequent amendments.

1 **Q. DOES THE 2019 COA ALSO ADDRESS CROSS-CONNECTIONS?**

2 A. Yes. PWSA was required by the 2019 COA to investigate the locations where valves,  
 3 blow-offs, or other such appurtenances that connect to the distribution system are found  
 4 within chambers, pits or manholes connected directly or indirectly to any storm drain or  
 5 sanitary sewer (commonly referred to by PWSA as “washouts”), which it has done.  
 6 Further, in September 2020, PWSA submitted to DEP a report detailing the findings  
 7 including the number and locations of all such cross-connections within PWSA’s system.  
 8 Finally, PWSA submitted a plan and proposed schedule on November 30, 2020 for  
 9 eliminating any and all cross-connections and to take the necessary steps to eliminate  
 10 them as soon as is practicable.<sup>8</sup>

11 **Q. WHAT ARE THE CONSEQUENCES THAT PWSA WILL FACE IF IT DOES**  
 12 **NOT COMPLY WITH THE 2019 COA?**

13 A. As noted above, under Amendment #1 and Amendment #2 of the 2019 COA, if PWSA  
 14 does not comply in a timely manner with any term or provision of the COA, it will be  
 15 required to pay a one-time civil penalty in the amount of \$20,000, in addition to a civil  
 16 penalty in the amount of \$1,000 per day for each violation. This contrasts with the  
 17 amount of \$100.00 per day for each violation that was in the original COA. PWSA is  
 18 also subject to the imposition of additional penalties.<sup>9</sup> As Mr. Barca explains, if PWSA  
 19 is not permitted to raise its rates as proposed in this proceeding, it will be unable to fulfill  
 20 these obligations. The result is that PWSA would be subject to the payment of these  
 21 penalties. Since PWSA does not have investors, this burden would be the responsibility

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<sup>8</sup> 2019 COA Ordering ¶ 3.q.-t.

<sup>9</sup> 2019 COA Ordering ¶ 4; Amendment #1 to 2019 COA and Amendment #2 to 2019 COA

1 of its ratepayers, which would further exacerbate the PWSA’s ability to implement the  
 2 required project improvements.

3 **Q. PLEASE DESCRIBE THE CONSTRUCTION PROJECTS THAT PWSA MUST**  
 4 **UNDERTAKE PURSUANT TO THE 2019 COA.**

5 A. PWSA has assigned the following names to the projects that are required by the 2019  
 6 COA:

- 7 • Aspinwall WTP Clearwell Bypass (Emergency Response)
- 8 • Rising Main 3 – Rehabilitation AND/OR
  - 9 ○ Rising Main 3 – Replacement
- 10 • Highland No. 2 Reservoir Improvements (Liner and Cover Replacement)
- 11 • Rising Main 4 – Rehabilitation AND/OR
  - 12 ○ Rising Main 4 – Replacement
- 13 • Aspinwall WTP High Service Pumping OR
  - 14 ○ Aspinwall Pump Station Improvements
  - 15 ○ Bruecken Pump Station Improvements
- 16 • Aspinwall Pump Station to Lanpher Reservoir Rising Main
- 17 • Aspinwall WTP Clearwell Improvements (Replacement)

18  
 19 These projects are shown in the table below:

Description	PWSA Project Name	PWSA Project Number	DEP Construction Permit Submittal	DEP COA Requirement: Construction Complete
<b>PROJECTS SPECIFICALLY STATED IN COA</b>				
Aspinwall WTP Clearwell Bypass (Emergency Response)	Clearwell Emergency Response Project	2017-323-100-0	Revised due date 9/30/2021 (was 1/1/2023) - Completed (submitted 9/30/2021) – Awaiting permit	2 years after receipt of construction permit
Rising Main 3 – Rehabilitation	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	Extended due date 11/30/2020 (was 9/1/2020) – Completed (submitted	Final amended due date was 12/31/2022, with an extension approved via 8/4/2022 COA Amendment).

Description	PWSA Project Name	PWSA Project Number	DEP Construction Permit Submittal	DEP COA Requirement: Construction Complete
			9/1/2020, early) - Permit received 3/10/2021	Completed 11/18/2022
Rising Main 3 – Replacement	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	Due 3/1/2021 – Completed (submitted 9/1/2020, early) - Permit received 3/10/2021	Final amended due date was 12/31/2022, with an extension approved via 8/4/2022 COA Amendment). Completed 11/18/2022
Highland No. 2 Reservoir Liner and Cover Replacement	Highland No. 2 Reservoir Liner and Cover Replacement	2019-323-102-0	Due 6/30/2020 (submitted 6/30/2020) – Permit received 1/8/2021	Final amended due date was 12/31/2022, with an extension approved via 8/4/2022 COA Amendment). Completed 12/30/2022
Rising Main 4 – Rehabilitation	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	Due 6/1/2021 - Completed (submitted 6/1/2021) – Permit received 1/14/2022	2 years after receipt of construction permit (currently due 1/14/2024)
Rising Main 4 – Replacement	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	Due 6/1/2021 - Completed (submitted 6/1/2021) – Permit received 1/14/2022	2 years after receipt of construction permit (currently due 1/14/2024)
Aspinwall Pump Station Improvements	Aspinwall Pump Station Improvements	2017-323-104-0	Extended date 9/1/2021 (was 1/1/2021, then 4/1/2023) - Completed (submitted 9/30/2021) – Awaiting permit)	2 years after receipt of construction permit

Description	PWSA Project Name	PWSA Project Number	DEP Construction Permit Submittal	DEP COA Requirement: Construction Complete
Bruecken Pump Station Improvements	Bruecken Pump Station Improvements	2017-323-106-0	Final extended date 9/1/2021 (was 1/1/2021, then 4/1/2023) - Completed (submitted 9/30/2021) – Awaiting permit	2 years after receipt of construction permit
Aspinwall Pump Station to Lanpher Reservoir Rising Main	Aspinwall Pump Station to Lanpher Reservoir Rising Main	2018-323-100-0	Extended due date 3/31/2021 (was 12/30/2020) - Completed (submitted 3/29/2021) – Awaiting permit	2 years after receipt of construction permit
Aspinwall WTP Clearwell Improvements (Replacement)	Clearwell Improvements	Unidentified	1/1/2024	2 years after receipt of construction permit
<b>PROJECTS NECESSARY TO SUPPORT COA PROJECTS (Not Stated in COA)</b>				
Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	2017-322-100-0	N/A	N/A
Highland Reservoir Pump Station and Rising Main	Highland Reservoir Pump Station and Rising Main	2017-323-101-0	Submitted 3/5/2021 – Permit Received 7/8/2022	N/A

1

2 **Q. WHAT ARE THE TOTAL COSTS ASSOCIATED WITH THE CONSTRUCTION**  
 3 **PROJECTS THAT ARE NECESSARY TO COMPLY WITH THE COA?**

4 A. PWSA’s total approved budget in the 2023-2027 CIP for the construction projects that  
 5 are necessary to comply with the 2019 COA is approximately \$377 million. However,

1 the total budget for these projects, including what was completed to date and what will be  
2 completed post-2027 is approximately \$450 million. As of April 2023, the cumulative  
3 commitment for these projects is \$68.2 million with \$48.9 million paid to date. In  
4 addition, even though it is not included in the 2019 COA, the Highland Reservoir Pump  
5 Station and Rising Main and Lanpher Reservoir Booster Disinfection Projects must be  
6 completed in order to replace the clearwell. The approved 2023-2027 CIP budget to  
7 complete these projects are approximately \$60 million with approximately an additional  
8 \$5 million spent prior to 2023. As design progress continues to refine the scope of the  
9 projects, additional budget may be necessary.

10 **Q. DO YOU WISH TO HIGHLIGHT ANY OTHER CAPITAL PROJECTS TO**  
11 **WHICH PWSA HAS COMMITTED?**

12 A. PWSA transitioned the Lead Service Line Replacement (“LSLR”) program to our  
13 ongoing water main replacement program. The small diameter water main program is  
14 being implemented to address the fragile condition and constant failures of these water  
15 mains throughout the service areas. These pipes are prematurely failing due to  
16 uncontrollable external pipeline corrosion. The corrosion related pipeline failures have  
17 become acute in the past several years, which adds substantially to the PWSA operations  
18 expenses. This approach allows PWSA to complete the replacement of the publicly  
19 owned portions of the individual lead service lines (“LSLs”) concurrent with the  
20 replacement of aging water distribution mains, improving the related costs and efficiency  
21 for completion of the LSLRs and the resulting surface restoration activities. Additionally,  
22 the private portion of identified LSLs are also replaced, where identified, during the  
23 completion of the Small Diameter Water Main Replacement Project.

24

1           In 2022, with the availability of outside funding sources, the Authority  
2 commenced additional LSLR projects. The first was funded by PENNVEST and focused  
3 on removing lead service lines at day care facilities and locations with elevated levels of  
4 lead in the drinking water. The 2022 Priority LSLR program was extremely successful  
5 and all LSLR work was completed by late 2022. The 2022 Neighborhood LSLR program  
6 was funded by American Recovery Plan Act funds, and construction of the \$17M  
7 program commenced in April 2022. The Authority expects to complete this work  
8 including service line identification and LSLR at over 1,800 properties in late 2023.

9           With funding being provided for LSLRs by the Infrastructure Investment and Jobs  
10 Act, PWSA is planning to submit funding request to PENNVEST for continued  
11 Neighborhood LSLR programs. A \$13.4M project was awarded to PWSA in January  
12 2023 (slated to start construction in July 2023) and another application was submitted in  
13 May 2023.

14           Another critical project is the annual Sewer Rehabilitation Project. This project  
15 rehabilitates sewers (combined, sanitary and storm) through the trenchless installation of  
16 airtight, watertight cured-in-place pipe lining on the inside of aging sewer pipes. This  
17 approach affords PWSA with an approach that minimizes the impact to residents through  
18 a more cost-effective way of extending the life of the sewer system than replacing it with  
19 new pipe. This sewer lining program improves the reliability and service provided to our  
20 customers. In response to the increasing rate of failure of sewer assets that are located  
21 under or adjacent to structures (e.g., buildings, bridges, railroads, or major utilities) or  
22 located on steep slopes (due to limited accessibility), PWSA has developed a Sewers



1 Under Structures Program for the proactive replacement, rehabilitation, or realignment  
 2 and abandonment of this aging infrastructure.

3 **III. UPDATE REGARDING PRIOR RATE CASE SETTLEMENT ISSUES**

4 **(D) Wastewater Laterals**

5 **Q. PLEASE DESCRIBE PWSA’S COMMITMENT IN THE 2020 RATE CASE**  
 6 **REGARDING WASTEWATER LATERALS.**

7 A. In the 2020 rate case, PWSA agreed to meet with interested parties no later than March  
 8 15, 2021 to discuss the Consultant’s report addressing feasibility of owning and/or  
 9 maintaining wastewater laterals within public easements/rights-of-ways (“ROWS”).<sup>10</sup>  
 10 PWSA met with interested parties on March 2, 2021 to discuss the report.

11 **Q. WHAT WAS THE PURPOSE OF THE REPORT?**

12 A. PWSA had contracted with the Consultant referenced in the Settlement to comply with  
 13 the Stage 1 Compliance Plan Order. The Consultant’s responsibilities were to study and  
 14 prepare a report that includes the legal, economic and operational feasibility of owning  
 15 and/or maintaining wastewater laterals within public easements/ROWS. The concern  
 16 sought to be addressed is the responsibility of customers who own laterals within public  
 17 ROWs and easements to maintain them, rather than PWSA having this responsibility.

18 **Q. WHAT WERE THE CONSULTANT’S FINDINGS?**

19 A. After review of the legal, cost and logistical issues, the present structure whereby the  
 20 customer owns and is responsible for operations and maintenance (“O&M”) and/or  
 21 replacement of the entire private lateral is currently the most realistic approach for the  
 22 PWSA for the near term. Based on the survey of other similarly situated wastewater  
 23 conveyance utilities, maintaining the current status quo whereby the customer remains

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<sup>10</sup> 2020 Joint Petition for Partial Settlement, III.H.5.

1 responsible for the portion of the lateral he or she owns is not unique. From the research  
 2 performed, about half (51.5 percent) of the utilities own/are responsible for the  
 3 wastewater lateral from the connection at the sewer main up until an actual or assumed  
 4 point (property line, easement, curb, assumed curb). In the other half (48.5 percent), the  
 5 utility is responsible for no portion of the lateral. Also, PWSA’s current structure of  
 6 private ownership of the wastewater laterals up to and including the connection of the  
 7 lateral to the sewer main (even where it crosses the ROW) is rooted in City of Pittsburgh  
 8 Ordinances and has been carried through in PWSA’s current Commission approved  
 9 wastewater tariff.

10 **Q. DID PWSA PROPOSE ANY CHANGES IN ITS 2021 BASE RATE CASE**  
 11 **REGARDING THE OWNERSHIP OF WASTEWATER LATERALS?**

12 A. No. Besides citing to the findings in the Consultant’s report, PWSA noted that it was is  
 13 in the process of undertaking many other extremely important construction projects  
 14 including its ambitious lead service line replacement program (now performed as part of  
 15 the small diameter water main replacement program) and an equally ambitious  
 16 infrastructure and system modernization upgrade as part of its transition to the  
 17 Commission’s jurisdiction. Requiring PWSA to embark upon taking ownership of its  
 18 approximately 110,000 wastewater laterals and/or replacing them all will require PWSA  
 19 to divert a significant amount of staff resources and incur substantial expense.

20 In addition to these realities, PWSA referred to Act 120 of 2018 which amended  
 21 the Public Utility Code regarding the accelerated replacement of customer-owned lead  
 22 water service lines and damaged wastewater laterals. The Commission issued a Notice of  
 23 Proposed Rulemaking Order on September 17, 2020 at Docket Number L-2020-301952  
 24 which was published in the *Pennsylvania Bulletin* on April 3, 2021 at 5 Pa. B. 1802,

1 starting a 90-day comment period (“Act 120 Proposed Rulemaking”). The Notice of  
2 Proposed Rulemaking proposed a framework that would enable the PWSA to replace  
3 damaged customer-owned wastewater laterals (without requiring the PWSA to take over  
4 ownership) when replacement would provide benefits to the rest of the wastewater  
5 system. The specifics of this framework are subject to the Commission’s final  
6 rulemaking order and a subsequent plan to be developed by PWSA and submitted to the  
7 Commission for approval.

8           Upon consideration of all these factors, PWSA concluded that the most prudent  
9 course at that time was to monitor the Commission’s Act 120 Proposed Rulemaking and  
10 actively evaluate the development of a PWSA-specific Act 120 plan that would be  
11 submitted to the Commission for approval. Ultimately, if PWSA were to embark upon a  
12 plan to replace damaged customer-owned wastewater laterals in accordance with Act  
13 120, the most cost-effective option for PWSA would be to use full lining as the go-to  
14 repair option, but in practice, the type of repair selected will be based on an assessment of  
15 the lateral in question.

16 **Q. DID PWSA MAKE A FURTHER COMMITMENT AS PART OF THE**  
17 **SETTLEMENT OF THE 2021 RATE CASE?**

18 A. Yes. In the Settlement of the 2021 rate case, PWSA agreed to prepare and submit for  
19 Commission approval a plan for repair and replacement of privately owned damaged  
20 wastewater service laterals (“DWSL Plan”), which includes those located within the  
21 public ROW, at PWSA’s expense.<sup>11</sup> Under the terms of the Settlement, the DWSL Plan  
22 was to be consistent with PWSA’s comments filed in the Commission’s Act 120

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<sup>11</sup> 2021 Joint Petition for Partial Settlement, III.E.6.

1 Proposed Rulemaking, and contain a cap of \$500,000 on the annual amount that PWSA  
2 would expend on replacement of damaged sewer laterals, subject to the right of PWSA  
3 and interested parties to request that the Commission revise the cap upward if additional  
4 funding sources or other factors justify a revision. Further, PWSA agreed to request that  
5 the DWSL Plan be grandfathered and not require revision upon final promulgation of the  
6 Commission's Proposed Act 120 Rulemaking. To formulate a DSL Plan, PWSA was  
7 obligated under the Settlement to convene a collaborative with interested parties within  
8 60 days of the final filing of the Settlement. Finally, PWSA committed to file for  
9 approval of the DWSL Plan with the Commission 90 days after entry of the  
10 Commission's final order in the 2021 base rate proceeding.

11 **Q. PLEASE DESCRIBE PWSA'S COMPLIANCE WITH THIS COMMITMENT OF**  
12 **THE 2021 SETTLEMENT.**

13 A. Consistent with the 2021 Settlement, which was filed with the Commission on September  
14 14, 2021, PWSA convened a collaborative within 60 days on November 9, 2021. Since  
15 the Commission's final order approving the Settlement was entered on November 18,  
16 2021, PWSA's DWSL Plan was due on February 16, 2022. Given the need for additional  
17 time to assemble the DWSL Plan, on January 13, 2022, PWSA requested an unopposed  
18 30-day extension of time. By Secretarial Letter dated February 14, 2022, PWSA's  
19 request was approved, making the DWSL Plan due on March 18, 2022. PWSA timely  
20 filed a DWSL Petition and Plan, which complied with the terms of the 2021 Settlement.  
21 Specifically, PWSA sought a \$500,000 budget, made proposals consistent with its  
22 comments filed to the Act 120 Proposed Rulemaking and requested that the Plan be  
23 grandfathered so that it would not have to be revised upon promulgation of final

1 regulations. With the filing on March 18, 2022, PWSA fulfilled its commitment under  
 2 the Settlement relating to privately owned damaged sewer laterals.<sup>12</sup>

3 **Q. DID THE COMMISSION PROMULGATE FINAL REGULATIONS?**

4 A. Yes. Shortly before PWSA made its March 18, 2022 filings, the Commission issued a  
 5 Final Rulemaking Order on March 14, 2022. The final regulations were approved by the  
 6 Independent Regulatory Review Commission (“IRRC”) on May 19, 2022 and went into  
 7 effect upon publication in the *Pennsylvania Bulletin* on July 23, 2022.

8 **Q. PLEASE DESCRIBE THE OVERALL APPROACH TAKEN BY THE**  
 9 **COMMISSION IN THE FINAL REGULATIONS WITH RESPECT TO**  
 10 **DAMAGED WASTEWATER SERVICE LATERALS.**

11 A. The approach taken by the Commission in the final regulations concerning the repair and  
 12 replacement of DWSLs is that utilities should replace them only in limited situations  
 13 where the costs will prudently benefit and improve system reliability, efficiency, and  
 14 service quality in known problem areas. The regulations provide as follows:<sup>13</sup>

15 (b) An entity’s purpose for petitioning the Commission for  
 16 approval of a DWSL program shall be linked to:

17 (1) Excessive I&I [Infiltration and Inflow] causing, or which is  
 18 reasonably expected to cause within the next 5 years, a  
 19 hydraulically overloaded condition, wastewater overflows or  
 20 additional flow which is prudent for the entity to avoid.

21 (2) Design or construction conditions causing, or which are  
 22 reasonably expected to cause within the next 5 years, wastewater  
 23 overflows.

24 **Q. DID PWSA’S DWSL PROGRAM FOCUS ON EXCESSIVE I&I AND PROJECT**  
 25 **AREAS AS CONTEMPLATED BY THE COMMISSION’S REGULATIONS?**

26 A. No. In its Comments filed to the Act 120 Proposed Rulemaking, PWSA had proposed  
 27 the inclusion of a public health or safety hazard as an additional justification for a DWSL

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<sup>12</sup> Docket Nos. P-2022-3031586 and R-2022-3031597.

<sup>13</sup> 52 Pa. Code § 66.33.

1 Program, which the Commission declined to add. However, in response to the IRRC  
 2 comments questioning how the proposed language protects public health and safety, the  
 3 Final Rulemaking Order notes that an entity is not prohibited from petitioning the  
 4 Commission to institute a DWSL Program that allows the entity to replace or repair  
 5 service laterals that create a public health and/or safety hazard.

6 **Q. DID PWSA PETITION FOR A DWSL PROGRAM THAT WOULD ALLOW IT**  
 7 **REPLACE OR REPAIR SERVICE LATERALS THAT CREATE A PUBLIC**  
 8 **HEALTH AND/OR SAFETY HAZARD?**

9 A. Yes. Given the full private ownership of laterals on PWSA’s system, the Authority  
 10 proposed that its voluntary DWSL Program focus on the repair and replacement of  
 11 damaged laterals that are part of its combined, wastewater/stormwater system and the  
 12 portion that are in the public ROW. DWSLs are often identified from sinkholes that form  
 13 in the public right-of-way. While sinkholes pose a wide array of public health and safety  
 14 harms and risks, they are not necessarily accompanied by or necessarily create I&I issues.  
 15 Among the harms that are created by sinkholes include risks to the traveling public,  
 16 damage to the bedding of other utility facilities, issues with maintenance and operation of  
 17 the sewer main, and seepage into public areas posing a health hazard to local residents as  
 18 well as the general public. In PWSA’s view, its proposed focus on the paved, public  
 19 ROW where the damage is creating a public health or safety hazard was designed to  
 20 produce system-wide benefits as envisioned by Act 120.

21 **Q. DID THE COMMISSION APPROVE PWSA’S DWSL PROGRAM?**

22 A. No. On December 29, 2022, the Commission entered an Order denying PWSA’s DWSL  
 23 Petition, concluding that if PWSA desires to implement a DWSL program pursuant to  
 24 Act 120, it may file a new petition that complies with Commission regulations.  
 25 Alternatively, the Commission suggested that PWSA could petition the Commission

1 outside of the scope of Act 120 to institute a program that would allow it to replace or  
2 repair DWSLs that create a public health and/or safety hazard to individual customers  
3 without system-wide benefits and under a different cost recovery mechanism.<sup>14</sup>

4 **Q. IS PWSA FOLLOWING THE COMMISSION'S ALTERNATIVE SUGGESTION?**

5 A. Yes. Through a separate filing, PWSA plans to seek authority from the Commission that  
6 would allow for private property reimbursement and illegal connection removal.

7 Although PWSA is still developing a comprehensive proposal to file with the  
8 Commission, the Authority has included in this base rate filing the amount of \$250,000  
9 for this alternative program for each 2025 and 2026. It is not necessary for PWSA to  
10 request money for 2024 due to a \$500,000 grant from the City. PWSA plans to petition  
11 the Commission for authority to implement a Pilot Infiltration and Inflow Reduction  
12 Program and Damaged Wastewater Lateral Program for eligible low-income customers.  
13 The combined programs would include reimbursement to eligible customers for the  
14 disconnection of illegal surface storm water connections to PWSA's Sanitary Sewers  
15 (e.g., downspout disconnection, foundation drain disconnection, yard drain  
16 disconnection, driveway drain disconnections, etc.) and lateral replacement and/or lateral  
17 rehabilitation of Damaged Wastewater Laterals located within the paved, public right-of-  
18 way. By disconnecting the illegal surface storm water connections or  
19 replacing/rehabilitating damaged laterals, PWSA could reduce operating costs, reduce  
20 capital program expenditures, and reduce the risks of overflows and basement backups.

21

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<sup>14</sup> December 29, 2022 Order at 3.

1 (E) Minimum Warranty

2 Q. PLEASE DESCRIBE PWSA’S OBLIGATION UNDER THE 2020 SETTLEMENT  
3 REGARDING ITS MINIMUM WARRANTY.

4 A. PWSA agreed as part of the 2020 Settlement to revise its minimum warranty on  
5 workmanship and material on lead service line replacements to comply with the industry-  
6 wide standard that the Commission is expected to establish pursuant to Act 120 of  
7 2018.<sup>15</sup>

8 Q. HAS THE COMMISSION ESTABLISHED THIS INDUSTRY-WIDE  
9 STANDARD?

10 A. Yes. The Commission established an industry-wide standard, requiring an entity  
11 performing damaged water service and wastewater sewer lines to provide a warranty term  
12 of not less than two years.<sup>16</sup> The warranty provisions must define the start date of the 2-  
13 year term; ensure that the materials and workmanship of the line replacement and  
14 restoration of services are covered; define the maximum coverage amounts under the  
15 warranty; explain any liability an entity will have for damages not covered by the  
16 warranty; and ensure that the entity has access to the property to correct any deficiencies.

17 Q. IS PWSA COMMITTED TO COMPLIANCE WITH THIS INDUSTRY-WIDE  
18 STANDARD FOR THE MINIMUM WARRANTY ON WORKMANSHIP AND  
19 MATERIAL LINE REPLACEMENTS?

20 A. Yes.

21 IV. CONCLUSION

22 Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

23 A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate.

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<sup>15</sup> 2020 Joint Petition for Settlement, III.H.7. See *Implementation of Act 120 of 2018*, Docket No. M-2019-3013286 (Order entered November 1, 2019), at 4-5.

<sup>16</sup> 52 Pa. Code §§ 65.58(e) and 66.38(e).



# Exhibit BK-1

**COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

In The Matter Of:

Pittsburgh Water and Sewer Authority	:	Violations of the Pennsylvania Safe
Penn Liberty Plaza 1	:	Drinking Water Act and the Rules and
1200 Penn Avenue	:	Regulations Promulgated Pursuant Thereto
Pittsburgh, PA 15222	:	

**CONSENT ORDER AND AGREEMENT**

This Consent Order and Agreement is entered into this 10<sup>th</sup> day of SEPTEMBER 2019, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection (“Department”) and the Pittsburgh Water and Sewer Authority (“PWSA”).

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce the Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, *as amended*, 35 P.S. §§ 721.1-721.17 (“Safe Drinking Water Act”); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510–17 (“Administrative Code”); and the rules and regulations promulgated thereunder (“Regulations”).

B. PWSA is a municipal authority with a business address of Penn Liberty Plaza 1, 1200 Penn Avenue, Pittsburgh, Pennsylvania 15222. PWSA is a “person,” a “supplier of water” and a “public water supplier,” as those terms are defined in Section 3 of the Safe Drinking Water Act, 35 P.S. § 721.3, and Section 1 of the Regulations, 25 Pa. Code § 109.1.

C. PWSA leases, operates and is the permittee of a “public water system” and, more specifically, a “community water system,” as those terms are defined in Section 3 of the Safe Drinking Water Act, 35 P. S. § 721.3, and Section 1 of the Regulations, 25 Pa. Code § 109.1.

PWSA's public water system consists of water sources, a clearwell and other storage facilities, treatment facilities and a distribution system (collectively, the "System"). PWSA provides drinking water through the System to approximately 520,000 people in the Pittsburgh, Pennsylvania area, including approximately 250,000 residential customers. PWSA operates the System pursuant to multiple public water supply permits issued by the Department and has been assigned Public Water System Identification Number 5020038. The City of Pittsburgh owns the System and leases it to PWSA.

D. Section 4(3) of the Regulations, 25 Pa. Code § 109.4(3), requires public water suppliers to provide and effectively operate and maintain public water system facilities. Section 4(4) of the Regulations, 25 Pa. Code § 109.4(4), requires public water suppliers to take whatever investigative or corrective action is necessary to assure that safe and potable water is continuously supplied to the users of the public water system.

E. PWSA uses a clearwell constructed in approximately 1908 for storage of filtered water prior to the introduction of the water into PWSA's distribution system. In 1998, PWSA contracted Marion Hill Associates to conduct an inspection of the clearwell. The 1998 clearwell inspection found that the structural stability of the clearwell was good overall, but identified several areas of concern including, but not limited to: excessive amounts of sediment that prohibited inspection of the bottom of the tank; debris; infiltrating tree roots; signs of erosion, deterioration and cracks in the concrete walls; leaks in the clearwell equalization chamber; and considerable amounts of rust on the gates for the clearwell and gatehouse, which could make them unmovable. The consultant concluded that the clearwell did not meet current design standards for public water supply finished water storage.

F. PWSA subsequently hired consultants HDR Engineering, Inc. and Malcom Pirnie, Inc. to provide separate but concurrent evaluations and recommendations regarding the clearwell. In November 2008, HDR Engineering, Inc. provided a report to PWSA titled “Pittsburgh Water Treatment Plant Clearwell Improvements, Phase 1- Study”. The purpose of the report was to identify available alternatives to address “PWSA’s desires to have a clearwell system with the operational flexibility of being able to remove approximately one half of the clearwell from service for cleaning and maintenance while the other half remains in service; and to have the ability to bypass the clearwell and send filtered water directly to the Bruecken Pump Station in emergency situations.” In December 2008, Malcom Pirnie, Inc. provided a report to PWSA titled “Clearwell Improvements Phase 1-Study”, which also addressed PWSA’s expressed need for operational flexibility with the clearwell. Both reports identified viable alternative options and provided cost estimates to PWSA to address the condition of the clearwell as well as the desired operational flexibility.

G. In March 2017, consultant Mott McDonald submitted another report to PWSA entitled “Alternative Evaluation-Clearwell Redundancy Project”, which identified additional viable options to remedy the inflexibility of the clearwell with cost estimates.

H. During a three-day inspection in late April 2017, the Department discovered that two access hatches on the clearwell were open and several other hatches were in disrepair, creating possible pathways of surface contamination. The Department required PWSA to take immediate action to secure the manholes on the clearwell with temporary covers. On May 1, 2017, the Department issued a Field Order citing PWSA for failing to effectively operate and maintain its public water facilities and failing to take investigative and corrective action necessary to ensure that safe and potable water is continuously supplied to the users of its system

by, among other things, not adequately responding to the 1998 Marion Hill Associates clearwell inspection report, in violation of 25 Pa. Code §§ 109.4(3) and 109.4(4). In the Field Order, the Department directed PWSA to increase its free chlorine residual, install additional protective and monitoring equipment on the clearwell, and conduct additional monitoring and testing of the clearwell.

I. The violations described in Paragraph H, above, constitute a public nuisance under Section 12 of the Safe Drinking Water Act, 35 P.S. § 721.12, and subject PWSA to a claim for civil penalties under Section 13(g) of the Safe Drinking Water Act, 35 P.S. § 721.13(g).

J. On October 25, 2017, the Department issued an Administrative Order to PWSA directing the Authority to undertake a number of actions including, among other things: to provide to the Department a detailed schedule for the completion of certain longer-term capital improvement projects identified by PWSA to the Department. Two of the identified capital improvement projects were the “Clearwell Emergency Response Project” and the “Washout Disconnection Program”.

K. Pursuant to Section 109.608 of the Regulations, 25 Pa. Code § 109.608, a public water system may not be designed or constructed in a manner which creates a cross-connection. A “cross-connection” is defined in 25 Pa. Code § 109.1 as “[a]n arrangement allowing either a direct or indirect connection through which backflow, including backsiphonage, can occur between the drinking water in a public water system and a system containing a source or potential source of contamination, or allowing treated water to be removed from any public water system, used for any purpose or routed through any device or pipes outside the public water system, and returned to the public water system. The term does not include connections to devices totally within the control of one or more public water systems and connections between

water mains.” A “washout”, as referred to in PWSA’s planned “Washout Disconnection Program”, is a connection between the public water system distribution components and the storm or sanitary sewerage systems utilized for flushing these lines and may indicate the presence of a cross-connection within the public water system. Cross-connections pose a potential threat to public health.

After full and complete negotiation of all matters set forth in this Consent Order and Agreement and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by PWSA as follows:

1. Authority. This Consent Order and Agreement is an Order of the Department authorized and issued pursuant to Section 5 of the Safe Drinking Water Act, 35 P.S. § 721.5; and Section 1917-A of the Administrative Code, 71 P.S. § 510-17.

2. Findings.

a. PWSA agrees that the findings in Paragraphs A through K are true and correct and, in any matter or proceeding involving PWSA and the Department, PWSA shall not challenge the accuracy or validity of these findings.

b. The parties do not authorize any other persons to use the findings in this Consent Order and Agreement in any matter or proceeding.

3. Corrective Action. PWSA shall complete the following actions in accordance with the following schedule:

**Clearwell and Related Projects**

a. On or before January 1, 2023, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit for a bypass system that

will enable PWSA to remove the clearwell from service and replace it. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

b. Within two (2) years of the Department's issuance of a construction permit authorizing construction of a clearwell bypass system, PWSA shall complete construction of the bypass system in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's construction of the bypass system, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

c. To facilitate the clearwell bypass system, PWSA shall rehabilitate or replace Rising Main #3 to PWSA's Highland 2 Reservoir as follows:

(i) On or before September 1, 2020, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit to rehabilitate Rising Main #3;

OR

(ii) On or before March 1, 2021, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit to replace Rising Main #3.

In the event the Department makes a written request to PWSA to supplement or modify an application submitted pursuant to Paragraph 3.c.(i) or 3.c.(ii), above, PWSA shall supplement or modify its application as requested by the Department within the time requested.

d. Within one (1) year of the Department's issuance of a construction permit authorizing the rehabilitation or replacement of Rising Main #3, PWSA shall complete the authorized work in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's rehabilitation or replacement of Rising Main #3, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

e. On or before June 1, 2021, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit to rehabilitate or replace Rising Main #4 to PWSA's Highland 2 Reservoir to facilitate the clearwell bypass system. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

f. Within two (2) years of the Department's issuance of a construction permit authorizing the rehabilitation or replacement of Rising Main #4, PWSA shall complete the authorized work in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's rehabilitation



or replacement of Rising Main #4, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

g. On or before December 30, 2020, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit for a new redundant rising main from the Aspinwall Pump Station to the Lanpher Reservoir to facilitate the clearwell bypass system. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

h. Within two (2) years of the Department's issuance of a construction permit authorizing the construction of a new redundant rising main from the Aspinwall Pump Station to the Lanpher Reservoir, PWSA shall complete construction of the rising main in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's construction of the redundant rising main, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

i. On or before June 30, 2020, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit to replace the cover and liner of the Highland 2 Reservoir to facilitate the clearwell bypass system. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

j. Within eighteen (18) months of the Department's issuance of a construction permit authorizing the replacement of the cover and liner of the Highland 2 Reservoir, PWSA shall replace the cover and liner in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's replacement of the cover and/or liner, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

k. On or before January 1, 2021, to facilitate the clearwell bypass system, PWSA shall submit to the Department:

(i) A complete and technically sufficient application for a combined pump station to replace the existing Aspinwall and Breucken pump stations;

OR

(ii) Complete and technically sufficient applications for rehabilitation of the existing Aspinwall and Breucken pump stations.

In the event the Department makes a written request to PWSA to supplement or modify the application(s), PWSA shall supplement or modify its application(s) as requested by the Department within the time requested.

l. Within two (2) years of the Department's issuance of a construction permit authorizing PWSA to conduct a project under either Paragraph 3.k.(i) or 3.k.(ii), above, PWSA shall complete the authorized work in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed "Certificate of

Construction/Modification Completion” form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA’s replacement or rehabilitation of the Aspinwall and Bruecken pump stations, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

m. On or before January 1, 2024, PWSA shall submit to the Department a complete and technically sufficient application for a construction permit to replace the clearwell. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

n. Within two (2) years of the Department’s issuance of a construction permit authorizing the replacement of the clearwell, PWSA shall complete the authorized work in accordance with the terms and conditions of the permit and shall submit to the Department an original, signed “Certificate of Construction/Modification Completion” form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA’s replacement of the clearwell, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

o. No later than thirty (30) days after the date of the Department’s issuance of an operation permit authorizing the operation of the new clearwell, PWSA shall begin operating the clearwell in accordance with the permit.

p. For as long as PWSA continues to operate the existing clearwell, PWSA shall continue to monitor turbidity, temperature, pH, log inactivation values and specific

conductance from the clearwell effluent, and NOAA precipitation values, as required by the Field Order issued by the Department on May 1, 2017. PWSA shall maintain the monitoring records on-site. PWSA shall notify the Department within one (1) hour if any turbidity reading from the clearwell effluent exceeds 1.0 NTU.

**Cross-connections**

q. On or before June 1, 2020, PWSA shall complete an investigation of the locations where valves, blow-offs, meters or other such appurtenances to the distribution system are found within chambers, pits or manholes connected directly or indirectly to any storm drain or sanitary sewer (commonly referred to by PWSA as “washouts”) and submit to the Department a report detailing the findings including the number and locations of all such cross-connections within PWSA’s System.

r. Within ninety (90) days of PWSA’s submission of the report required under Paragraph 3.q., above, PWSA shall submit to the Department a plan and proposed schedule to eliminate all of the identified cross-connections and a written request for a determination by the Department as to whether the requested modification to eliminate each cross-connection identified in the report constitutes a major or minor change.

s. For any modification the Department determines to require a permit, PWSA shall submit a complete and technically sufficient application to the Department for a construction permit within sixty (60) days of the date the Department’s written determination is issued to PWSA. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within the time requested.

t. In accordance with the plan and schedule required under Paragraph 3.r., above, as approved or as modified and approved by the Department, PWSA shall complete the elimination of all identified cross-connections and shall submit to the Department within ninety (90) days of completion a report confirming the elimination of all previously existing cross-connections with confirmatory photographs, dates and details of the corrective work performed.

4. Stipulated Civil Penalties.

a. In the event PWSA fails to comply in a timely manner with any term or provision of this Consent Order and Agreement, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount of One Hundred Dollars (\$100.00) per day for each violation.

b. Stipulated civil penalty payments shall be payable monthly on or before the fifteenth day of each succeeding month. The payment shall be made by corporate check or the like made payable to the "Commonwealth of Pennsylvania – Safe Drinking Water Fund" and sent to Renee Diehl, Program Manager, Safe Drinking Water Program, Department of Environmental Protection, 400 Waterfront Drive, Pittsburgh, PA 15222-4745.

c. Any payment under this paragraph shall neither waive PWSA's duty to meet its obligations under this Consent Order and Agreement nor preclude the Department from commencing an action to compel PWSA's compliance with the terms and conditions of this Consent Order and Agreement. The payment resolves only PWSA's liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

d. Stipulated civil penalties shall be due automatically and without notice.

5. Additional Remedies.

a. In the event PWSA fails to comply with any provision of this Consent Order and Agreement, the Department may, in addition to the remedies prescribed herein, pursue any remedy available for a violation of an order of the Department, including an action to enforce this Consent Order and Agreement.

b. The remedies provided by this paragraph and Paragraph 4 (Stipulated Civil Penalties) are cumulative and the exercise of one does not preclude the exercise of any other. The failure of the Department to pursue any remedy shall not be deemed to be a waiver of that remedy. The payment of a stipulated civil penalty, however, shall preclude any further assessment of civil penalties for the violation for which the stipulated penalty is paid.

6. Reservation of Rights. The Department reserves the right to require additional measures to achieve compliance with applicable law. PWSA reserves the right to challenge any action which the Department may take to require those measures.

7. Liability of PWSA. PWSA shall be liable for any violations of the Consent Order and Agreement, including those caused by, contributed to, or allowed by its officers, agents, employees, consultants or contractors. Except as provided in Paragraph 8.c., PWSA also shall be liable for any violation of this Consent Order and Agreement caused by, contributed to, or allowed by its successors and assigns.

8. Transfer of Site.

a. The duties and obligations under this Consent Order and Agreement shall not be modified, diminished, terminated or otherwise altered by the transfer of any legal or equitable interest in the PWSA public water system or any part thereof.

b. If PWSA intends to transfer any legal or equitable interest in the PWSA public water system which is affected by this Consent Order and Agreement, PWSA shall serve a copy of this Consent Order and Agreement upon the prospective transferee of the legal and equitable interest at least thirty (30) days prior to the contemplated transfer and shall simultaneously inform the Southwest Regional Office of the Department of such intent.

c. The Department in its sole discretion may agree to modify or terminate PWSA's duties and obligations under this Consent Order and Agreement upon transfer of the PWSA System or any part thereof. PWSA waives any right that it may have to challenge the Department's decision in this regard.

9. Correspondence with Department. All correspondence with the Department concerning this Consent Order and Agreement shall be addressed to:

Renee Diehl, Program Manager  
Safe Drinking Water Program  
Department of Environmental Protection  
Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh, Pennsylvania 15222-4745  
Telephone: 412.442.4210 Facsimile: 412.442.4242

10. Correspondence with PWSA. All correspondence with PWSA concerning this Consent Order and Agreement shall be addressed to:

Robert Weimar, Executive Director  
Pittsburgh Water and Sewer Authority  
Penn Liberty Plaza 1  
1200 Penn Avenue  
Pittsburgh, PA 15222  
Telephone: 412.255.2579

PWSA shall notify the Department whenever there is a change in the contact person's name, title, or address. Service of any notice or any legal process for any purpose under this Consent

Order and Agreement, including its enforcement, may be made by mailing a copy by first class mail to the above address.

11. Force Majeure.

a. In the event that PWSA is prevented from complying in a timely manner with any time limit imposed in this Consent Order and Agreement solely because of a strike, fire, flood, act of God, or other circumstance beyond PWSA's control and which PWSA, by the exercise of all reasonable diligence, is unable to prevent, then PWSA may petition the Department for an extension of time. An increase in the cost of performing the obligations set forth in this Consent Order and Agreement shall not constitute circumstances beyond PWSA's control. PWSA's economic inability to comply with any of the obligations of this Consent Order and Agreement shall not be grounds for any extension of time.

b. PWSA shall only be entitled to the benefits of this paragraph if PWSA notifies the Department within five (5) working days by telephone and within ten (10) working days in writing of the date it becomes aware or reasonably should have become aware of the event impeding performance. The written submission shall include all necessary documentation, as well as a notarized affidavit from an authorized individual specifying the reasons for the delay, the expected duration of the delay, and the efforts which have been made and are being made by PWSA to mitigate the effects of the event and to minimize the length of the delay. The initial written submission may be supplemented within ten (10) working days of its submission. PWSA's failure to comply with the requirements of this paragraph specifically and in a timely fashion shall render this paragraph null and of no effect as to the particular incident involved.

c. The Department will decide whether to grant all or part of the extension requested on the basis of all documentation submitted by PWSA and other information available



to the Department. In any subsequent litigation, PWSA shall have the burden of proving that the Department's refusal to grant the requested extension was an abuse of discretion based upon the information then available to it.

12. Severability. The paragraphs of this Consent Order and Agreement shall be severable and should any part hereof be declared invalid or unenforceable, the remainder shall continue in full force and effect between the parties.

13. Entire Agreement. This Consent Order and Agreement shall constitute the entire integrated agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

14. Attorney Fees. The parties shall bear their respective attorney fees, expenses and other costs in the prosecution or defense of this matter or any related matters, arising prior to execution of this Consent Order and Agreement.

15. Modifications. No changes, additions, modifications, or amendments of this Consent Order and Agreement shall be effective unless they are set out in writing and signed by the parties hereto.

16. Titles. A title used at the beginning of any paragraph of this Consent Order and Agreement may be used to aid in the construction of that paragraph, but shall not be treated as controlling.

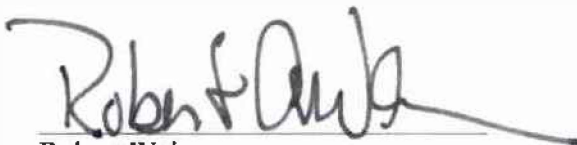
17. Decisions Under Consent Order. Any decision which the Department makes under the provisions of this Consent Order and Agreement, including a notice that stipulated civil penalties are due, is intended to be neither a final action under 25 Pa. Code § 1021.2, nor an

adjudication under 2 Pa. C.S. § 101. Any objection which PWSA may have to the decision will be preserved until the Department enforces this Consent Order and Agreement.

18. Resolution. Attached hereto as Appendix A is a resolution of the Board of PWSA authorizing its signatories below to enter into this Consent Order and Agreement on its behalf.

IN WITNESS WHEREOF, the parties hereto have caused this Consent Order and Agreement to be executed by their duly authorized representatives. The undersigned representatives of PWSA certify under penalty of law, as provided by 18 Pa. C.S. § 4904, that they are authorized to execute this Consent Order and Agreement on behalf of PWSA; that PWSA consents to the entry of this Consent Order and Agreement as a final ORDER of the Department; and that PWSA hereby knowingly waives its right to appeal this Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, Act of July 13, 1988, P.L. 530, 35 P.S. § 7514; the Administrative Agency Law, 2 Pa. C.S. § 103(a) and Chapters 5A and 7A; or any other provisions of law. Signature by PWSA's attorney certifies only that the agreement has been signed after consulting with counsel.

FOR PITTSBURGH WATER AND SEWER AUTHORITY:



Robert Weimar  
Executive Director  
Pittsburgh Water and Sewer Authority



David Ries  
Attorney for Pittsburgh Water and Sewer Authority

FOR THE COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION:



Renee Diehl  
Environmental Program Manager  
Bureau of Safe Drinking Water



Gail Guenther  
Assistant Counsel  
Southwest Office of Chief Counsel

# Exhibit BK-2

May 13, 2020

**CERTIFIED MAIL NO.**

Robert Weimar, Executive Director  
Pittsburgh Water and Sewer Authority  
1200 Penn Avenue  
Pittsburgh, PA 15222

Re: Consent Order and Agreements dated November 17, 2017 and September 9, 2019  
Extension Request  
PWS ID No. 5020038  
Allegheny County

Dear Mr. Weimar:

On April 8, 2020, the Department received a request from the Pittsburgh Water and Sewer Authority (PWSA), for an extension of time to complete the following tasks:

**November 17, 2017 Consent Order and Agreement**

Paragraph 3.c.iii - requiring all monies held aside for the Community Environmental Project to be spent within three years of the execution date of the COA, or by November 16, 2020.

**September 6, 2019 Consent Order and Agreement**

Paragraph 3.c.i - requiring PWSA must submit a construction permit application for the rehabilitation of Rising Main #3 on or before September 1, 2020.

Paragraph 3.g – requiring submission of a construction permit application for the Aspinwall Pump Station to Lanpher Reservoir Rising main on or before December 30, 2020.

Paragraph 3.k.ii – requiring submission of a construction permit application for the rehabilitation of the existing Aspinwall and Breucken pump stations on or before January 1, 2021.

Paragraph 3.q – requiring completion of investigation of the locations where valves, blow-offs, meters or other appurtenances are directly or indirectly connected to storm drains or sanitary sewers by June 1, 2020.

In response to this request, the Department will exercise its enforcement discretion to allow an **additional 90 days** for PWSA to comply with the provisions of the specific paragraphs listed above of DEP's November 17, 2017 Consent Order and Agreement and September 9, 2019 Consent Order and Agreement. All other requirements and deadlines of the November 17, 2017 Consent Order and Agreement and the September 9, 2019 Consent Order and Agreement remain unchanged.

Provided that PWSA complies with the new corrective action deadlines stated above, the Department will exercise its enforcement discretion to forego the collection of stipulated civil penalties otherwise due under the terms of the COAs. If, however, PWSA fails to satisfactorily complete the corrective action obligations required under the provisions listed above in accordance with the new deadlines, then the Department will assess civil penalties beginning from the new deadlines until such time as PWSA complies in full with these obligations under the November 17, 2017 Consent Order and Agreement and the September 9, 2019 Consent Order and Agreement.

Sincerely,

A handwritten signature in cursive script that reads "Renee L. Diehl". The signature is written in dark ink and is positioned above the printed name and title.

Renee L. Diehl  
Environmental Group Manager  
Safe Drinking Water Program

# Exhibit BK-3

**COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

IN THE MATTER OF:

Pittsburgh Water and Sewer Authority	:	Violations of the Clean Streams Law,
Penn Liberty Plaza 1	:	Safe Drinking Water Act and Rules and
1200 Penn Avenue	:	Regulations Promulgated Pursuant Thereto
Pittsburgh PA 15222	:	

**FIRST AMENDMENT TO  
SEPTEMBER 6, 2019 CONSENT ORDER AND AGREEMENT**

This first amendment to the September 6, 2019 Consent Order and Agreement (“First Amendment”) is entered into this 7<sup>th</sup> day of May, 2021, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection (“Department”) and the Pittsburgh Water and Sewer Authority (“PWSA”).

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce the Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, *as amended*, 35 P.S. §§ 721.1-721.17 (“Safe Drinking Water Act”); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510-17 (“Administrative Code”); and the rules and regulations promulgated thereunder (“Regulations”).

B. PWSA is a municipal authority with a business address of Penn Liberty Plaza 1, 1200 Penn Avenue, Pittsburgh, Pennsylvania 15222. PWSA is a “person,” a “supplier of water” and a “public water supplier,” as those terms are defined in Section 3 of the Safe Drinking Water Act, 35 P.S. § 721.3, and Section 109.1 of the Regulations, 25 Pa. Code § 109.1.

C. PWSA leases, operates and is the permittee of a “public water system” and, more specifically, a “community water system,” as those terms are defined in Section 3 of the Safe

Drinking Water Act, 35 P.S. § 721.3, and Section 109.1 of the Regulations, 25 Pa. Code § 109.1. PWSA's public water system consists of water sources, a clearwell and other storage facilities, treatment facilities, and a distribution system (collectively, the "System"). PWSA's System has been assigned Public Water System Identification Number 5020038.

D. On September 6, 2019, the Department and PWSA executed a Consent Order and Agreement ("2019 COA"), a copy of which is attached hereto as Appendix A.

E. Because of delays associated with the COVID-19 pandemic and changes in design and construction approaches, PWSA has requested to amend the 2019 COA for the purpose of: 1) extending the deadline for PWSA to submit applications for permits to construct two new pump stations; 2) shortening the deadline for PWSA to submit an application for a permit to construct a new clearwell bypass system; and 3) establishing a new stipulated civil penalty in the event PWSA fails to meet the new deadlines under this First Amendment.

F. Based on the foregoing reasons, the Department is willing to amend Paragraphs 3.a., 3.k. and 3.l. (Corrective Action) and Paragraph 4 (Stipulated Civil Penalties) of the 2019 COA as set forth below. To avoid confusion, the modified Corrective Action provisions herein are identified with the same numbers and letters as those of the provisions in the 2019 COA that they amend.

G. The parties intend that all other terms and provisions of the 2019 COA shall remain in full force and effect.

After full and complete negotiation of all matters set forth in this First Amendment, and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by PWSA as follows:



1. Authority. This First Amendment is an Order of the Department authorized and issued pursuant to Section 5 of the Safe Drinking Water Act, 35 P.S. § 721.5; and Section 1917-A of the Administrative Code, 71 P.S. § 510-17.

2. Findings.

a. PWSA agrees that the findings in Paragraphs A through G of this First Amendment are true and correct and, in any matter or proceeding involving PWSA and the Department, PWSA shall not challenge the accuracy or validity of these findings.

b. The parties do not authorize any other persons to use the findings in this First Amendment in any matter or proceeding.

3. Corrective Action. The following paragraphs and subparagraphs of the 2019 COA are amended to read as follows:

**Clearwell and Related Projects**

3.a. No later than September 30, 2021, PWSA shall submit to the Department a complete and technically sufficient application for a permit to construct a bypass system that will enable PWSA to remove the clearwell from service and replace it. In the event the Department makes a written request to PWSA to supplement or modify the application, PWSA shall supplement or modify its application as requested by the Department within fifteen (15) days or such other time as the Department requests.

3.k. No later than September 30, 2021, to facilitate the clearwell bypass system, PWSA shall submit to the Department a complete and technically sufficient application to rehabilitate the existing Aspinwall pump station and a complete and technically sufficient application to rehabilitate the existing Bruecken pump station. In the event the Department makes a written request to PWSA to supplement or modify either or both of the applications,

PWSA shall supplement or modify its application(s) as requested by the Department within fifteen (15) days or such other time as the Department requests.

3.l. Within two (2) years of the Department's issuance of each of the construction permits for the Aspinwall pump station and the Bruecken pump station referenced in Paragraph 3.k., above, PWSA shall complete the authorized work in accordance with the terms and conditions of each construction permit and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in PWSA's rehabilitation of either the Aspinwall or Bruecken pump stations, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

4. Stipulated Civil Penalties.

a. In the event PWSA fails to meet the corrective action deadline of September 30, 2021, as specified in Paragraphs 3a. and 3.k., above, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a one-time civil penalty in the amount of Twenty Thousand Dollars (\$20,000). In addition to the one-time payment, PWSA shall pay a civil penalty in the amount of One Thousand Dollars (\$1,000) per day for each violation until the requirements specified in Paragraphs 3a. and 3.k., above, are fulfilled.

b. In the event PWSA fails to comply in a timely manner with any term or provision in Paragraphs 3.b. through 3.j. and Paragraphs 3.l. through 3.t., above, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount of One Hundred Dollars (\$100) per day for each violation.

c. Stipulated civil penalty payments shall be payable monthly on or before the fifteenth day of each succeeding month. The payment shall be made by corporate check or the like, made payable to the “Commonwealth of Pennsylvania - Safe Drinking Water Fund” and sent to:

Gail Guenther  
Environmental Protection Compliance Specialist  
Safe Drinking Water Program  
PA DEP Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh PA 15222

d. Any payment under this paragraph shall neither waive PWSA’s duty to meet its obligations under this Consent Order and Agreement, nor preclude the Department from commencing an action to compel PWSA’s compliance with the terms and conditions of this Consent Order and Agreement. The payment resolves only PWSA’s liability for civil penalties arising from the violation of this Consent Order and Agreement for which the payment is made.

e. The civil penalty settlement and stipulated civil penalties shall be due automatically and without notice.

5. Except for the amendment to Paragraphs 3.a., 3.k., 3.l. and Paragraph 4, expressly stated herein, the Findings and all other terms and conditions of the 2019 COA shall remain in full force and effect between the Parties.

6. Resolution. Attached hereto as Appendix B is a resolution of the Board of Directors of PWSA authorizing its signatory(ies) below to enter into this First Amendment on its behalf.

7. This First Amendment may be signed in counterparts, each of which shall be deemed to be an original and all of which together shall constitute one and the same instrument. Counterpart signatures may be transmitted electronically using portable document format (.pdf).

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the parties hereto have caused this First Amendment to the September 6, 2019 Consent Order and Agreement to be executed by their duly authorized representatives. PWSA certifies under penalty of law, as provided by 18 Pa. C.S. § 4904, that it is authorized to execute this First Amendment to the September 6, 2019 Consent Order and Agreement; that it consents to the entry of this First Amendment to the September 6, 2019 Consent Order and Agreement as a final ORDER of the Department; and it hereby knowingly waives its rights to appeal this First Amendment to the September 6, 2019 Consent Order and Agreement and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, Act of July 13, 1988, P.L. 530, 35 P.S. § 7514; the Administrative Agency Law, 2 Pa. C.S. § 103(a) and Chapters 5A and 7A; or any other provisions of law. Signature by PWSA's attorney certifies only that the amendment has been signed after consulting with counsel.

**FOR PITTSBURGH WATER  
AND SEWER AUTHORITY:**

**FOR THE COMMONWEALTH OF  
PENNSYLVANIA, DEPARTMENT OF  
ENVIRONMENTAL PROTECTION:**



William J. Pickering  
Chief Executive Officer  
Pittsburgh Water and Sewer Authority



Renee Diehl  
Program Manager  
Southwest Safe Drinking Water Program



David G. Ries, Esquire  
Attorney for Pittsburgh Water and  
Sewer Authority



Wendy Carson  
Assistant Counsel

# Exhibit BK-4

**COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL PROTECTION**

IN THE MATTER OF:

Pittsburgh Water and Sewer Authority	:	Violations of the Safe Drinking Water Act
Penn Liberty Plaza 1	:	and the Rules and Regulations Promulgated
1200 Penn Avenue	:	Pursuant Thereto
Pittsburgh, PA 15222	:	

**SECOND AMENDMENT TO  
SEPTEMBER 6, 2019 CONSENT ORDER AND AGREEMENT**

This second amendment to the September 6, 2019 Consent Order and Agreement (Amendment 2) is entered into this 4<sup>th</sup> day of August, 2022, by and between the Commonwealth of Pennsylvania, Department of Environmental Protection (Department) and the Pittsburgh Water and Sewer Authority (PWSA).

The Department has found and determined the following:

A. The Department is the agency with the duty and authority to administer and enforce the Pennsylvania Safe Drinking Water Act, Act of May 1, 1984, P.L. 206, *as amended*, 35 P.S. §§ 721.1-721.17 (Safe Drinking Water Act); Section 1917-A of the Administrative Code of 1929, Act of April 9, 1929, P.L. 177, *as amended*, 71 P.S. § 510-17 (Administrative Code); and the rules and regulations promulgated thereunder (Regulations).

B. PWSA is a municipal authority with a business address of Penn Liberty Plaza 1, 1200 Penn Avenue, Pittsburgh, Pennsylvania 15222. PWSA is a “person”, a “supplier of water” and a “public water supplier”, as those terms are defined in Section 3 of the Safe Drinking Water Act, 35 P.S. § 721.3, and Section 109.1 of the Regulations, 25 Pa. Code § 109.1.

C. PWSA leases, operates and is the permittee of a “public water system” and, more specifically, a “community water system”, as those terms are defined in Section 3 of the Safe

Drinking Water Act, 35 P.S. § 721.3, and Section 109.1 of the Regulations, 25 Pa. Code § 109.1. PWSA's public water system consists of water sources, a clearwell, and other storage facilities, treatment facilities, and a distribution system (collectively, the "PWSA System"). PWSA's System has been assigned Public Water System Identification Number 5020038.

D. On September 6, 2019, the Department and PWSA executed a Consent Order and Agreement (2019 COA). On May 7, 2021, the Department and PWSA executed a First Amendment to the 2019 COA (First Amendment). A copy of the First Amendment, which appends a copy of the 2019 COA, is attached hereto as Appendix A.

E. Because of delays associated with supply chain issues as a result of the COVID-19 pandemic, PWSA has requested to amend the 2019 COA for the purpose of: 1) extending the deadline for PWSA to complete construction of a replacement for Rising Main #3 to PWSA's Highland 2 Reservoir; 2) extending the deadline for PWSA to complete construction of a new cover and liner for the Highland 2 Reservoir; and 3) establishing new stipulated civil penalties in the event PWSA fails to meet the new deadlines under this Amendment 2.

F. Based on the foregoing reasons, the Department is willing to amend Paragraphs 3.d. and 3.j. (in Corrective Action) and Paragraph 4 (Stipulated Civil Penalties) of the 2019 COA as set forth below. To avoid confusion, the modified Corrective Action provisions herein are identified with the same numbers and letters as those of the provisions in the 2019 COA that they amend. The parties intend that all other terms and provisions of the 2019 COA and the First Amendment shall remain in full force and effect.

After full and complete negotiation of all matters set forth in this Amendment 2, and upon mutual exchange of covenants contained herein, the parties desiring to avoid litigation and



intending to be legally bound, it is hereby ORDERED by the Department and AGREED to by PWSA as follows:

1. Authority. This Amendment 2 is an Order of the Department authorized and issued pursuant to Section 5 of the Safe Drinking Water Act, 35 P.S. § 721.5; and Section 1917-A of the Administrative Code of 1929, 71 P.S. § 510-17.

2. Findings.

a. PWSA agrees that the findings in Paragraphs A through F of this Amendment 2 are true and correct and, in any matter or proceeding involving PWSA and the Department, PWSA shall not challenge the accuracy or validity of these findings.

b. The parties do not authorize any other persons to use the findings in this Amendment 2 in any matter or proceeding.

3. Corrective Action. The following subparagraphs of Paragraph 3 of the 2019 COA are amended to read as follows:

*Clearwell and Related Projects*

3.d. No later than December 31, 2022, PWSA shall complete the work authorized for the reconstruction and rehabilitation of Rising Main #3 in accordance with the terms and conditions of Public Water Supply Permit No. 0220523MA and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in the reconstruction and rehabilitation of Rising Main #3, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

3.j. No later than December 31, 2022, PWSA shall complete the work authorized for the installation of a new liner and cover for the Highland 2 Reservoir in accordance with the terms and conditions of Public Water Supply Permit No. 0220522MA, which has an expiration date of December 31, 2022, and shall submit to the Department an original, signed "Certificate of Construction/Modification Completion" form (certification of construction) that meets the requirements of 25 Pa. Code § 109.504(a). In the event the Department notifies PWSA in writing of any deficiencies in the installation of the new liner and/or cover for the Highland 2 Reservoir, PWSA shall correct the deficiencies as requested by the Department within the time requested and submit a new certification of construction.

4. Stipulated Civil Penalties. Paragraph 4 of the 2019 COA and the First Amendment are superseded by the following:

a. In the event PWSA fails to meet the corrective action deadline of September 30, 2021, as specified in Paragraphs 3a. and 3.k., above, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a one-time civil penalty in the amount of Twenty Thousand Dollars (\$20,000). In addition to the one-time payment, PWSA shall pay a civil penalty in the amount of One Thousand Dollars (\$1,000) per day for each violation until the requirements specified in Paragraphs 3a. and 3.k., above, are fulfilled.

b. In the event that PWSA fails to meet the corrective action deadline of December 31, 2022, as specified in Paragraphs 3.d. and 3.j., above, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a one-time civil penalty in the amount of Twenty Thousand Dollars (\$20,000). In addition to the one-time payment, PWSA shall pay a civil penalty in the amount of One Thousand Dollars

(\$1,000) per day for each violation until the requirements specified in Paragraphs 3d. and 3.j., above, are fulfilled.

c. In the event PWSA fails to comply in a timely manner with any term or provision in Paragraphs 3.b., 3.c., 3.e. through 3.i. and Paragraphs 3.l. through 3.t., above, PWSA shall be in violation of this Consent Order and Agreement and, in addition to other applicable remedies, shall pay a civil penalty in the amount of One Hundred Dollars (\$100) per day for each violation.

d. Stipulated civil penalty payments shall be payable monthly on or before the fifteenth day of each succeeding month. The payment shall be made by corporate check or the like, made payable to the "Commonwealth of Pennsylvania - Safe Drinking Water Fund" and sent to:

Gail Guenther  
Environmental Protection Compliance Specialist  
Safe Drinking Water Program  
PA DEP Southwest Regional Office  
400 Waterfront Drive  
Pittsburgh PA 15222

e. Any payment under this paragraph shall neither waive PWSA's duty to meet its obligations under the 2019 COA, as amended, nor preclude the Department from commencing an action to compel PWSA's compliance with the terms and conditions of the 2019 COA, as amended. The payment resolves only PWSA's liability for civil penalties arising from the violation of the 2019 COA, as amended, for which the payment is made.

f. The civil penalty settlement and stipulated civil penalties shall be due automatically and without notice.

5. Except for the amendments to Paragraphs 3.d. and 3.j. and Paragraph 4, expressly stated herein, the Findings and all other terms and conditions of the 2019 COA and First Amendment shall remain in full force and effect between the Parties.

6. Resolution. Attached hereto as Appendix B is a resolution of the Board of Directors of PWSA authorizing its signatory(ies) below to enter into this Amendment 2 on its behalf.

7. This Amendment 2 may be signed in counterparts, each of which shall be deemed to be an original and all of which together shall constitute one and the same instrument.

Counterpart signatures may be transmitted electronically using portable document format (.pdf).

**[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]**

IN WITNESS WHEREOF, the parties hereto have caused this Amendment 2 to be executed by their duly authorized representatives. PWSA certifies under penalty of law, as provided by 18 Pa. C.S. § 4904, that it is authorized to execute this Amendment 2; that it consents to the entry of this Amendment 2 as a final ORDER of the Department; and it hereby knowingly waives its rights to appeal this Amendment 2 and to challenge its content or validity, which rights may be available under Section 4 of the Environmental Hearing Board Act, Act of July 13, 1988, P.L. 530, 35 P.S. § 7514; the Administrative Agency Law, 2 Pa. C.S. § 103(a) and Chapters 5A and 7A; or any other provisions of law.

**FOR PITTSBURGH WATER  
AND SEWER AUTHORITY:**

*William J. Pickering*

\_\_\_\_\_  
William J. Pickering  
Chief Executive Officer  
Pittsburgh Water and Sewer Authority

**FOR THE COMMONWEALTH OF  
PENNSYLVANIA, DEPARTMENT OF  
ENVIRONMENTAL PROTECTION:**

*Renee Diehl*

\_\_\_\_\_  
Renee Diehl  
Program Manager  
Southwest Safe Drinking Water Program

*David G. Ries*

\_\_\_\_\_  
David G. Ries, Esquire  
Attorney for Pittsburgh Water and  
Sewer Authority

*Wendy Carson*

\_\_\_\_\_  
Wendy Carson  
Assistant Counsel

**VERIFICATION**

I, Barry King, hereby state that: (1) I am the Director of Engineering for The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Dated: 05/03/2023 | 11:08 AM PDT \_\_\_\_\_

DocuSigned by:  
*Barry King*  
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Barry King  
Director of Engineering  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**TONY IGWE**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPIC:

STORMWATER

May 9, 2023



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**TABLE OF EXHIBITS**

Appendix A	Resume of T. Igwe
TI-1	PWSA and City of Pittsburgh Stormwater Outfalls and Storm Sewershed Drainage Areas Overview Map (dated May 3, 2023)
TI-2	January 26, 2021 U.S. EPA Administrative Order on Consent

1     **I.    INTRODUCTION**

2     **Q.    PLEASE STATE YOUR NAME AND POSITION FOR THE RECORD.**

3     A.    My name is Tony Igwe. I am the Senior Group Manager, Stormwater for The Pittsburgh  
4           Water and Sewer Authority (“PWSA”), a position that I assumed in January 2021. I  
5           previously held this position on an interim basis beginning in September 2020.

6     **Q.    WHAT ARE YOUR JOB RESPONSIBILITIES IN THAT POSITION?**

7     A.    My responsibilities include planning, design, implementation, and maintenance of  
8           stormwater-related projects that reduce localized flooding and combined sewer overflows  
9           while improving the water quality and health of streams and waterways.

10    **Q.    PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND**  
11    **RELEVANT EXPERIENCE.**

12    A.    I am a civil and environmental engineer with nearly three decades of experience helping  
13           municipalities and authorities solve wet weather control issues. I hold a Bachelor of  
14           Science Degree in Civil Engineering from Mississippi State University, and a Master’s  
15           Degree and Ph.C. in Environmental Engineering from Wayne State University. I am also  
16           a registered professional engineer in Pennsylvania and Michigan. Prior to joining PWSA,  
17           I worked on projects that covered wastewater, combined sewer overflow, and stormwater  
18           issues for cities such as Detroit, Michigan and Cleveland, Ohio. In 2002, I established  
19           the Pittsburgh office of Wade Trim, a leading engineering firm. During my time at Wade  
20           Trim, I worked with 3 Rivers Wet Weather, Inc., PWSA and the 83 municipalities and  
21           municipal authorities in the Allegheny County Sanitary Authority (“ALCOSAN”) service  
22           area to develop a regional flow monitoring plan and wet weather feasibility study reports.  
23           I also supported PWSA as a consultant on the Four Mile Run Stormwater Improvement  
24           Project.

1           A complete description of my background and experience is set forth in Appendix  
2           A to this testimony.

3 **Q.   HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA**  
4 **PUBLIC UTILITY COMMISSION (“PUC” OR “COMMISSION”)?**

5   A.   Yes. I presented written Direct, Supplemental Direct, Rebuttal and Rejoinder testimony  
6       in support of PWSA’s most recent rate case at Docket Numbers R-2021-3024773 (water),  
7       R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater). I also presented  
8       written Direct Testimony in support of PWSA’s Compliance Plan Stage 2 Stormwater  
9       Proceeding at Docket Nos. M-2018-2640802 and M-2018-2640803. I have also  
10      presented testified on behalf of PWSA in Commission formal complaint cases.

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

12   A.   The purpose of my testimony is to support PWSA’s proposed stormwater rate increase.  
13       Additionally, I describe the Authority’s stormwater conveyance facilities, the related  
14       regulatory requirements and PWSA’s stormwater management program. I also discuss  
15       the status of PWSA’s Stormwater Strategic Plan.

16 **Q.   ARE OTHER WITNESSES PROVIDING TESTIMONY REGARDING THE**  
17 **STORMWATER PROGRAM AND PROPOSED RATES?**

18   A.   Yes. Mr. Readling’s testimony describes the development of PWSA’s proposed  
19       stormwater charges and updates we are proposing to the stormwater credit program.  
20       Additionally, Ms. Mechling discusses customer service-related aspects of the stormwater  
21       rate and sponsors the proposed Stormwater Tariff Supplement No. 3 which is included  
22       with her testimony as Exhibits JAM-15 (clean) and JAM-16 (red-lined). -

23 **Q.   ARE YOU SPONSORING ANY EXHIBITS?**

24   A.   Yes. I am sponsoring the following exhibits:

- 1 • **Exh. TI-1:** Exhibit TI-1 is a map titled Stormwater Outfalls Overview providing an  
 2 overview of the PWSA and City of Pittsburgh storm sewershed drainage areas and  
 3 outfalls as of May 3, 2023.
- 4 • **Exh. TI-2:** Exhibit TI-2 is a copy of the January 26, 2021 U.S. EPA Administrative  
 5 Order on Consent with PWSA and the City of Pittsburgh.

6 **Q. HAS PWSA ALREADY RECEIVED COMMISSION APPROVAL FOR ITS**  
 7 **CURRENT STORMWATER RATES AND RATE STRUCTURE?**

8 A. Yes. In our last base rate proceeding PWSA submitted a full stormwater tariff with  
 9 proposed rates that was approved by the Commission and became effective in January  
 10 2022. Since 2022, we have been charging customers a stormwater rate. Previously,  
 11 PWSA used the fees generated from customer charges for sewer conveyance to fund  
 12 stormwater management. A sewer conveyance charge (based on a PWSA customer’s  
 13 water usage) was not an equitable way to charge customers for stormwater management.  
 14 This is because the volume of stormwater that a property generates is a function of hard  
 15 surface (impervious area) on that property, not water usage. The most common measure  
 16 used by governments across the United States to charge for costs related to stormwater  
 17 services is based on impervious surface area. Therefore, PWSA developed a stormwater  
 18 rate to charge for stormwater management services more equitably to meet water quality  
 19 and regulatory requirements. While we continue to recover some of our stormwater costs  
 20 through the wastewater conveyance rates, we are doing so based on the principal of  
 21 gradualism and are continuing, as part of this case, to increase the allocation we are  
 22 recovering in the stormwater fee. Gradualism is discussed more fully by Mr. Smith, Mr.  
 23 Readling and Ms. Mechling.

24

1 **II. OVERVIEW OF STORMWATER ISSUES**

2 **Q. WHAT IS STORMWATER?**

3 A. Stormwater is rain or snowmelt that does not infiltrate into the ground. When  
 4 precipitation falls on an impervious area, it runs off the property rather than being  
 5 absorbed. Figure 1 below illustrates the stormwater cycle in a separate sanitary sewer  
 6 system, where stormwater runoff is conveyed to a nearby water body, such as a stream or  
 7 a river. Note that in a combined sewer system, stormwater is conveyed to a pipe that  
 8 carries a combination of both sanitary sewer flow and stormwater.

9 Figure 1:

Stormwater Basics

The Stormwater Cycle

Stormwater isn't hard to spot and chances are, you have already been impacted by its effects. This simple example shows the stormwater cycle for a typical single family home.

How it Works

<b>Rain Falls:</b> water collects on an impervious/paved surfaces	1
<b>Run Off Collects:</b> run off collects pollutants along its way	2
<b>Run Off Flows:</b> water moves over impervious/paved surfaces	3
<b>Run Off Grows:</b> water your yard can't absorb combines into run off	4
<b>Stormwater Drains:</b> pollutant-heavy water now flows into storm drains	5
<b>Streams and Rivers Impacted:</b> pollutants enter water	6



10

11 Source: <https://www.conservationactioncenter.org/solution-center/stormwater/what-is-stormwater#>

12 **Q. IS STORMWATER A PROBLEM?**

13 A. Yes. When precipitation falls on undeveloped areas, it is primarily absorbed into the  
 14 ground or slowly runs off into streams, rivers, or other water bodies. However, developed  
 15 areas that are impervious, such as rooftops and paved areas, prevent water from being  
 16 absorbed and create a faster rate of runoff. This development often causes localized  
 17 flooding or other water quantity or quality issues. In addition, stormwater can carry

1 harmful pollutants (such as such as oil, dirt, chemicals, and lawn fertilizers) that  
 2 adversely affect water quality. Stormwater can cause flooding, erode topsoil, and stream  
 3 banks, and destroy habitats. PWSA’s service territory has densely developed areas with a  
 4 lot of impervious surfaces.

5 **Q. WHO PRODUCES STORMWATER?**

6 A. All properties receive precipitation in the form of rain or snow. Accordingly, all  
 7 properties produce stormwater runoff that must be managed. Even if a property has  
 8 never flooded and there is no nearby stormwater infrastructure, the stormwater that flows  
 9 off of a property must be managed so that it does not contribute to pollution and flooding  
 10 downstream. This also applies to cases in which the majority of stormwater is managed  
 11 onsite; property owners should contribute for services provided that are beyond their  
 12 property lines, such as permit compliance, municipal separate storm sewer system (MS4)  
 13 maintenance, and stormwater infrastructure improvements throughout the City of  
 14 Pittsburgh. Stormwater management is a community-wide service and the costs should be  
 15 funded by residents in a fair and equitable manner.

16 **Q. ARE THERE DIFFERENT REGULATORY CATEGORIES OF**  
 17 **STORMWATER?**

18 A. Yes. Under the Clean Water Act, a permit is required for any discharge to waters such as  
 19 rivers or streams. There are two types of permits that address stormwater discharges: (1)  
 20 National Pollutant Discharge Elimination System (NPDES) permits that apply to  
 21 discharges from a combined sewer system, including stormwater flow which is due to  
 22 groundwater infiltration and stormwater inflow that mix with other wastewater in  
 23 combined sewer pipes; and (2) NPDES permits for Municipal Separate Storm Sewer

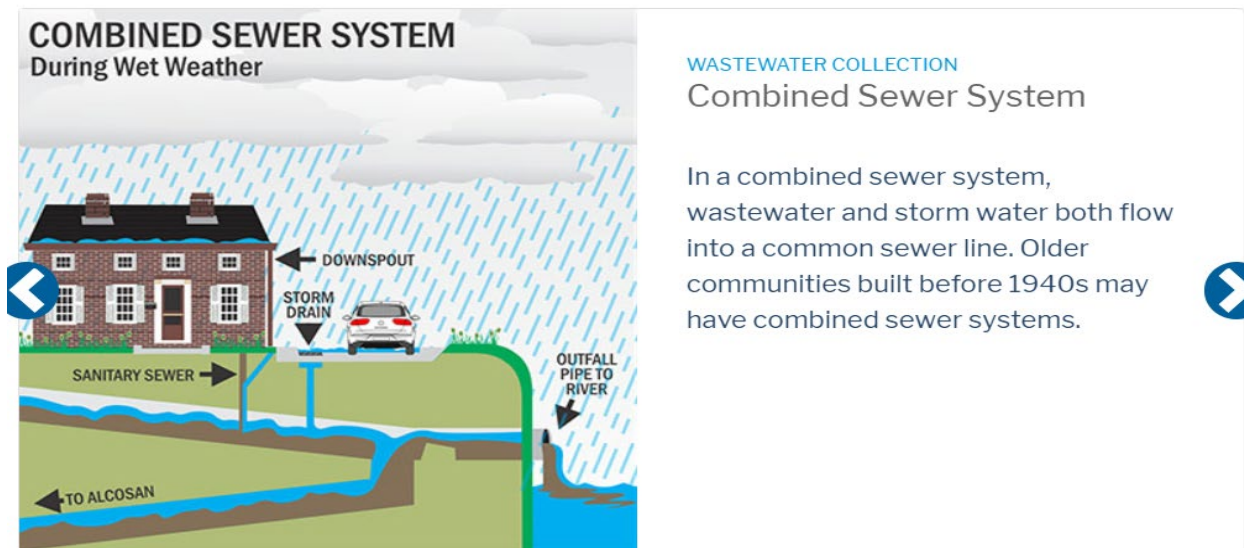
1 Systems (MS4), relating to stormwater that is collected, conveyed, and discharged to  
 2 local waterbodies via stormwater-only pipes.

3 **Q. PLEASE PROVIDE AN OVERVIEW OF THE AUTHORITY’S STORMWATER**  
 4 **AND/OR WASTEWATER INFRASTRUCTURE.**

5 A. PWSA’s overall wastewater conveyance system is composed of over 1,200 miles of  
 6 sewer lines, 4 pump stations, and approximately 25,000 catch basins. PWSA has two  
 7 types of wastewater conveyance systems – a combined system and separated sanitary and  
 8 storm sewer systems. Stormwater is conveyed in different ways by each type of system.

9 First, approximately 75% of the PWSA system, or approximately 900 miles of  
 10 sewer lines, is the combined sewer system. This is generally the older areas of the system  
 11 where wastewater and stormwater are conveyed in the same pipe. During times of dry  
 12 weather, all flow is conveyed to ALCOSAN for treatment. When it rains, the capacity of  
 13 the system to convey flow can be limited, which causes localized flooding, basement  
 14 sewer backups, and overflows to streams and rivers. Figure 2 below illustrates the  
 15 operation of a combined sewer system.

16 Figure 2:



17  
 18

Source: <https://www.alcosan.org/what-we-do/wastewater-treatment>

1           Second, newer, or more recently redeveloped communities have separated  
2 sanitary and storm sewer systems.<sup>1</sup> In a separated system, wastewater is conveyed to  
3 ALCOSAN for treatment, and when it rains stormwater is discharged directly to a nearby  
4 stream or river. The separate stormwater conveyance system (“MS4”)<sup>2</sup> is not connected  
5 to either the combined wastewater system or the sanitary sewer system, and only carries  
6 stormwater. A map providing an overview of stormwater outfalls in the City of  
7 Pittsburgh, including those served by an MS4, is attached as Exhibit TI-1.  
8 Approximately 25% of the PWSA system is separated. The separated system has  
9 approximately 178 miles of sanitary sewer and 148 miles of stormwater pipes. Figure 3  
10 below illustrates the operation of a separate sanitary sewer system.

---

<sup>1</sup> Due to uneven patterns and timelines of real estate development, some areas have been built as separated systems, but must connect to an older combined system downstream because they do not have direct access to ALCOSAN sanitary sewer lines (for sanitary flow) or a body of water (for stormwater flow), resulting in a patchwork of infrastructure types.

<sup>2</sup> “MS4” stands for Municipal Separate Storm Sewer System. *See* 25 Pa. Code § 92a.2. Municipalities and other entities that meet certain standards must obtain National Pollutant Discharge Elimination System (“NPDES”) permit coverage for discharges of storm water from their MS4s. *See, e.g.*, the Storm Water Management Act, 32 P.S. §§ 680.1, *et seq.* *See also* 40 CFR 122.26(b) (relating to definitions).



1 Figure 3:



2

3 Source: <https://www.alcosan.org/what-we-do/wastewater-treatment>

4 The combined sewer system and MS4 are each discussed in greater detail below.

5 **A. Combined Sewer System**

6 **Q. PLEASE BRIEFLY DESCRIBE PWSA’S COMBINED WASTEWATER**  
 7 **SYSTEM.**

8 A. The PWSA system, as was common industry practice at the time of installation, was  
 9 designed as a “combined system,” meaning that there is one pipe underground that  
 10 transports both wastewater and stormwater, all of which is then conveyed to treatment  
 11 facilities. Our first sewer lines were built as early as 1840 in present-day Shadyside and  
 12 Oakland. By 1908, more than 390 miles of underground sewer lines were in place,  
 13 establishing the start of the combined sewer system that is still used today. About 75%  
 14 (about 900 miles) of PWSA’s current wastewater conveyance system is the combined  
 15 system.

1 **Q. HOW DOES STORMWATER ENTER THE PWSA COMBINED WASTEWATER**  
 2 **SYSTEM?**

3 A. Principally, through storm grates or inlets located in the streets, then into the sump or  
 4 well below, called a catch basin. There are, however, other sources of inflow, such as  
 5 roof stormwater downspouts and area drains as required by existing Municipal Building  
 6 Codes, that were designed to feed this stormwater into the combined wastewater  
 7 conveyance system. Finally, groundwater can enter the piping system via aging or  
 8 defective infrastructure. This is termed “infiltration.”

9 **Q. HOW IS STORMWATER HANDLED BY THE COMBINED WASTEWATER**  
 10 **SYSTEM?**

11 A. PWSA sends the combined flow of wastewater and stormwater to ALCOSAN, the  
 12 regional wastewater treatment plant along the Ohio River. ALCOSAN treats wastewater  
 13 (together with any stormwater collected by combined systems) for 83 municipalities in  
 14 Allegheny County, including the City of Pittsburgh.

15 **Q. WHAT IS COMBINED SEWER OVERFLOW (CSO)?**

16 A. Normally, during dry periods or low intensity rainfalls, PWSA’s combined system sends  
 17 all wastewater and stormwater flow to the ALCOSAN treatment facility. However, if  
 18 there is a large rainfall event, the system can become overloaded beyond its capacity.  
 19 When this occurs, the system is designed to allow excess stormwater and untreated  
 20 sewage to be discharged into rivers and streams. This means that combined sewers can  
 21 cause water pollution problems when the volume of sewage and stormwater exceed the  
 22 capacity of the conveyance system.

1 **Q. HAVE COMBINED SEWER OVERFLOW EVENTS BEEN AN ISSUE IN THE**  
2 **CITY OF PITTSBURGH?**

3 A. Yes, CSOs are a significant issue in City of Pittsburgh. Approximately 5.5 billion  
4 gallons of untreated sewage overflows each year from the PWSA combined sewer system  
5 into local streams and rivers.<sup>3</sup> The frequency of CSO events is driven by weather,<sup>4</sup> and  
6 in recent years Pittsburgh has experienced increased amounts of total annual rainfall as  
7 well as increased frequency of large rainfall events. As an illustration, 2018 was the  
8 wettest year on record for Pittsburgh, with a total of 57.83 inches of rain. Similarly, 2019  
9 was the third wettest year on record with a total of 52.46 inches of rain. By comparison,  
10 the 30-year mean rainfall for Pittsburgh is about 39.5 inches of rain.<sup>5</sup> See Figures 4 and 5  
11 below to note that the trend of precipitation amounts and event frequency appears to be  
12 increasing, which will result in more frequent CSO events and an even greater need to  
13 adequately manage stormwater.

14

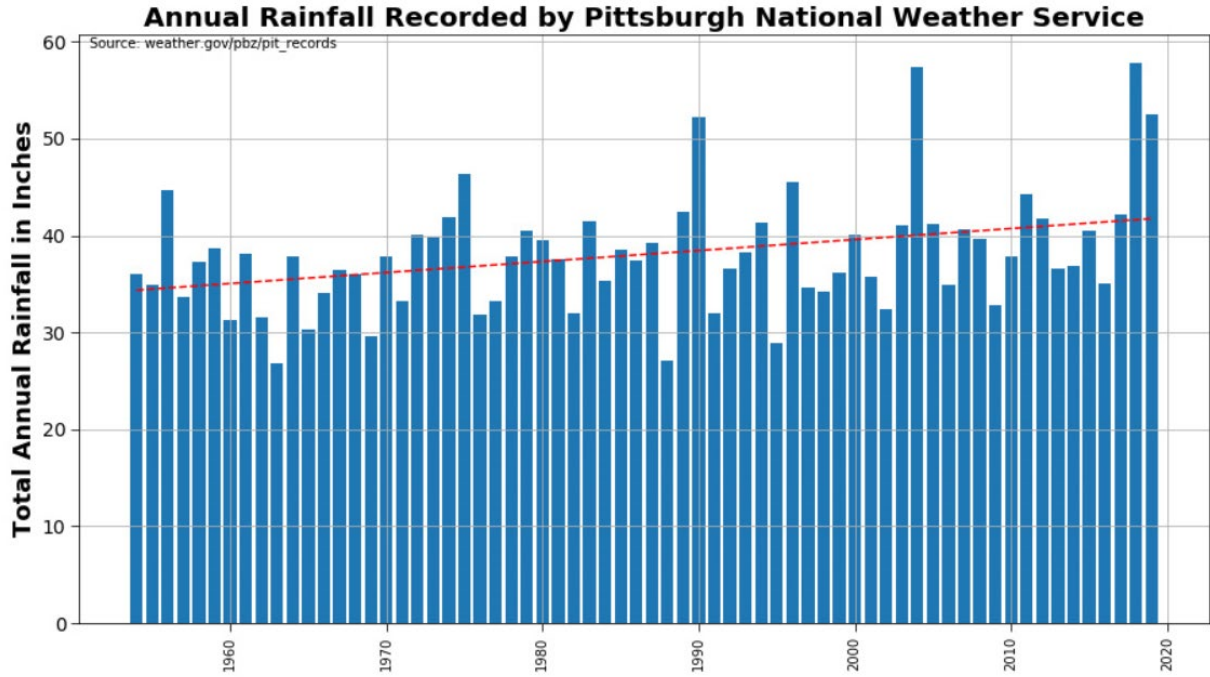
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<sup>3</sup> As per the PWSA SWMM Model, 2003 Typical Year.

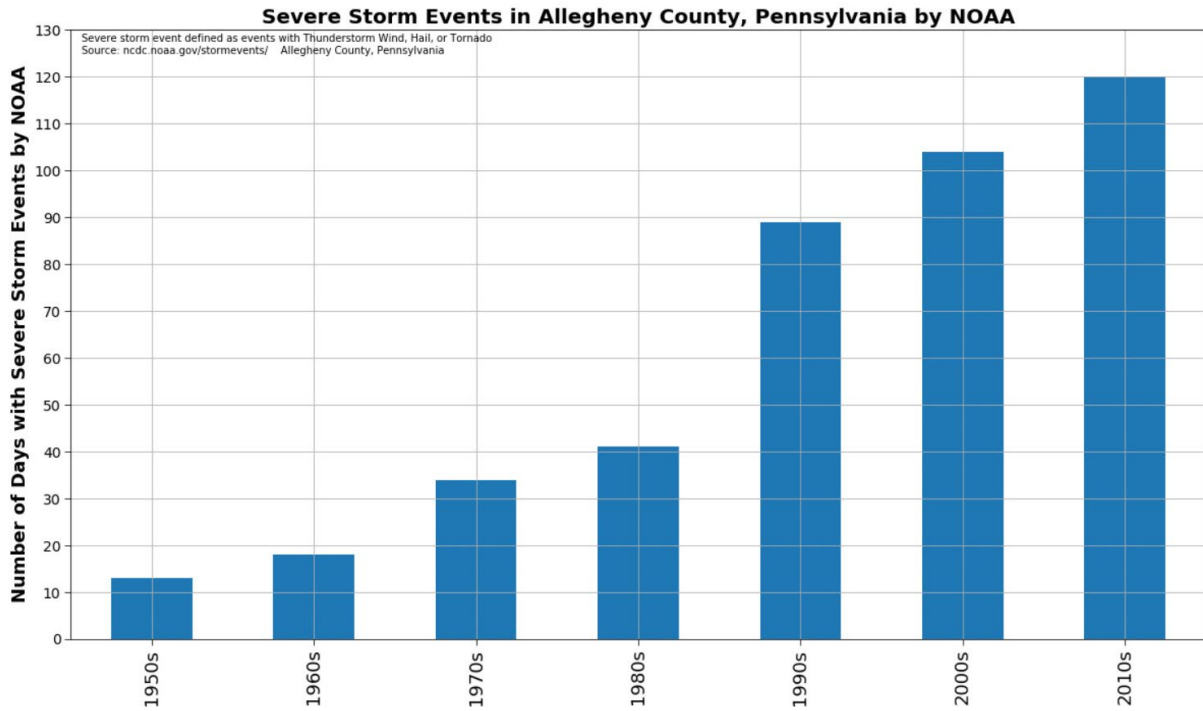
<sup>4</sup> See the ALCOSAN website for data on CSO Alerts issued by year since 1993:  
<https://www.alcosan.org/our-plan/sewer-overflow-advisories>.

<sup>5</sup> [https://www.weather.gov/pbz/pit\\_records](https://www.weather.gov/pbz/pit_records).

1 Figure 4:



2  
3 Figure 5:



4  
5  
6

1 **Q. HOW ARE COMBINED SEWER OVERFLOWS BEING ADDRESSED?**

2 A. In 2004, the Pennsylvania Department of Environmental Protection (PA DEP) issued a  
 3 Consent Order to the City of Pittsburgh and other municipalities in Allegheny County.<sup>6</sup>  
 4 The order directed the parties to reduce the volume of CSOs and basement backups.

5 In 2013, PWSA prepared a *Wet Weather Feasibility Study*<sup>7</sup> in accordance with the  
 6 PA DEP Consent Order. In this document, PWSA discussed green infrastructure and  
 7 integrated watershed management and indicated its intent to further analyze and evaluate  
 8 how these methods could be utilized to address CSOs in Pittsburgh and the region. The  
 9 study also described how stormwater infrastructure can help to address chronic surface  
 10 flooding and sewage basement backups experienced across Pittsburgh.

11 In November 2016, PWSA completed the *Green First Plan*,<sup>8</sup> which presented the  
 12 results of these analyses and evaluations. PWSA’s *Green First Plan* identified the use of  
 13 green infrastructure, stormwater source control, and stream removal as an alternate plan  
 14 to the current ALCOSAN *Clean Water Plan* (CWP).<sup>9</sup> It also indicated that using these  
 15 alternate methods could lead to improved efficiencies for ALCOSAN’s planned  
 16 wastewater treatment plant (WWTP) upgrades and operations of the existing collection  
 17 system, as well as greater reduction of sediment levels in the existing deep tunnel  
 18 interceptor sewers. PWSA’s *Green First Plan* estimated that it could reduce the region’s  
 19 overflow volume by a comparable amount (6 billion gallons or more) to ALCOSAN’s

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<sup>6</sup> Available at:  
<https://www.3riverswetweather.org/sites/default/files/Consent%20Order%20and%20Agreement%20final%202004.pdf>.

<sup>7</sup> Available at: <https://www.pgh2o.com/your-water/stormwater>.

<sup>8</sup> Available at: <https://www.pgh2o.com/your-water/stormwater>.

<sup>9</sup> Available at: <https://www.alcosan.org/our-plan/plan-documents/clean-water-plan>.

1 WWTP, while also providing a higher level of protection against surface flooding and  
 2 basement sewage backups.

3 PWSA also identified that the costs to provide this same level of protection  
 4 against surface flooding and sewage basement backups were not included in  
 5 ALCOSAN’s CWP, as ALCOSAN is only charged with addressing CSOs. ALCOSAN’s  
 6 CWP does not address surface flooding, sewage basement backups, sanitary sewer  
 7 overflows, PWSA’s MS4 permit requirements or PWSA only CSO outfalls. The  
 8 resolution of PWSA only CSO outfalls and related water quality issues as well as sanitary  
 9 sewer overflows are subject to further negotiation between PWSA and U.S.  
 10 Environmental Protection Agency (EPA) Region 3. These negotiations started in earnest  
 11 in January 2021. Negotiations are ongoing and are expected to result in a Consent  
 12 Decree. The timing of when a Decree will be issued has not been determined.

13 **Q. ARE THERE SPECIFIC PROJECTS RELATED TO COMBINED SEWER**  
 14 **OVERFLOWS THAT YOU WOULD LIKE TO HIGHLIGHT?**

15 A. Yes. In addition to the above work, PWSA also developed an Integrated Watershed  
 16 Management (IWM) Plan report for the Saw Mill Run (SMR) watershed by working with  
 17 the eleven other municipalities in the watershed, the Watersheds of South Pittsburgh  
 18 organization, the U.S. Army Corps of Engineers, and PA DEP. The implementation of  
 19 this integrated planning approach is in accordance with the provisions in the Water  
 20 Infrastructure and Improvement Act (WIIA) (HR 7279), which was signed into law on  
 21 January 14, 2019.

22 The SMR watershed is plagued with a range of in-stream water quality pollution  
 23 problems, sewer overflows, chronic surface flooding, and basement backups. The IWM  
 24 Plan identified that dry weather sources are the largest source of bacteria pollution, which

1 are most likely from failing sanitary and storm sewer infrastructure and illicit discharges,  
2 which are left uncontrolled in any of the current regional wet weather plans. Also,  
3 stormwater runoff was found to be the largest source of pollution in the watershed. In  
4 addition, it was found that if CSOs were eliminated, without addressing the other  
5 pollution sources, there would be no improvement in the number of days of water quality  
6 standard compliance achieved.

7 PWSA has finalized the IWM implementation plan report which has identified a  
8 combination of dry weather sources, stormwater runoff, and acid mine drainage control  
9 projects recommended to be implemented over the next five to ten years to maximize in-  
10 stream water quality improvement and reduce CSOs, surface flooding, and sewage  
11 basement backups to meet PWSA's and the other 11 municipalities' regulatory  
12 obligations. Implementation of the initial phases of the report cannot start until PWSA  
13 and the 11 municipalities involved are able to work out a suitable framework for  
14 implementation. This framework would include project cost sharing issues for planning,  
15 design and eventual construction of any recommended project. Given the number of  
16 municipalities involved, this framework will take some time to develop. This program is  
17 ongoing. The Watersheds of South Pittsburgh asked for and were given permission by  
18 PWSA to use the IWM as a starting point in continuing to convene the municipalities and  
19 PWSA to work towards the implementation of some of the lower cost projects.

1        **B.      Municipal Separate Storm Sewer System**

2        **Q.      WHAT HAPPENS TO STORMWATER IN SEPARATED SANITARY SEWER**  
 3        **AREAS?**

4        A.      Stormwater in separated sanitary sewer areas is subject to management under local  
 5        ordinances and/or an NPDES permit for municipal separate storm sewer systems  
 6        (otherwise known as an MS4 Permit).

7                    There are approximately 200 known stormwater discharge points (or outfalls) that  
 8        are part of PWSA’s MS4 system. These are locations where stormwater exits a property,  
 9        including pipes, ditches, swales, and other structures that transport stormwater. Each  
 10       outfall location is given a unique identifier to differentiate them from other mapped  
 11       outfall locations. Under the MS4 Permit, PWSA is required to monitor all known outfalls  
 12       (subject to impaired waters monitoring requirements).

13       **Q.      WHAT IS AN MS4 PERMIT?**

14       A.      Municipalities and other entities (such as universities) that meet certain standards must  
 15       obtain an NPDES permit for discharges of stormwater from their MS4s.

16                    In Pennsylvania, the MS4 program is managed by PA DEP. The Clean Water Act  
 17       requires cities serving a population of over 100,000 people to obtain an NPDES permit  
 18       for their discharges. EPA has delegated oversight of the NPDES program in  
 19       Pennsylvania to PA DEP. The Pennsylvania Clean Streams Law of 1937 also provides  
 20       additional authority to PA DEP.

21       **Q.      DOES PWSA HAVE AN MS4 PERMIT?**

22       A.      Yes. PWSA and the City of Pittsburgh were issued an MS4 NPDES Permit in 2004 that  
 23       was administratively extended through June 30, 2020. PA DEP issued a new MS4 Permit



1 to PWSA and the City effective as of July 1, 2020, with an expiration date of June 30,  
 2 2025.

3 **Q. WHAT ARE SOME OF THE STORMWATER SERVICES AND ACTIVITIES**  
 4 **THAT PWSA MUST PROVIDE UNDER THE MS4 PERMIT?**

5 A. PWSA’s obligations under the MS4 NPDES Permit include reducing the amount of  
 6 sediment, nutrients, and other pollution from entering rivers, streams, creeks, waterways  
 7 and water bodies that have significant direct and indirect impacts on water supply and  
 8 water quality in the area. Some examples of “water quality” services include:

- 9 • GIS mapping;
- 10 • Public education and outreach; and
- 11 • Project design construction and management (e.g. projects in Pollutant Reduction  
 12 Plans and Total Maximum Daily Load Plans)

13  
 14 Both PWSA and the City must implement Six Minimum Control Measures (MCMs) in  
 15 order to comply with our MS4 NPDES Permit. These include:

- 16 • Public Education and Outreach
- 17 • Public Participation
- 18 • Illicit Discharge Detection and Elimination
- 19 • Pre-Construction Runoff Control
- 20 • Post-Construction Runoff Control
- 21 • Good Housekeeping

22  
 23 **Q. ARE THERE ANY STORMWATER ORDINANCES WITHIN THE CITY?**

24 A. Yes. Within the City of Pittsburgh, all new development is required to separate their  
 25 sanitary and stormwater flows on-site in a way that would be compatible with a separated  
 26 system.<sup>10</sup> However, those that are in a combined sewer area then convey those separated  
 27 flows into an older combined system downstream because they do not have direct access

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<sup>10</sup> The City’s subdivision and land development ordinance addresses stormwater and drainage control. *See* Pittsburgh Code of Ordinances, Zoning Code, Title 13 (Stormwater Management) and Pittsburgh Code of Ordinances, Title 4 (public places), Article III (Sewers) at Chapter 433 (Illegal Surface Stormwater Connections).

1 to ALCOSAN sanitary sewer lines (for sanitary flow) or a body of water (for stormwater  
 2 flow). New development (or redevelopment) is required to use structural and non-  
 3 structural practices to manage stormwater.<sup>11</sup> Such structures and practices are  
 4 implemented and based on “design” storms (the first one inch of runoff for privately  
 5 funded projects, and the 95th percentile storm event for publically funded projects).<sup>12</sup> The  
 6 City of Pittsburgh has also devised a “credit” program by which a property unable to  
 7 perform on-site stormwater management will provide funding for offsite practices to  
 8 address stormwater flood abatement.

9           The *Pennsylvania Stormwater Best Management Practices Manual* provides  
 10 guidance, but otherwise no predetermined set of stormwater structures or practices is  
 11 required, since the application of management structures or practices varies with each  
 12 location.<sup>13</sup> BMPs may be designed and implemented based on the design storm method,  
 13 the simplified method, or criteria as allowed by regulation.<sup>14</sup>

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<sup>11</sup> *Id.* The City’s Department of City Planning (“DCP”) reviews stormwater management plans for compliance with the Zoning and Building Codes. See PWSA PROCEDURE MANUAL FOR DEVELOPERS (2018) at 9-7, which is available at <http://www.pgh2o.com/developer-manual>. The City of Pittsburgh Department of Permits, Licenses, and Inspections (“PLI”) has the authority to inspect stormwater management structures provided by private development and to enforce any violations. *Id.*

<sup>12</sup> The City’s Ordinances require the onsite retention of the 2-year 24-hour storm volume. See Pittsburgh, Pennsylvania Code of Ordinances at § 1303.03(a)(1). See also Pittsburgh Code of Ordinances § 1303.01(k) — which incorporates, *inter alia*, Appendix 7A of Pennsylvania Department of Transportation’s DRAINAGE MANUAL, PennDOT Publication 584. That Publication is available at: <https://www.dot.state.pa.us/public/pubsforms/Publications/PUB%20584.pdf>.

<sup>13</sup> See PWSA PROCEDURE MANUAL FOR DEVELOPERS (2018) at Section 9 (stormwater); Pennsylvania Department of Environmental Protection, STORM WATER BMP MANUAL (December 30, 2006), DEP Document No. 363-0300-002, at Forward; <http://www.pgh2o.com/developer-manual>.

<sup>14</sup> See 25 Pa. Code Chapter 102; City Code 1303.03 Volume Controls.

1 **Q. HAS THE CITY OF PITTSBURGH RECENTLY UPDATED ITS**  
 2 **STORMWATER CODE?**

3 A. Yes. Pursuant to EPA’s January 26, 2021 Administrative Order on Consent with PWSA  
 4 and the City of Pittsburgh, PWSA and the City were required to submit an amended  
 5 unified Stormwater Code to City Council by July 1, 2021, which became effective on  
 6 March 31, 2022.<sup>15</sup> This project included developing an implementable revised Code,  
 7 supporting policy and process recommendations, and guidance materials that align with  
 8 other City initiatives regarding green stormwater infrastructure, complete streets, and  
 9 resiliency, as well as clarifying development requirements and improving efficiency of  
 10 stormwater project review and approval processes. Improving ordinances, review  
 11 processes, policies, and guidance material, has created a clearer, more user-friendly  
 12 stormwater code.<sup>16</sup>

13 **Q. HOW DO PWSA AND THE CITY OF PITTSBURGH DETERMINE**  
 14 **RESPONSIBILITY FOR STORMWATER-RELATED ACTIVITIES?**

15 A. PWSA and the City are taking several steps to further define their respective  
 16 responsibilities for stormwater-related activities.

17 For activities related to compliance with the joint MS4 NPDES permit, PA DEP  
 18 required PWSA and the City to define their roles and responsibilities to ensure  
 19 compliance with the permit (which went into effect on July 1, 2020). PWSA and the City  
 20 have an MS4 compliance agreement that primarily addresses responsibility for the six  
 21 Minimum Control Measures included in the permit.

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<sup>15</sup> The January 26, 2021 Administrative Order on Consent is attached as Exhibit TI-2.

<sup>16</sup> Additional information regarding the Stormwater Code Updates is available at:  
<https://pittsburghpa.gov/dcp/stormwater-code-update>.

1           Additionally, as a result of the January 26, 2021 Administrative Order on Consent  
 2 (AOC) with EPA (and coordinated with PA DEP) on MS4 Permit requirements and  
 3 stormwater inspection and enforcement, the City of Pittsburgh and PWSA have  
 4 committed to a timeline for implementing a full stormwater inspection and enforcement  
 5 program that consisted of:

- 6           • submitting an updated stormwater code for approval to the Pittsburgh City  
 7           Council by July 2021;
- 8           • hiring additional inspectors and enforcement staff for 2022;
- 9           • putting management partnership procedures in place by the end of January 2022;
- 10          • achieving full compliance with the requirements by March 31, 2022; and  
 11           submitting quarterly progress reports to EPA.

12           More broadly, PWSA and the City developed a detailed draft agreement to  
 13 negotiate and resolve any issues outside of MS4 requirements. The focus of this  
 14 agreement is other stormwater management responsibilities of PWSA's Stormwater  
 15 Division and the required coordination and cost-sharing with the City. This includes the  
 16 planning, design, implementation, and maintenance of stormwater-related capital projects  
 17 that may reduce localized flooding and CSOs at the rivers while improving water quality  
 18 and the health of streams and waterways.

19           **C. Stormwater Management and Mitigation**

20           **Q. ON A SYSTEM-WIDE SCALE, WHAT CAN BE DONE TO REDUCE THE**  
 21           **AMOUNT OF STORMWATER ENTERING THE WASTEWATER SYSTEM?**

22           A. Broadly, there are a wide variety of steps that a community can take to reduce the amount  
 23 of stormwater runoff entering the wastewater system. Many of these are aimed at  
 24 reducing the amount of impervious area and improving the ability of precipitation to be

1 absorbed or held where it falls. Examples can include replacing impervious pavement  
2 with pervious materials, stream removal projects, and large-scale green infrastructure  
3 projects.

4 **Q. PLEASE HIGHLIGHT SOME OF THE AUTHORITY’S RECENT**  
5 **STORMWATER MANAGEMENT AND MITIGATION PROJECTS.**

6 A. As of April 2023, PWSA has constructed (or partnered with) 26 stormwater projects in  
7 the City of Pittsburgh. In addition, 9 projects are currently in various stages of planning  
8 and design. Projects are strategically sited to collect stormwater in high priority sheds  
9 where projects would have a significant impact on reducing combined sewer overflows,  
10 as mandated by the U.S. EPA and PA DEP. These projects featured bioretention (rain  
11 gardens and “bump outs” along roadways), underground retention tanks to hold back the  
12 peak flows of stormwater during rainfall events, and many were partially funded by  
13 ALCOSAN’s GROW (Green Revitalization of our Waterways) grant program.  
14 ALCOSAN’s GROW program funds municipal green infrastructure projects in their  
15 service area that they determine will provide cost-effective management of stormwater to  
16 reduce sewer overflows. The total value of the grants awarded to PWSA to date is over  
17 \$14 million. It should be noted that the GROW grants are reimbursement grants. As a  
18 result, PWSA is required to budget for and spend the funds before it can be reimbursed  
19 for these projects. PWSA has started post-construction monitoring of these facilities to  
20 document effectiveness where possible.

21 **Q. WHAT CAN INDIVIDUAL PROPERTY OWNERS DO TO REDUCE**  
22 **STORMWATER RUNOFF FROM THEIR PROPERTIES OR OTHERWISE**  
23 **IMPROVE WATER QUALITY?**

24 A. Individual homeowners and other property owners also play an important role in reducing  
25 stormwater runoff or improving water quality in other ways. Homeowners can do this by

1 reducing impervious areas (hard surfaces like roofs and paved areas) so that rain soaks  
 2 into the ground; disconnecting downspouts so that the stormwater from their roof can  
 3 infiltrate into the ground in areas away from structures; maintaining the lawn and  
 4 landscaped areas to prevent erosion, planting native trees and plants which help infiltrate  
 5 stormwater and increase evaporation and transpiration; or managing stormwater on-site  
 6 with rain gardens, rain barrels, and similar practices. Other stormwater-mitigation  
 7 practices at home include:

- 8 • Keeping drains, gutters, and downspouts clean and free of debris.
- 9 • Disposing of trash properly.
- 10 • Don't hand wash your car. Bring it to a carwash.
- 11 • Properly dispose of pet waste.
- 12 • Use fertilizer sparingly, and do not fertilize when rain is forecasted within 24  
 13 hours.
- 14 • Stop oil or chemical leaks immediately.<sup>17</sup>

15 As I discuss below, PWSA's stormwater tariff includes incentives for property owners to  
 16 install certain stormwater mitigation measures and earn credits to reduce their stormwater  
 17 charges.

18 **Q. PLEASE DISCUSS STREET SWEEPING PRACTICES IN THE CITY OF**  
 19 **PITTSBURGH AND HOW STREET SWEEPING RELATES TO STORMWATER**  
 20 **MANAGEMENT.**

21 A. Street sweeping is done by the City of Pittsburgh using their equipment. Street sweeping,  
 22 as a method of pollution prevention and general good housekeeping, is important because  
 23 it helps to reduce the amount of pollution, sediment, and litter collected on municipally-

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<sup>17</sup> Refer to the Southwestern *Pennsylvania's Homeowner's Guide to Stormwater*. - <http://www.accdpa.org/wp-content/uploads/2015/04/Homeowners-Stormwater-Guide.pdf>.

1 owned and maintained facilities (e.g. streets, parking lots, and vehicle maintenance areas)  
 2 from discharging into local waterways. The City of Pittsburgh is responsible for street  
 3 sweeping in accordance with the Cooperation Agreement. The City of Pittsburgh  
 4 complies with the current MS4 NPDES permit requirements and submits records monthly  
 5 to PWSA (such as weight of debris collected, miles swept in the MS4 area, or any other  
 6 information as required by the current permit cycle). PWSA includes this information in  
 7 the MS4 annual report and submits it to PA DEP in accordance with the MS4 NPDES  
 8 permit requirements.

9 **Q. WHO MAINTAINS THE STORMWATER CATCH BASINS IN THE CITY OF**  
 10 **PITTSBURGH?**

11 A. Stormwater runoff from roadways flows into storm grates or inlets, then into the sump or  
 12 well below called a catch basin. PWSA has taken responsibility for maintaining  
 13 approximately 25,000 stormwater catch basins and inlets.<sup>18</sup> The catch basins and inlets  
 14 need to remove stormwater runoff from the streets as quickly as possible. For them to  
 15 function properly, they require regular maintenance to remove sediment, litter and other  
 16 debris as well as contaminants that get picked up along the way.

17 Catch basins are designed to handle flows from specific rainfall events (i.e., a  
 18 design storm). It is neither feasible nor cost effective to build catch basins (and combined  
 19 sewer systems) to handle the largest or heaviest rains. In doing so, they would never be  
 20 used to their full capacity if designed to manage storms with a frequency of 25, 100, or  
 21 200 years. Even with proper design and installation, catch basins may not be able to

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<sup>18</sup> On State roads, however, the Pennsylvania Department of Transportation (PENNDOT) is responsible for inlet maintenance.

1 handle all heavy drainage, runoff, or high intensity precipitation, but can manage our  
2 most common sized storms.

3 The below-ground (or internal) cleaning of a catch basin requires the use of a  
4 vacuum truck to suck up leaves, sediment and debris from the catch basin. After the basin  
5 is vacuumed, other work needs to be done inside the basin to ensure that the subsurface  
6 connections to the combined sewer lines or separate stormwater lines are clear before the  
7 job is complete. This other work often includes spraying, flushing and/or “jetting” the  
8 catch basin. “Jetting” means that high pressure water runs through the lines to remove  
9 any accumulated material such as sediment, leaves, or trash. Right now, PWSA acts as an  
10 agent of the City of Pittsburgh to perform maintenance of all publicly owned catch  
11 basins.

### 12 **III. PWSA’S STORMWATER PLAN**

#### 13 **Q. PLEASE DESCRIBE PWSA’S APPROACH TO STORMWATER ISSUES.**

14 A. PWSA’s *Green First Plan*<sup>19</sup> outlines projects which will reduce pollution and minimize  
15 flooding caused by stormwater. On a macro level, PWSA has sought to create a  
16 comprehensive plan that provides a unified, long-term approach toward regulatory  
17 compliance. As a matter of cost effectiveness, PWSA is seeking to address multiple  
18 issues: poor water quality, CSOs and SSOs, illicit discharges, surface flooding, basement  
19 flooding, older sewer systems, and regulatory requirements.

20 PWSA has developed a final draft Stormwater Strategic Plan that advances some  
21 of the concepts contained in the Green First Plan. The Strategic Plan recognizes that  
22 system integration and resiliency are an important part of future stormwater control

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<sup>19</sup> Available at: <https://www.pgh20.com/your-water/stormwater>.



1 planning for the service area. The Strategic Plan transitions PWSA from primarily  
 2 combined sewer overflow control (as shown in the Green First Plan) to a more holistic  
 3 approach to managing stormwater quality issues, beyond CSO control.

4 **Q. WHAT ARE THE SPECIFIC GOALS OF THE PROGRAM?**

5 A. There are several goals of PWSA’s stormwater program, including to:

- 6
- 7 1. Demonstrate that stormwater source management and stream removal projects
- 8 can reduce CSO volume as well as manage Stormwater quantity issues;
- 9 2. Develop and implement a stormwater asset management program;
- 10 3. Evaluate the system capacity and define a publicly accepted level of stormwater
- 11 management capacity to mitigate surface and basement sewage flooding;<sup>20</sup>
- 12 4. Achieve regulatory compliance and implement pollution reduction projects as
- 13 required by the state and federal agencies;
- 14 5. Develop partnerships with government and philanthropic agencies to access
- 15 eligible funds for flood protection and water quality projects; and
- 16 6. Ensure an affordable stormwater utility fee structure.

17

18 **Q. PLEASE DESCRIBE THE GREEN ASPECTS OF PWSA’S APPROACH TO**  
 19 **STORMWATER CONTROL.**

20 A. Rain gardens, green roofs, tree plantings, and permeable pavements are examples of  
 21 some practices that can be used to soak up the rain. Often called green infrastructure,  
 22 these practices rely on soil, plants and natural processes such as infiltration, evaporation,  
 23 and transpiration to mimic the natural water cycle and manage rain water, rather than  
 24 sending it directly into a series of pipes to convey it for treatment at ALCOSAN’s Woods  
 25 Run Wastewater Treatment Plant. Green infrastructure is a cost-effective and resilient  
 26 approach to managing stormwater that can bring many additional social, economic,  
 27 public health, and environmental benefits to communities.

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<sup>20</sup> Note that sewerage backups into building basements is not permissible under the federal Clean Water Act and must be abated.

1 PWSA’s process has focused on analyzing the City of Pittsburgh’s top 30 surface  
 2 watersheds by several criteria, including risk, opportunity, activity, and benefits. We then  
 3 identified the priority projects. Consulting firms with international expertise are  
 4 contracted by PWSA to identify the most cost-effective locations for stormwater  
 5 infrastructure that will manage the first 1.5 inches of rainfall using the metric of \$250,000  
 6 per impervious acre managed.<sup>21</sup>

7 In 2016 the City of Pittsburgh and PWSA finalized the Citywide Green First  
 8 Plan,<sup>22</sup> which provided an outlined for how Pittsburgh has used green infrastructure  
 9 solutions to manage stormwater.

10 Implementing the plan has reduced local street flooding and sewer backups  
 11 caused by large rainstorms, as well as reduced regional CSOs. These innovative  
 12 practices also help the City of Pittsburgh and the region comply with the EPA’s sewer  
 13 overflow mandates and improve the quality of local waterways.

14 **Q. PLEASE IDENTIFY PWSA’S CURRENT PRIORITY CAPITAL PROJECTS IN**  
 15 **THE AREA OF STORMWATER MANAGEMENT.**

16 A. Much of the current work is designed to confirm the application of various project  
 17 approaches to abate stormwater overflows or flooding. For example, in August 2020,  
 18 PWSA completed construction on two new green infrastructure projects to help manage  
 19 stormwater within Four Mile Run, which consists of building two engineered drainage  
 20 channels in Schenley Park along Overlook Drive and next to the Bridle Trail. Without  
 21 these improvements, stormwater is mostly unmanaged, flowing off the steep hillside from  
 22 Overlook Drive to the Bridle Trail below and further downhill, where it causes the

---

<sup>21</sup> This metric is based upon comparisons to the cost of piped solutions.

<sup>22</sup> Available at <https://www.pgh2o.com/your-water/stormwater>.

1 combined sewer system to overflow into, and flood, downstream neighborhoods and  
 2 properties. The channels will create a path where water can flow. These two “Early  
 3 Action Projects” were part of the larger Four Mile Run Stormwater Project that has a  
 4 total project cost of approximately \$28 million and encompasses Schenley Park and  
 5 several City of Pittsburgh neighborhoods, including Greenfield, Hazelwood, Oakland,  
 6 Squirrel Hill, and the Run.

7 As of April 2023, PWSA has constructed (or partnered with) twenty-six  
 8 stormwater infrastructure projects in the City of Pittsburgh. In addition, nine projects are  
 9 currently in various stages of planning and design.

10 **Q. WHAT ARE THE CAPITAL COSTS ASSOCIATED WITH THESE PROJECTS?**

11 A. PWSA made a significant investment in green infrastructure over the past several years to  
 12 manage stormwater, reduce sewer overflows, and comply with regulatory requirements,  
 13 as shown in Table 1:

14

<b>Table 1 - PWSA Stormwater Capital Expenditures from 2017-2021<sup>23</sup></b>	
<u>Year</u>	<u>Capital Expenditure</u>
2017	\$953,003 <sup>24</sup>
2018	\$3,156,175 <sup>25</sup>
2019	\$6,901,255 <sup>26</sup>
2020	\$15,791,622 <sup>27</sup>
2021	\$15,614,923 <sup>28</sup>

<sup>23</sup> Source, 2022-2026 CIP ( [2022-2026 CIP - FINAL-compressed.pdf \(pgh2o.com\)](#) and the 2023-2027 CIP (2023-2027 Capital Improvement Plan Final Document.pdf (pgh2o.com))

<sup>25</sup> See, <https://www.pgh2o.com/sites/default/files/2021-09/2022-2026%20CIP%20-%20FINAL-compressed.pdf> at p. 4.

<sup>25</sup> Id.

<sup>26</sup> Id.

<sup>27</sup> Id.

<sup>28</sup> Id.

1 Going forward, PWSA’s Capital Improvement Plan<sup>29</sup> includes the capital requirements  
 2 shown in Table 2:

<b>Table 2 – PWSA Stormwater Capital Budget 2023 - 2027</b>	
<b>Year</b>	<b>Green Infrastructure + Other Stormwater Projects<sup>30</sup></b>
2023	\$29,822,932
2024	\$34,827,423
2025	\$36,884,821
2026	\$33,038,424
2027	\$26,808,750
<b>Total</b>	<b>\$161,382,350</b>

3  
 4 PWSA’s Capital Improvement Plan Budget allocates a significant amount of stormwater  
 5 and green infrastructure monies as shown above. However, these allocated funds are only  
 6 to meet the minimum requirements for regulatory compliance based on how much PWSA  
 7 can currently afford within its sewer budget. These budgeted amounts were anticipated to  
 8 change once the stormwater fee was established, which was implemented in 2022.

9 Beginning in 2023, PWSA is anticipating the phase-in of stormwater fee revenues, which  
 10 will help fund stormwater infrastructure projects and partially offset the sewer fee  
 11 revenues.<sup>31</sup> The stormwater rate will allow PWSA to follow the Green First Plan of  
 12 addressing 1,800 impervious acres over 20 years to reduce combined sewer overflows

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<sup>29</sup> See, <https://www.pgh2o.com/sites/default/files/2022-10/2023-2027%20Capital%20Improvement%20Plan%20Final%20Document.pdf> at p. 9

<sup>30</sup> Other stormwater projects include catch basin replacements and stormwater asset renewal.

<sup>31</sup> SW fees received in 2022 enabled PWSA to further refine and design the Green First Plan-related projects and to fund the stormwater-related activities and operations of PWSA.

1 and mitigate basement backups and localized flooding. The plan estimates the  
 2 construction of these impervious acres at approximately \$250,000 per impervious acre  
 3 (2016 dollars) not accounting for inflation, which is approximately \$450 million.

4 Currently, PWSA’s most pressing stormwater funding shortfalls include:

- 5 • Construction of solutions to stormwater flooding problem areas;
- 6 • Construction of CSO abatement projects to comply with EPA and PA DEP  
 7 requirements;
- 8 • Projects to comply with MS4 requirements; and
- 9 • Expanded green infrastructure maintenance.

10  
 11 **Q. ARE ALL COSTS RELATED TO PWSA’S STORMWATER OBLIGATIONS**  
 12 **KNOWN AT THIS TIME?**

13 A. No, the total costs are currently unknown. On January 7, 2022 PWSA and the City of  
 14 Pittsburgh executed a MS4 Compliance Agreement. A second part of this agreement is  
 15 expected to address specific roles and responsibilities for managing stormwater within  
 16 the city of Pittsburgh is yet to be completed, but is still being negotiated. This includes  
 17 the responsibilities for MS4 permit compliance and the planning, design, construction,  
 18 operation and maintenance of stormwater-related capital projects intended to reduce  
 19 localized flooding and CSOs while improving the water quality of streams and  
 20 waterways.

21 In addition, the plan is based upon a level of “stormwater service” to  
 22 appropriately mitigate flooding within the City of Pittsburgh. The stormwater tariff and  
 23 associated rates allows PWSA to charge customers more accurately for stormwater  
 24 service based on the cost to serve their property and will improve PWSA’s ability to  
 25 adequately fund important stormwater management activities.

1 **Q. HAS PWSA DEVELOPED A STRATEGIC STORMWATER PLAN?**

2 A. Yes. The plan also takes into consideration climate change issues that impact stormwater  
3 and provide a strategic approach to developing a resilient stormwater management  
4 program.

5 As part of the terms and conditions of the Joint Petition for Settlement Regarding  
6 PWSA's January 20, 2022, Stage 2 Compliance Plan: Stormwater (Revised) the PUC  
7 specifically noted public engagement for the Stormwater Strategic Plan to include public  
8 comments and meetings, and a long-term engagement process in consultation with its  
9 existing Stormwater Partners Group (consisting of the Pittsburgh Parks Conservancy,  
10 Pittsburgh United, Grounded Strategies, Penn State Master Watershed Stewards, and  
11 PWSA). PWSA has been working closely with the Stormwater Partners Group since the  
12 beginning of 2023, and the group now also includes other partners such as representatives  
13 from the City of Pittsburgh, Watersheds of South Pittsburgh, the Mon Water Project,  
14 Pittsburgh United, and Clean Water Action. PWSA meets regularly with the Partners,  
15 and they have been helpful in developing informational content for the "Stormwater  
16 Conversations." These are six workshops that PWSA is hosting in April – June 2023 to  
17 gather feedback from community members about the Stormwater Strategic Plan and how  
18 stormwater impacts their communities.

19 The Stormwater Conversations are educational, engaging, inclusive (they include  
20 childcare, dinner, and American Sign Language interpreters) and are being held in six  
21 geographic areas of the City including the: West End, South, East End, Northside,  
22 Hazelwood/Four Mile Run and Central Pittsburgh. Two stormwater workshops have  
23 already taken place. One on April 13th in the West End and the second on April 18th in  
24 Pittsburgh's southern neighborhoods. Those attending were engaged throughout the

1 workshops interacting with PWSA staff and the partner groups to learn more about  
2 Pittsburgh's water and sewer infrastructure and understand the Stormwater Strategic  
3 Plan. The facilitated table discussions about the six priority actions in the Plan have  
4 sparked thoughtful comments and ideas. Many of the comments relate to equity in the  
5 prioritization of future projects, insight on the communication tactics, and expectations  
6 around a higher level of service.

7 About a hundred or so people have attended the first three workshops. The  
8 audience has been diverse and for many, this is their first time interacting with PWSA.  
9 Robocalls and doorhangers have been the most successful communication methods to  
10 bring people out. We will continue using these methods throughout the remaining  
11 workshops.

12 The Stormwater Partners have helped review and refine workshop content,  
13 distribute flyers both door to door and electronically in their networks, and attend the  
14 Stormwater Conversations to help facilitate discussions. PWSA has found their  
15 participation to be extremely valuable. Finally, PWSA has an ongoing commitment to  
16 public engagement and outreach and will provide a process for the community to provide  
17 input into ongoing stormwater planning and implementation.

18 **IV. PROPOSED REVISED STORMWATER TARIFF**

19 **Q. IS PWSA CHANGING THE RATE DESIGN IN THE PROPOSED REVISED**  
20 **STORMWATER TARIFF?**

21 A. No. The Commission has previously approved the PWSA Stormwater tariff based on a  
22 rate design which is not being changed in this proceeding. Rather, the proposals we are  
23 making in this case seek the Commission's approval to increase the rates and make two  
24 new changes as described in the testimony of Mr. Readling. See PWSA Exhibits JAM-

1 15 (clean) and JAM-16 (red-lined) sponsored by Ms. Mechling for proposed Tariff  
 2 Supplement No. 3.

3 **Q. PLEASE DESCRIBE HOW PWSA HAS STRUCTURED THE STORMWATER**  
 4 **RATE FOR RESIDENTIAL CUSTOMERS.**

5 A. Single family residential customers are charged one of three flat rates (commonly  
 6 referred to as tiers). A customer’s tier is based on the impervious surface area found on  
 7 the residential lot. PWSA proposes the following increased monthly stormwater rates for  
 8 each residential tier:

<b>Table 3 - PWSA Proposed Monthly Stormwater Fees by Residential Tier</b>			
<b>Proposed Residential Stormwater Fee</b>	Tier 1	Tier 2	Tier 3
<b>2024</b>	\$5.13	\$10.26	\$20.52
<b>2025</b>	\$6.07	\$12.14	\$24.28
<b>2026</b>	\$7.10	\$14.20	\$28.40

9 **Q. WHY DOES PWSA CONTINUE TO SUPPORT A THREE-TIERED FEE AS**  
 10 **OPPOSED TO A SINGLE STORMWATER FEE FOR ALL RESIDENTIAL**  
 11 **CUSTOMERS?**

12 A. PWSA has measured the impervious surface area found on each residential lot and found  
 13 substantial variability in impervious area – from properties with less than 1,000 square  
 14 feet of impervious area to properties with more than 4,000 square feet of impervious area.  
 15 This large variability and the availability of the data on impervious area led us to  
 16 conclude that the tiered approach was more equitable to the individual ratepayer. This  
 17 approach also is more supportive of a credits program that could grant fee credits to  
 18 residential ratepayers who undertake measures on their lots to reduce their stormwater  
 19 demand. Mr. Readling’s testimony discusses development of the tiered stormwater fee in  
 20 greater detail.

21 **Q. PLEASE DESCRIBE THE STORMWATER RATE FOR NON-RESIDENTIAL**  
 22 **CUSTOMERS THAT PWSA CONTINUES TO SUPPORT IN THIS CASE.**



1 A. The impervious area found on a typical residential property in the service area is called  
 2 the Equivalent Residential Unit of impervious area, or ERU. PWSA proposes to bill non-  
 3 residential customers a charge based on the rate per ERU times the number of ERUs  
 4 found on the property. PWSA proposed a per ERU rate of \$5.96 in 2022, and \$7.95 in  
 5 2023. PWSA also proposed that one ERU is 1,650 square feet of impervious area.

6 **Q. WHY IS PWSA PROPOSING TO CONTINUE TO CALCULATE THE NON-  
 7 RESIDENTIAL STORMWATER FEE IN THIS WAY?**

8 A. ERU-based rate structures that charge for impervious surfaces are by far the most  
 9 common across the United States and balance fairness with simplicity. Impervious  
 10 surface relates to runoff volume, peak runoff rate, and pollution. These factors most  
 11 closely relate to demand in the service area. This is discussed in more detail in Mr.  
 12 Readling’s testimony.

13 **Q. IS PWSA PROPOSING TO CONTINUE TO ALLOW CUSTOMERS TO EARN  
 14 CREDITS TO REDUCE THEIR STORMWATER FEES?**

15 A. Yes. For non-residential customers, PWSA is proposing to maintain its credit program  
 16 consisting of credits for customers who capture and detain runoff on-site, meeting or  
 17 exceeding recent development standards in place in Pittsburgh. For residential  
 18 customers, we are proposing a maintain a similar credit. The non-residential credit will be  
 19 a percentage discount of up to 60% for meeting the 2019 City of Pittsburgh stormwater  
 20 standards, and up to 45% for meeting the 2016 City of Pittsburgh stormwater standards.  
 21 In both situations, only the portion of the property that meets the requirement is used to  
 22 compute the credit. Non-residential customers can also earn a credit of between 75% and  
 23 100% of their stormwater fees, for “regional efforts” – of “Enhanced Volume Control”  
 24 for controlling at least 25% more runoff than what is required by the City of Pittsburgh  
 25 2019 stormwater standards.

1           Single family residential properties can get at least a 50% credit by capturing and  
2 slowly releasing the runoff from 3/4-inch of rain from the impervious surfaces on the  
3 property. Residents in Tiers 2 and 3 can drop to the next lower tier if they sufficiently  
4 reduce their impervious area to qualify for a lower tier.

5           A credit application must be made to get a credit, and applications are simple.

6           Finally, although not technically a credit, customers can also reduce their  
7 stormwater fee by removing impervious area from their property.

8 **Q. DOES PWSA HAVE A PROCESS FOR CUSTOMERS TO APPEAL THEIR**  
9 **IMPERVIOUS AREA DESIGNATION?**

10 A. Yes, PWSA has developed a process for customers to challenge their property's  
11 impervious area calculation if they believe the calculation is incorrect or if the  
12 impervious area on their property has changed. If the customer follows this process and  
13 is still unsatisfied with their impervious area calculation, customers also have the  
14 Commission's informal and formal complaint processes available to them.

15 **Q. DOES PWSA REASSESS IMPERVIOUS AREA ON A REGULAR BASIS?**

16 A. Yes, PWSA reviews and reassesses impervious area approximately every five (5) years.  
17 We recognize that impervious area may change over time as a result of construction,  
18 redevelopment, changing uses for a property, etc. A periodic reassessment is appropriate  
19 to account for these changes over time and increase or decrease a customer's stormwater  
20 fee or residential tier to reflect those changes.

21 **Q. HOW DOES PWSA EDUCATE CUSTOMERS ABOUT THE STORMWATER**  
22 **TARIFF AND RATE?**

23 A. Since first implementing stormwater rates in 2022, PWSA has developed a robust  
24 customer education process including a website, informational materials about the

1 stormwater rates and, as I discussed previously, our public facing efforts regarding the  
2 Stormwater Strategic Plan. PWSA's stormwater information web site can be found at:  
3 <https://www.pgh2o.com/your-water/stormwater>. Social media, ongoing media relations,  
4 and presentations to community groups are an ongoing part of the communications  
5 campaign. This approach is an essential way to reach the broader public and provides an  
6 opportunity to share information about the ways the stormwater rate will support our  
7 stormwater program.

8 PWSA also maintains a searchable database, called the Stormwater Fee Finder,  
9 where customers can look up specific information about their property to understand how  
10 the rate impacts their property. Anyone can access the PWSA Stormwater Fee Finder  
11 from the internet at:

12 [https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29](https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc)  
13 [889a42125edc](https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc)

14

1 **V. COMPLIANCE PLAN STAGE 2 STORMWATER**

2 **Q. DID PWSA FILE A COMPLIANCE PLAN STAGE 2 REGARDING**  
 3 **STORMWATER ISSUES?**

4 A. Yes. Consistent with the Commission’s directive in its February 4, 2021 Order, PWSA  
 5 filed its Compliance Plan Stage 2: Stormwater on April 9, 2021.<sup>32</sup> PWSA filed an update  
 6 to that plan on June 9, 2022.

7 **Q. HAS PWSA’S COMPLIANCE PLAN BEEN APPROVED BY THE**  
 8 **COMMISSION?**

9 A. Yes, the Commission approved a settlement of the Compliance Plan Stage 2 Stormwater  
 10 proceeding in an Order entered on July 19, 2022.<sup>33</sup>

11 **Q. HAS PWSA COMPLETED ALL OF THE REQUIRED FILINGS AND SECURED**  
 12 **ALL OF THE NECESSARY APPROVALS FROM THE PUC TO IMPLEMENT**  
 13 **ITS STORMWATER TARIFF?**

14 A. Yes. The PUC has reviewed PWSA’s SW tariff several times and permitted it to go into  
 15 effect each time. First, PWSA filed and was permitted to go forward with its initial  
 16 Stormwater Tariff which became effective January 12, 2022. Second, PWSA filed and  
 17 the PUC permitted PWSA to implement its Compliance Plan 2 tariff contained in Tariff  
 18 Supplement No. 1 which became effective November 2, 2022. Supplement No. 2 of the  
 19 Stormwater Tariff which is currently in effect implemented the directives from the  
 20 Compliance Plan Stage 2 Customer Service issues. Finally, when PWSA filed a Second  
 21 Revised Compliance Plan Stage 2 for Stormwater, after the settlement with the parties

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<sup>32</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 1*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Opinion and Order entered February 4, 2021 (“*Stage 1 February 4, 2021 Order*”).

<sup>33</sup> See, Order in *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 3 (Stormwater)*, Docket Nos. M-2018 2640802 and M-2018-2640803, August 25, 2022.

1 discussed above, the PUC permitted PWSA's Second Revised Compliance Plan to go  
2 into effect.

3 **VI. CONCLUSION**

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

5 A. Yes.

# Appendix A

## /// Anthony C. Igwe, PE

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### Senior Group Manager Stormwater, Pittsburgh Water & Sewer Authority



Tony Igwe, PE, has built his 30-year career around the development of engineering solutions to control wet weather pollution. He has extensive experience planning, designing, and evaluating numerous wet weather

combined sewer overflow (CSO), sanitary sewer overflow (SSO) control facilities and integrated planning projects. These activities include hydrologic/hydraulic evaluations including flow monitoring and modeling, evaluating, selecting, and implementing wet weather control alternatives, and pilot programs that include proof of concept for green stormwater infrastructure projects and enhanced high rate treatment facilities.

Tony's experience has included working with various municipal engineers within the ALCOSAN Service Area to implement projects that meet various consent orders for separate and combined sewer systems. Tony's role on these projects included developing the flow monitoring approaches, data review and calibration of H/H models as well as alternative evaluation assisting in the 30% design of the facility. The projects included coordination with various stakeholders and working with the PADEP.

Tony's experience also includes evaluating the effectiveness of control methods relative to performance and water quality and documenting lessons learned for more than \$600 million of constructed wet weather facilities as part of a National Wet Weather Demonstration Program in Michigan, that clarified the role of internal basin hydraulics in effective treatment. Results of these activities have been used in discussions with both regulatory and client communities in development and acceptance of affordable solutions.

Tony thoroughly understands the operational characteristics of watersheds, the interrelationships of subwatersheds and sewersheds and how they impact the entire watershed.

He has managed projects ranging in scope from hydraulic evaluations to in-system storage design to CSO Alternative Evaluations and a Long Term CSO Control Plan Update. He scrutinizes specific problems and considers how the solution will impact downstream areas and the entire watershed. He understands that many factors impact water quality in a watershed and that control efforts must be coordinated to gain an environmental benefit. He seeks solutions that are cost-effective for the client and environmentally effective for the watershed.

Tony has a keen understanding of regulatory requirements and how to address regulatory agency concerns during project development and can assist PWSA in other areas that require interface with regulatory agencies, if needed. Prior to joining Wade-Trim, he worked with the Michigan Department of Environmental Quality Surface Water Quality Division for five years where he helped set the technical direction for the State's wet weather control requirements. He has successfully used these insights to help clients target negotiations to address underlying regulatory concerns and develop cost-effective solutions.

## ANTHONY IGWE, PE

**EDUCATION**

- » Ph.D., Environmental Engineering, Wayne State University
- » MS, Environmental Engineering, Wayne State University
- » BS, Civil Engineering, Mississippi State University
- » BS, Construction Technology, Eastern Michigan University

**REGISTRATION**

- » Professional Engineer: PA, MI

**YEARS OF EXPERIENCE**

- » Total years: 35

**AREA OF EXPERTISE**

- » Urban Wet Weather Controls

**RELEVANT PRESENTATIONS**

- » “NEORSD Approach to Clean Water Act Integrated Planning” with Devona Marshall, Andrea Remias, Imad Salim, and Joe Pavlick. WEF Collection Systems 2016
- » “Green Infrastructure Opportunities in Gray Wet Weather Plans” with Lawrence J. Lennon, Uzair Shamsi, John Schombert and John Maslanik. WEF Collection Systems, 2013
- » “Seasonal Precipitation Frequency and Distribution Analysis” with Imad Salim, Jerry Brown, James Sherrill, Tarun Sonkhya and Anass Jerrari. WEF Collection Systems, 2011

**QUALIFICATIONS**

- » 35 years of experience developing engineering solutions to control wet weather pollution and improve treatment efficiency
- » Evaluated and applied innovative and new technologies in the treatment of CSO including the swirl concentrator, fine screening, conventional and high-rate disinfection, dechlorination, odor control, and flow control
- » Experienced in every aspect of CSO control from metering and modeling to alternative evaluation to facility design, implementation, and operational evaluation
- » Former state regulator with compliance experience

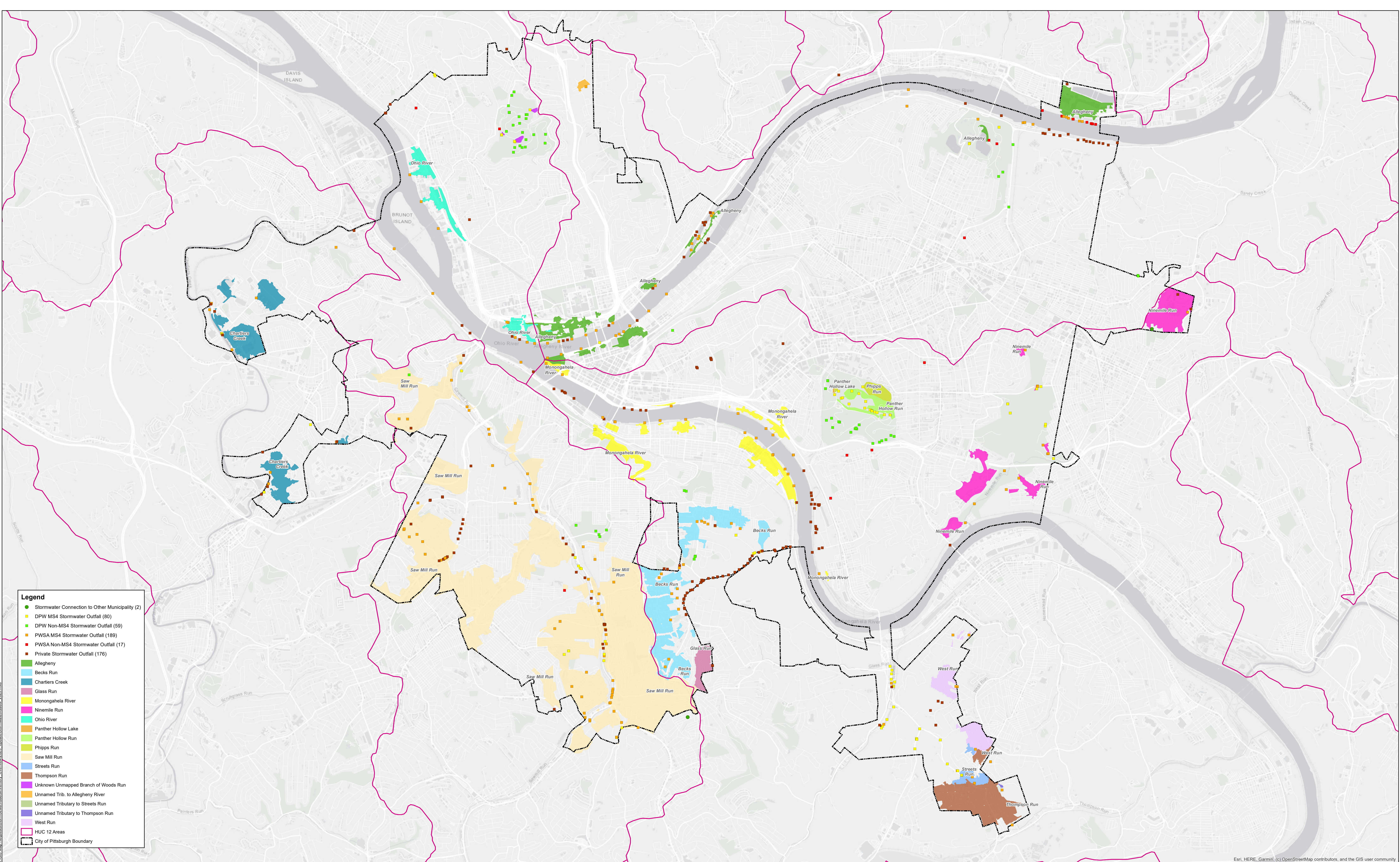
**REPRESENTATIVE PROJECT EXPERIENCE**

- Advanced Facilities Plan Integrated Planning, NEORS, Cleveland, OH. Regulatory and Water Quality Technical Lead for evaluation of District’s entire service area to identify and prioritize local community Clean Water Act (CWA) issues. Reviewed historical District and localized sewer SSES data studies, District and Cuyahoga County GIS data, CSO Phase II Water Quality Reports, CSO Phase II Dry Weather Overflow surveys, WQIS investigation reports, community record drawings, temporary flow and level monitoring data, TMDL reports, NOACA and Cuyahoga County septic systems survey data, community basement flooding records, District collection system models, Affordability CSO LTCP Negotiations, Cuyahoga County Sanitary Engineer data, Region V C-MOM Initiative, and targeted field inspection. This information was used to evaluate local community CWA issues including SSO, CSO, and stormwater discharge and their impacts on public health and water quality, estimate cost of improvements, and develop District-wide IP alternatives. Collaborated with Michigan Technological University to develop a 3D, linked hydrodynamic water quality model for Lake Erie and nine tributary stream models to evaluate environmental benefits of selected alternatives. Conducted integrated watershed planning to determine which project investments provide the highest impact on water quality throughout the service area.
- Green Stormwater Infrastructure (GSI) Opportunities Evaluation, Pittsburgh, PA. 3Rivers Wet Weather, Inc. Senior Engineer. Leading evaluation of green stormwater infrastructure (GSI) opportunities with 83 municipalities within the ALCOSAN service area that make up 3Rivers Wet Weather. The USEPA SUSTAIN model was used to identify potential areas based on criteria developed by the Project Team and vetted by major stakeholders. Projects were consolidated and optimized prior to cost and performance evaluation. A suite of cost-effective GSI projects identified can be used to augment or replace grey infrastructure.



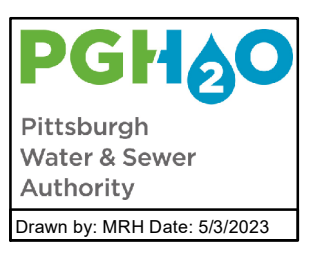
- Program Management of Municipal Activities in Response to Administrative Consent Orders Regarding CSO and SSO Abatement, 3RWW, Pittsburgh, PA. Provided technical assistance to 83 municipalities within the ALCOSAN service district conducting consent order activities including manhole inspections, sewer line cleaning and CCTV, sewer system mapping, dye testing, hydraulic design capacity analysis, flow monitoring, and development of feasibility and O&M program plan reports.
- Great Lakes Water Authority (GLWA) Embedded Staff Related Projects, Detroit, MI. Worked directly with Water Resources Recovery Facility (WRRF) Staff in developing and implementing the Risk and Process Safety Management Program (RPSMP) SOW. The project was split into three phases. Tony led all three phases which were: Phase 1- Establish Current Condition through a Baseline Compliance Audit, Phase 2-Update/Revise RPSMP, Phase 3-Conduct a Compliance Audit utilizing the new RPSMP. This project required working in the GLWA WRRF three days a week to coordinate, plan and execute tasks while working with various GLWA staff engineers, chemists, and operators.
- City of Detroit Long Term CSO Control Plan, Detroit and Rouge Rivers, MI. Technical Project Manager to prepare update for Detroit's Long Term CSO Control Plan that includes results of completed demonstrative projects including three CSO basins, six in-system storage gates and a Rain Water Control Pilot Program. The plan update also addressed the status of projects under design or in construction including in-system storage improvements at 27 locations; three screening and disinfection facilities; a 7.5 mile, 22.5-foot diameter deep rock tunnel; a 30 MG CSO basin; and wastewater treatment plant improvements. Managed Rain Water Control Pilot Program in the City that demonstrated that up to 3 billion gallons of wet weather flow could be eliminated in the system through downspout disconnection, cisterns, restricted catch basin covers and tree plantings. Conducted in four neighborhoods, the pilot program measured the flow removal efficiency of the different control methods. Led Water Quality Work Group efforts that established CSO control facility alternatives to MDEQ's presumptive criteria sizing. Resulted in 66% reduction in the size of control facilities. Led Treatment Efficiency Work Group responsible for evaluating effectiveness of pilot/demonstration projects. The work group developed performance criteria and identified evaluation parameters for pilot/demonstration projects. Detroit's Long Term CSO Control Plan was recognized for its innovative approach with an Honorable Conceptor Award from the Michigan Chapter of the American Council of Engineering Companies.
- Wayne County CSO Basin Evaluation, MI. Project Manager for collection and analysis of CSO basin data to determine the efficiency and effectiveness of the three Wayne County CSO Basins (Dearborn Heights, Redford Township and Inkster). Results of this project were incorporated into the Rouge River National Wet Weather Demonstration Program database and were used to form the basis for future CSO control in Southeast Michigan. The Redford and Inkster Basins received state and national engineering excellence awards from the American Council of Engineering Companies, and the Dearborn Heights Basin received a state engineering excellence award.
- High Rate Treatment (HRT) Program Development, Metropolitan Sewer District of Greater Cincinnati (MSDGC), OH. Task Lead on the HRT Technology Alternative Analysis that evaluated the various HRT approaches and recommended which should be used by MSDGC as the WWIP moves forward over the next 20 years. Also, part of the MSDGC Wet Weather HRT Facility Base Design team that outlined the development of a treatment facility base template design used to evaluate various sites for being suitable for the next MSDGC HRT Demonstration Facility. The template included facility layouts as well as recommendations for each process component including headworks/screening, mixing, settling tanks, disinfection/dechlorination, solids handling, odor control, flow monitoring, sampling system, HVAC, power, I&C and ancillary systems for sizing purposes.

# Exhibit TI-1



- Legend**
- Stormwater Connection to Other Municipality (2)
  - DPW MS4 Stormwater Outfall (80)
  - DPW Non-MS4 Stormwater Outfall (59)
  - PWSA MS4 Stormwater Outfall (189)
  - PWSA Non-MS4 Stormwater Outfall (17)
  - Private Stormwater Outfall (176)
  - Allegheny
  - Becks Run
  - Chartiers Creek
  - Glass Run
  - Monongahela River
  - Ninemile Run
  - Ohio River
  - Panther Hollow Lake
  - Panther Hollow Run
  - Phipps Run
  - Saw Mill Run
  - Streets Run
  - Thompson Run
  - Unknown Unmapped Branch of Woods Run
  - Unnamed Trib. to Allegheny River
  - Unnamed Tributary to Streets Run
  - Unnamed Tributary to Thompson Run
  - West Run
  - HUC 12 Areas
  - City of Pittsburgh Boundary

Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community



Neither the City of Pittsburgh nor the PWSA guarantees the accuracy of any of the information hereby made available. We warrant that we have taken reasonable steps to ensure the accuracy of the information. We warrant that we have taken reasonable steps to ensure the accuracy of the information. We warrant that we have taken reasonable steps to ensure the accuracy of the information. We warrant that we have taken reasonable steps to ensure the accuracy of the information.

Drawn by: MRH Date: 5/3/2023

**Stormwater Outfalls Overview**  
As of 5/3/2023

# Exhibit TI-2

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III**

**Philadelphia, Pennsylvania 19103-2029**

<b>In the Matter of:</b>	:	
	:	
<b>City of Pittsburgh</b>	:	<b>U.S. EPA Docket No. CWA-03-2021-0039DN</b>
<b>414 Grant Street</b>	:	
<b>Pittsburgh, Pennsylvania 15219</b>	:	<b>Proceeding under Section 309(a)</b>
	:	<b>of the Clean Water Act</b>
<b>AND</b>	:	
	:	
<b>Pittsburgh Water and Sewer Authority</b>	:	<b>ADMINISTRATIVE ORDER ON CONSENT</b>
<b>1200 Penn Avenue</b>	:	
<b>Pittsburgh, Pennsylvania 15222</b>	:	
	:	
<b>Respondents</b>	:	
	:	

**I. PRELIMINARY STATEMENT**

1. The United States Environmental Protection Agency (“EPA”) has made the following findings of fact and issues this Administrative Order on Consent (“AOC”) pursuant to the authority vested in the Administrator of EPA under Section 309(a) of the Clean Water Act (“CWA” or “Act”), 33 U.S.C. § 1319(a). This authority has been delegated by the Administrator to the Regional Administrator of EPA Region III, and further delegated to the Director, Enforcement & Compliance Assurance Division, Region III.
2. Section 309(a) of the CWA, 33 U.S.C. § 1319(a), provides, *inter alia*, that whenever on the basis of any information available to him the Administrator finds that any person is in violation of any permit condition or limitation implementing certain sections of the CWA, in a permit issued under Section 402 of the CWA, 33 U.S.C. § 1342, he shall issue an order requiring such person to comply with such section or requirement.
3. The City of Pittsburgh (“City”) and the Pittsburgh Water and Sewer Authority (“PWSA”) (collectively, “Respondents”) have agreed to the issuance of this AOC.

**II. STATUTORY AND REGULATORY BACKGROUND**

4. Section 301(a) of the CWA, 33 U.S.C. § 1311(a), prohibits the discharge of any pollutant (other than dredged or fill material) from a point source into waters of the United States except in compliance with a permit issued pursuant to the National Pollutant Discharge Elimination System (“NPDES”) program under Section 402 of the CWA, 33 U.S.C. § 1342.

*AOC with City of Pittsburgh and PWSA*

*Docket No. CWA-03-2021-0039DN*

5. Section 402 of the CWA, 33 U.S.C. § 1342(a), provides that the Administrator of EPA, or a state upon approval by EPA, may issue permits under the NPDES program for the discharge of pollutants from point sources to waters of the United States. The discharges are subject to specific terms and conditions as prescribed in the permit.
6. Pursuant to Section 402(b) of the CWA, 33 U.S.C. § 1342(b), EPA authorized the Pennsylvania Department of the Environment Protection (“PADEP”) to issue NPDES permits in the Commonwealth of Pennsylvania.
7. Section 402(p) of the CWA, 33 U.S.C. § 1342(p), and 40 C.F.R. §§ 122.2 and 122.26 provide that, with some exceptions not relevant here, storm water discharges are “point sources” subject to NPDES permitting requirements under Section 402(a) of the CWA, 33 U.S.C. § 1342(a).
8. 40 C.F.R. § 122.2 states, in relevant part: “Discharge of a pollutant means: a) any addition of any ‘pollutant’ or combination of pollutants to waters of the United States from any point source. . . . This definition includes additions of pollutants into waters of the United States from: surface runoff which is collected or channeled by man; discharges through pipes, sewers, or other conveyances owned by a State, municipality, or other person which do not lead to a treatment works; and discharges through pipes, sewers, or other conveyances, leading into privately owned treatment works. . . .”
9. “Storm water” (or “stormwater”) is defined as “storm water runoff, snow melt runoff and surface runoff and drainage.” 40 C.F.R. § 122.26(b)(13).
10. 40 C.F.R. § 122.26(b)(8)(i) defines the term “municipal separate storm sewer system” or “MS4” as including, *inter alia*, “a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains): (i) owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States.”
11. 40 C.F.R. § 122.26(b)(16) defines the term “small municipal separate storm sewer system” as “all separate storm sewers that are: (i) Owned or operated by the United States, a State, city, town, borough . . . or other public body (created by or pursuant to State law) having jurisdiction over disposal of . . . storm water. . . .; [and] (ii) Not defined as ‘large’ or ‘medium’ municipal separate storm sewer systems.”

*AOC with City of Pittsburgh and PWSA*

*Docket No. CWA-03-2021-0039DN*

12. 40 C.F.R. § 122.26(b)(17) defines the term “Small MS4” as “a small municipal separate storm sewer system.”
13. Small MS4s are regulated pursuant to Section 402(p) of the CWA, 33 U.S.C. § 1342(p) and the regulations promulgated thereunder.
14. Pursuant to 40 C.F.R. § 122.26(a)(9)(i), small MS4s require an NPDES permit if they are required to be regulated pursuant to 40 C.F.R. § 122.32.
15. 40 C.F.R. § 122.32(a)(1) states: “(a) Unless you qualify for a waiver under paragraph (c) of this section, you are regulated if you operate a small MS4, including but not limited to systems operated by federal, State, Tribal, and local governments, including State departments of transportation; and: (1) Your small MS4 is located in an urbanized area as determined by the latest Decennial Census by the Bureau of the Census. (If your small MS4 is not located entirely within an urbanized area, only the portion that is within the urbanized area is regulated). . . .”
16. 40 C.F.R. § 122.34(a) provides: “*General requirements.* For any permit issued to a regulated small MS4, the NPDES permitting authority must include permit terms and conditions to reduce the discharge of pollutants from the MS4 to the maximum extent practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Clean Water Act. Terms and conditions that satisfy the requirements of this section must be expressed in clear, specific, and measurable terms. Such terms and conditions may include narrative, numeric, or other types of requirements (*e.g.*, implementation of specific tasks or best management practices (BMPs), BMP design requirements, performance requirements, adaptive management requirements, schedules for implementation and maintenance, and frequency of actions).”
17. Pursuant to its authority under the CWA and the NPDES program approval, PADEP issued to the Respondents NPDES Permit No. PAI136133, an Individual Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (“the 2004 Permit”). The effective date of the 2004 Permit was September 29, 2004, with an expiration date of March 9, 2008.
18. PADEP administratively extended the 2004 Permit until June 30, 2020.
19. Pursuant to its authority under the CWA and the NPDES program approval, the PADEP issued to Respondents NPDES Permit No. PAI136133, Individual Permit to Discharge Stormwater from Small Municipal Separate Storm Sewer Systems (“the 2020 Permit”). The effective date of the Permit was July 1, 2020 with an expiration date of June 30, 2025.
20. NPDES Permit No. PAI136133 authorizes discharges from a regulated small MS4, when in accordance with the conditions and terms of the Permit.

*AOC with City of Pittsburgh and PWSA*

*Docket No. CWA-03-2021-0039DN*

21. The City and PWSA are “municipalities” within the meaning of Section 502(4) of the CWA, 33 U.S.C. § 1362(4).
22. Respondents are “persons” within the meaning of Section 502(5) of the CWA, 33 U.S.C. § 1362(5) and 40 C.F.R. § 122.2.
23. At all times relevant herein, upon information and belief, Respondents owned or operated a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains) that discharges to waters of the United States.
24. At all times relevant herein, upon information and belief, Respondents owned or operated a “municipal separate storm sewer system” or “MS4”, as that term is defined at 40 C.F.R. § 122.26(b)(8)(i), located in the City of Pittsburgh, Allegheny County, Pennsylvania.
25. At all times relevant to this AOC, the Respondents have discharged stormwater from the MS4 to the Monongahela River, Thompson Run, Chartiers Creek, Ohio River, Allegheny River, Glass Run, Streets Run, Sawmill Run, and Nine Mile Run.
26. The Monongahela River, Thompson Run, Chartiers Creek, Ohio River, Allegheny River, Glass Run, Streets Run, Sawmill Run, and Nine Mile Run are “water[s] of the United States” within the meaning of Section 502(7) of the CWA, 33 U.S.C. § 1362(7).
27. On December 6 and 7, 2016, representatives of EPA Region III and EPA contractors from Eastern Research Group, Inc. (jointly “the Inspection Team” or “the inspectors”) conducted an inspection of the MS4 (hereinafter, “the Inspection”) to assess compliance with the 2004 NPDES Permit No. PAI136133.
28. Following the Inspection, the Inspection Team prepared an inspection report, dated January 2017 (“the Inspection Report”), which included multiple observations regarding Respondents’ compliance with the requirements of the 2004 Permit. EPA sent a copy of the Inspection Report to the Respondents on February 27, 2017.
29. Respondents were presented with the opportunity to provide to EPA a response to the Inspection Report by March 20, 2017. EPA received no response from Respondents.
30. On May 19, 2017, EPA sent an Opportunity to Confer letter to the Respondents, communicating alleged violations of the CWA and the 2004 Permit observed during the Inspection.
31. EPA received the Respondents’ response to the Opportunity to Confer letter on June 5, 2017. This response indicated that the Respondents were developing and/or implementing new procedures to address the alleged violations communicated in the May 2017 Opportunity to Confer letter.



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32. On September 6, 2017, EPA sent to Respondents a follow-up letter to the Opportunity to Confer letter. In this letter, EPA requested documentation of the procedures referenced in Respondents' June 2017 response, to evaluate whether the new procedures had been implemented and whether these practices satisfied the Permit requirements. EPA also requested documentation related to Respondents' NPDES Permit renewal application that was due September 16, 2017.
33. EPA received Respondents' response to the follow up letter on October 2, 2017. This response provided documentation that indicated Respondents had addressed some, but not all, of the violations communicated in the May 2017 Opportunity to Confer letter.
34. On February 26, 2020, pursuant to its authority under Section 308 of the CWA, 33 U.S.C. § 1318, EPA issued an Information Requirement Letter to the Respondents. This Information Requirement Letter requested updates on eight components of the Respondents' MS4 program.
35. EPA received a partial response to the Information Requirement Letter from Respondents on April 2, 2020, and a complete response on May 2, 2020.
36. On June 30, 2020, EPA issued a Notice of Noncompliance to the Respondents for violations of the 2004 Permit that were previously identified as potential violations in the Opportunity to Confer letter. The Notice of Noncompliance requested, among other things, that the Respondents (1) submit to EPA within 45 days of receipt of the letter a plan and schedule for developing and implementing a program for conducting inspections and enforcement regarding construction erosion and sediment ("E&S") controls and post-construction BMPs and (2) develop and implement the program within 180 days of receipt of the letter.
37. On August 17, 2020, EPA received the Respondents' response to the Notice of Noncompliance. In the response, Respondents provided a schedule of activities to develop and implement a program for conducting inspections of construction E&S controls and post-construction BMPs. The schedule extended from February 7, 2020 through July 31, 2021. However, the schedule did not include implementation of an enforcement program.

### **III. PERMIT REQUIREMENTS**

38. Part A. Stormwater Management Program, 2. Minimum Control Measures of the 2004 Permit requires, among other requirements, Permittees to (1) implement procedures for site inspection and enforcement of construction E&S control measures and (2) enforce a program that addresses post-construction runoff and ensures the long-term operations and maintenance of post-construction stormwater controls.

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39. Part A. Stormwater Management Program, 3. Use of the DEP Stormwater Management *Protocol* to Meet the Minimum Control Measure Requirements of the 2004 Permit states that “Permittees may elect to implement the *Protocol* to meet the 6 Minimum Control Measure requirements. The *Protocol* becomes a part of the Individual Permit coverage for those permittees who elect to do so.” In the Individual Permit application submitted by Respondents on September 5, 2003, the Respondents elected to use the DEP Stormwater Management *Protocol* (“the Protocol”) for all six minimum control measures. Therefore, implementation of the Protocol is part of the 2004 Permit requirements.
40. In the Construction Stormwater Management Minimum Control Measure section of the Protocol, Permittees are required, among other things, to “Enact, implement, and enforce a stormwater control ordinance using DEP model language.”
41. In the Post-Construction Stormwater Runoff Management Minimum Control Measure section of the Protocol, Permittees are required, among other things, to “Enact, implement, and enforce a stormwater control ordinance,” using DEP model language
42. Part C.I.B.4.c of the 2020 Permit requires, among other requirements, Permittees to “Enact, implement and enforce an ordinance or SOP to require the implementation and maintenance of E&S control BMPs, including sanctions for non-compliance, as applicable.”
43. Part C.I.B.5.a of the 2020 Permit requires, among other requirements, Permittees to “Enact, implement and enforce an ordinance or SOP to require post-construction stormwater management from new development and redevelopment projects, including sanctions for non-compliance.”
44. Part C.I.B.5.c of the 2020 Permit requires, among other requirements, Permittees to “Ensure adequate O&M of all post-construction stormwater management BMPs that have been installed at development or redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale.”
45. Title Thirteen: Stormwater Ordinance for the City of Pittsburgh, Pennsylvania Code of Ordinances (“Stormwater Ordinance”), Section §1304.07 states that “the City or its designated representative may conduct inspections during construction as it deems appropriate. If inspections performed by the City reveal deficiencies from the submitted and approved SWM site plan, the City may request corrective actions. Any corrective action shall be at the cost of the stormwater facility owner,” and “After receipt of the completion certification by the City, the City will conduct a final inspection, and may conduct inspections thereafter to ensure proper functioning and compliance with approved plans.”

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46. Section §1305.03 of the Stormwater Ordinance states, “The landowner or the owner's designee (including the City for dedicated and owned facilities) shall inspect [stormwater management] SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended: annually for the first five (5) years, once every three (3) years thereafter, and during or immediately after the cessation of a ten-year or greater storm. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be kept onsite and furnished to City/PWSA inspectors upon request.”

#### **IV. FINDINGS OF FACT AND CONCLUSIONS OF LAW**

##### **Count I**

##### **Failure to Conduct Inspections and Enforcement of Construction E&S Control Measures and Post-Construction Stormwater Management BMPs**

47. The information and allegations in the Paragraphs above are incorporated herein by reference.
48. At the time of the Inspection on December 6 and 7, 2016, representatives from the City of Pittsburgh stated that the City relied on Allegheny County Conservation District to conduct reviews of E&S control plans and E&S control inspections during active construction. This agreement was initially formalized under a Memorandum of Understanding (“MOU”). The MOU had expired prior to the time of Inspection.
49. At the time of Inspection on December 6 and 7, 2016, representatives from the City stated:
- a. There was no protocol established or entity identified to conduct regular inspections, or system in place to monitor privately-owned stormwater management BMPs following construction.
  - b. The City was not inspecting municipally-owned stormwater control facilities at least annually.
  - c. The City did not have a detailed schedule for inspection and maintenance of all stormwater facilities, and instead performed this work on an as-needed basis.
50. In their June 5, 2017 response to the Opportunity to Confer Letter, the Respondents stated:
- a. The City’s Department of Public Works budgeted for an Environmental Enforcement Inspector position within the City’s Department of Permits, Licenses, and Inspections.

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- b. The City was seeking a qualified individual for the position and expected to start operation and maintenance inspections as soon as possible.
  - c. PWSA conducts multiple inspections of its drainage facilities, but informal inspections of other municipally owned stormwater facilities are not documented.
  - d. The City planned to implement a formal stormwater facility documentation process for incorporation into the NPDES Permit renewal application due September 16, 2017.
51. In its September 6, 2017 follow-up letter to the Opportunity to Confer Letter, EPA requested verification that the Environmental Enforcement Inspector position within the City's Department of Permits, Licenses, and Inspections had been filled.
  52. In their October 2, 2017 response letter, Respondents stated that the Environmental Enforcement Inspector position was budgeted for in the 2017 budget but had not yet been filled by the City of Pittsburgh.
  53. In its Information Requirement Letter dated February 26, 2020, EPA requested documentation from Respondents to confirm that the Environmental Enforcement Inspector position has been filled.
  54. In their May 2, 2020 response to the Information Requirement Letter, Respondents stated:
    - a. They determined that the Environmental Enforcement Inspector position was not suited to be within the Departments of Permits, Licenses and Inspections because this Department could not enforce the plumbing code and stormwater permitting requirements. Therefore, the funding for the position was removed from the City of Pittsburgh's budget.
    - b. The legal authority to enforce stormwater management falls under Allegheny County Health Department Plumbing Code. Respondents stated that they were working with Allegheny County Health Department and Allegheny County Conservation District to define agency responsibilities in stormwater enforcement.
  55. On June 30, 2020, EPA issued a Notice of Noncompliance to the Respondents for their failure to conduct inspections and enforcement of construction E&S control measures and post-construction stormwater management BMPs.
  56. In their August 17, 2020 response to the Notice of Noncompliance, the Respondents stated that they were in the process of addressing the violations set forth in the Notice of Noncompliance, and provided a schedule of activities to develop and implement a program for conducting inspections of construction E&S controls and post-construction BMPs. The schedule extended from February 7, 2020 through July 31, 2021. However, the schedule did not include ultimate implementation of an enforcement program.

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57. Based upon the information described above, Respondents failed to implement the Stormwater Ordinance in accordance with the requirements of the Protocol of the 2004 Permit and Parts C.I.B.4.c and C.I.B.5.a of the 2020 Permit.
58. Based upon the information described above, Respondents failed to conduct inspections and enforcement of construction E&S controls and post-construction stormwater management BMPs in accordance with Part A. Stormwater Management Program, 2. Minimum Control Measures of the 2004 Permit and Parts C.I.B.4.c, C.I.B.5.a, and C.I.B.5.c of the 2020 Permit.
59. Respondents' failure to conduct inspections and enforcement of construction E&S controls and post-construction stormwater management BMPs in accordance Part A. Stormwater Management Program, 2. Minimum Control Measures of the 2004 Permit and Parts C.I.B.4.c, C.I.B.5.a, and C.I.B.5.c of the 2020 Permit constitutes a violation of the Permit and Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342.

## **V. ORDER**

AND NOW, Pursuant to Section 309(a) of the CWA, 33 U.S.C. § 1319(a), Respondents are hereby ORDERED to do the following:

60. Respondents shall develop and implement a program for conducting inspections and enforcement of (1) construction erosion and sediment controls and (2) post-construction BMPs, in accordance with the schedule attached to this AOC as Attachment A.
61. Respondents shall achieve the following milestones by the deadlines specified below:
  - a. Submission of amended unified Stormwater Code to City Council by July 1, 2021.
  - b. City administration submission of the budget request to City Council to increase capacity for inspections and enforcement by December 31, 2021.
  - c. Implementation of procedures with the capability to implement an inspection and enforcement program in accordance with Permit requirements by January 28, 2022. This may include implementation of MOUs with Allegheny County Conservation District, Allegheny County Health Department, and other agencies, as necessary, to ensure the Respondents retain oversight and responsibility of the programs.
  - d. Complete implementation of the inspection and enforcement program and staff in place for construction E&S controls and post-construction stormwater management BMPs by March 31, 2022.
62. Respondents shall submit quarterly progress reports to EPA for a period of two years after the effective date of this AOC. These reports shall be due on March 31, June 30, September 30, and December 31 each year. These reports shall be submitted in accordance with Paragraphs 68 and 69. These reports shall include, at a minimum:
  - a. Activities completed during the reporting period;
  - b. Dates by which the activities were completed;

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- c. Any barriers to the timely completion of activities encountered; and
- d. Activities currently in progress.

63. Any notice, submission, certification, data presentation, or other document submitted by Respondents to EPA pursuant to this AOC which discusses, describes, demonstrates, or supports any finding or makes any representation concerning Respondents' compliance or non-compliance with any requirements of this AOC shall be certified by either a principal executive officer or ranking elected official. The aforesaid certification shall provide the following statement above the signature of the responsible corporate officer signing the certification on behalf of Respondent:

*I certify under penalty of law that this document and all attachments are true, accurate and complete. As to [the/those] identified portions of this [type of submission] for which I cannot personally verify [its/their] accuracy, I certify under penalty of law that this [type of submission] and all attachments were prepared in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.*

Signature: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Title: \_\_\_\_\_

64. Any notice, submission, certification, data presentation, or other document submitted by Respondents to EPA pursuant to this AOC shall be sent via-email transmission to the attention of:

Shane McAleer (3ED32)  
 Environmental Engineer / Inspector  
 NPDES Section, Water Branch  
 Enforcement and Compliance Assurance Division  
 U.S. Environmental Protection Agency  
 1650 Arch Street  
 Philadelphia, PA 19103-2029  
 mcaleer.shane@epa.gov

and

*AOC with City of Pittsburgh and PWSA*

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Natalie Katz (3RC40)  
Sr. Asst. Regional Counsel  
U.S. Environmental Protection Agency, Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029  
katz.natalie@epa.gov

## **VI. GENERAL PROVISIONS**

65. Issuance of this AOC is intended to address the violations described herein. EPA reserves the right to commence action against any person, including Respondent, in response to any condition which EPA determines may present an imminent and substantial endangerment to the public health, public welfare, or the environment. Further, EPA reserves any rights and remedies available to it under the CWA, 33 U.S.C. §§ 1251-1388, the regulations promulgated thereunder, and any other federal laws or regulations for which EPA has jurisdiction, to enforce the provisions of this AOC, following its effective date (as defined below).
66. This AOC does not constitute a waiver or modification of the terms or conditions of the Respondents' Permit. Compliance with the terms and conditions of this AOC does not relieve Respondents of their obligations to comply with any applicable federal, state, or local law, regulation or permit.
67. By signing this AOC, Respondents neither admit nor deny the specific factual allegations set forth in this AOC.
68. Respondents waive any and all remedies, claims for relief and otherwise available rights to judicial or administrative review that Respondents may have with respect to any issue of fact or law set forth in this AOC, including any right of judicial review pursuant to Chapter 7 of the Administrative Procedure Act, 5 U.S.C. §§ 701-706.
69. EPA reserves all existing inspection authority otherwise available to EPA pursuant to Section 308 of the CWA, 33 U.S.C. § 1318, or pursuant to any other statute or law.
70. The undersigned representative of each Respondent certifies that he or she is fully authorized by the party represented to enter into the terms and conditions of this AOC and to execute and legally bind the party.
71. The provisions of this AOC shall apply to and be binding upon each Respondent and its officers, directors, employees, contractors, agents, trustees, successors and assigns of that Respondent.
72. Each Respondent certifies that any information or representation it has supplied or made to EPA concerning this matter was, at the time of submission true, accurate, and complete

*AOC with City of Pittsburgh and PWSA*

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and that there has been no material change regarding the truthfulness, accuracy or completeness of such information or representation. EPA shall have the right to institute further actions to recover appropriate relief if EPA obtains evidence that any information provided and/or representations made by a Respondent to the EPA regarding matters relevant to this AOC are false or, in any material respect, inaccurate. This right shall be in addition to all other rights and causes of action that EPA may have, civil or criminal, under law or equity in such event. Each Respondent and its officers, directors and agents are aware that the submission of false or misleading information to the United States government may subject a person to separate civil and/or criminal liability.

- 73. Respondents may assert a business confidentiality claim covering part or all of the information which this AOC requires it to submit to EPA, but only to the extent and only in the manner described in Part 2 Subpart B of Title 40 of the C.F.R. The EPA will disclose information submitted under a confidentiality claim only as provided in Part 2 Subpart B of Title 40 of the C.F.R. If Respondents do not assert a confidentiality claim, EPA may make the submitted information available to the public without further notice to Respondent.

**VI. EFFECTIVE DATE**

This AOC is effective after receipt by Respondents of a fully executed document.

SO ORDERED:

U.S. ENVIRONMENTAL PROTECTION AGENCY

Date: 01/26/2021

By: **KAREN MELVIN** Digitally signed by  
KAREN MELVIN  
Date: 2021.01.26  
13:52:45 -05'00'

Karen Melvin  
 Director, Enforcement & Compliance Assurance  
 Division  
 U.S. EPA – Region III




*AOC with City of Pittsburgh and PWSA*

*Docket No. CWA-03-2021-0039DN*

AGREED TO:

For Respondent: CITY OF PITTSBURGH

Date: 1/20/2021

By:   
\_\_\_\_\_  
William Peduto  
Mayor

*AOC with City of Pittsburgh and PWSA*

*Docket No. CWA-03-2021-0039DN*

AGREED TO:

For Respondent:      PITTSBURGH WATER AND SEWER AUTHORITY

Date: 1/20/2021

By: William J. Pickering  
William J. Pickering  
Chief Executive Officer

## ATTACHMENT A

## Pittsburgh Water and Sewer Authority - Stormwater Code and Ordinance Review and Update

## Project Schedule - Updated: 12/22/2020

Task Description	Start Date	End Date	Meeting Date
<b>Task 1 Technical Analysis</b>			
1.1 Kickoff and Discovery Meeting			2/7/2020
1.2 Evaluation of Policy and Regulation Changes	2/10/2020	2/26/2021	
<i>Internal AKRF Team - Policy Alternatives Exploration Workshop</i>			3/4/2020
<i>PWSA/City/AKRF Meeting to Discuss Policy Priorities</i>			7/31/2020
<i>Detailed Scoping of Additional Technical Analyses for Priority Policies</i>	8/3/2020	8/25/2020	
<i>Additional Technical Analyses for Priority Policies</i>	8/26/2020	2/26/2021	
1.3 Technical Analysis: BMP Applicability	3/2/2020	7/31/2020	
1.4 Technical Analysis: Variability in SWM Requirements	7/20/2020	12/4/2020	
1.5 Analysis and Recommendations Report	10/19/2020	2/26/2021	
1.6 Updated PWSA Developer Manual Chapters	2/1/2021	5/31/2021	
1.7 Design Manual	2/1/2021	5/31/2021	
<b>Task 2 Creation of Unified Stormwater Code</b>			
2.1 Kickoff and Discovery Meeting			2/7/2020
2.2 Review Existing Code and Identify Conflicts and Overlap	2/10/2020	4/24/2020	
2.3 Identify Plan Review Thresholds and Applicability Triggers	3/2/2020	7/31/2020	
2.4 Evaluate Opportunities for Enhanced Co-benefits/Resiliency	8/26/2020	12/4/2020	
2.5 Evaluate Opportunities for Integration into ROW Policy	8/26/2020	12/4/2020	
2.6 Review of Regulatory Compliance Goals and Enhancement Options	8/26/2020	12/4/2020	
2.7 Develop Updated Stormwater Management Code	2/1/2021	7/31/2021	
<i>Development of recommended code revisions for executive review</i>	2/1/2021	3/15/2021	
<i>Public notice of proposed amended code (21 days in advance of Planning Commission)</i>	4/27/2021	5/18/2021	
<i>Submission of amended code to Planning Commission</i>	4/27/2021	5/18/2021	
<i>Public notice of proposed amended code (21 days in advance of City Council public)</i>	7/9/2021	7/31/2021	
<i>Submission of amended code to City Council</i>	7/9/2021	7/31/2021	
2.8 Summary of and Recommendations for Resolving Potential Conflicts	8/1/2020	2/26/2021	
2.9 Analysis of Agency Roles and Agreements (see Task 3)			
<b>Task 3 Process Improvement Recommendations</b>			
3.1 Kickoff and Discovery Meeting			2/7/2020
3.2 Review Existing Procedures for Approvals, Plan Review and Enforcement	9/14/2020	11/27/2020	
3.3 Develop Recommendations for Streamlining Including Integration with New Software	11/30/2020	2/26/2021	
3.4 Integration with Other Related Programs	11/30/2020	2/26/2021	
3.5 Development of Tiered Review Processes	8/26/2020	12/4/2020	
3.6 Legal Analysis for Proposed Improvements	1/4/2021	2/12/2021	
3.7 Staffing Requirements for Review, Inspections, and Enforcement	8/26/2020	12/4/2020	
3.8 Costs and Pricing for Services	1/25/2021	7/31/2021	
<b>Task 4 Internal Policy Updates</b>			
4.1 Kickoff and Discovery Meeting			2/7/2020
4.2 Analysis of Alternative Compliance Options	8/26/2020	12/4/2020	
4.3 Review of Draft MOU	5/4/2020	7/17/2020	
4.4 Develop Recommendations for SWM Responsibilities	9/14/2020	12/4/2020	
4.5 Staffing and Budget Requirements by Department	1/25/2021	7/31/2021	
<b>Task 5 Stakeholder Communication</b>			
5.1 Kickoff and Discovery Meeting			2/7/2020
<i>Community Engagement Plan Development</i>	3/2/2020	6/15/2020	
5.2 Introduction Meetings			
<i>Agency Workgroup</i>			2/7/2020
<i>Stakeholder Workgroup</i>			7/8/2020
5.3 Focused Workshops			
<i>Stakeholder Focus Groups / Workshops</i>	7/8/2020	9/30/2020	
<i>Agency Staff Interviews</i>	3/2/2020	10/31/2020	
5.4 Key Stakeholder Meetings			
<i>Meeting 1</i>			7/8/2020
<i>Meeting 2</i>			12/17/2020
<i>Meeting 3</i>			3/31/2021
5.5 Agency Work Group Meetings			
<i>Meeting 1</i>			5/5/2020
<i>Meeting 2</i>			8/6/2020
<i>Meeting 3</i>			12/15/2020
<i>2021 Meetings - TBD</i>			
5.6 Information Sessions (2)	6/1/2021	7/31/2021	

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III**

**Philadelphia, Pennsylvania 19103-2029**

<b>In the Matter of:</b>	:	
	:	
<b>City of Pittsburgh</b>	:	<b>U.S. EPA Docket No. CWA-03-2021-0039DN</b>
<b>414 Grant Street</b>	:	
<b>Pittsburgh, Pennsylvania 15219</b>	:	<b>Proceeding under Section 309(a)</b>
	:	<b>of the Clean Water Act</b>
<b>AND</b>	:	
	:	
<b>Pittsburgh Water and Sewer Authority</b>	:	<b>ADMINISTRATIVE ORDER ON CONSENT</b>
<b>1200 Penn Avenue</b>	:	
<b>Pittsburgh, Pennsylvania 15222</b>	:	
	:	
<b>Respondents</b>	:	
	:	

**CERTIFICATE OF SERVICE**

I certify that the enclosed Administrative Order on Consent was sent to the following persons by UPS Overnight Mail, at the following addresses:

Yvonne Hilton, Esq. and John Miller, Esq.  
 City of Pittsburgh  
 414 Grant Street  
 Pittsburgh, Pennsylvania 15219  
 Email: yvonne.hilton@pittsburghpa.gov and  
 john.miller@pittsburghpa.gov

Debbie Lestitian, Esq.  
 Pittsburgh Water and Sewer Authority  
 1200 Penn Avenue  
 Pittsburgh, Pennsylvania 15222  
 Email: dlestitian@pgh2o.com

David G. Ries, Esq.  
 Clark Hill  
 One Oxford Centre  
 301 Grant St., 14<sup>th</sup> Floor  
 Pittsburgh, Pennsylvania 15219  
 Email: dries@clarkhill.com

I certify that the enclosed Administrative Order on Consent was delivered to the following person by electronic mail, at the following addresses.

Regional Hearing Clerk (3RC00)  
U.S. Environmental Protection Agency, Region III  
Email: R3\_Hearing\_Clerk@epa.gov

I have also arranged for the Regional Hearing Clerk to distribute the Administrative Order by electronic mail to the persons listed above.

Date: 1/20/2021

By: Gloria DeBattista  
NAME:  
TITLE:

**VERIFICATION**

I, Tony Igwe, hereby state that: (1) I am the Senior Group Manager, Stormwater for The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Dated 05/03/2023 | 3:54 PM EDT

DocuSigned by:  
*Tony Igwe*  
404A1979E8BC410...

---

Tony Igwe  
Senior Group Manager, Stormwater  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**JULIE A. MECHLING**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Customer Service and Collections Updates

Rate Mitigation Efforts

Prior Settlement Commitments

Water, Wastewater, Storm Water Tariffs

May 9, 2023



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JAM-16	Proposed Storm Water Tariff Supplement No. 3 (red-lined)

1 **I. INTRODUCTION**

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

3 A. My name is Julie A. Mechling. My position with The Pittsburgh Water and Sewer  
4 Authority (“PWSA” or “Authority”) is Director of Customer Service.

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

6 A. Although my title changed in 2021, I have held this current position for over five years.  
7 Previously, I was an employee of PWSA for 22 years. I left for a job opportunity in the  
8 private sector from 2011 through 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 department; including the day to day operations of Advanced Metering  
12 Infrastructure (AMI) and Billing, Collections, the Contact Center, Emergency Dispatch,  
13 Lead Help, Permits, PUC Compliance (including our PGH2O Cares team), and Quality  
14 Control. I am also the driving force for inter- and intra-departmental initiatives and  
15 innovative partnerships with third party providers.

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

17 A. I obtained a Bachelor of Arts degree at Duquesne University, and I have over 30 years of  
18 utility billing experience. My initial role at PWSA was entry level while in college.  
19 When I left employment in 2011, I was PWSA’s Customer Services Manager. In the  
20 private sector, I processed electronic Earned Income Tax (“EIT”) employer filings. I  
21 then designed, developed, launched, and managed monthly/quarterly sewage treatment,  
22 stormwater, and refuse billing and collection for 24 municipalities with less than 10  
23 employees.

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

2 A. Yes, I have presented oral testimony in support of PWSA for a number of formal  
 3 consumer complaint cases before the Commission. In addition, below is a list of the  
 4 written testimony I have presented for other PWSA proceedings before the Commission:

- 5 • Written Direct and Rebuttal testimony in PWSA’s Initial Tariff and Rate Case at  
 6 Docket Numbers R-2018-3002645 (water) and R-2018-3002647 (wastewater).
- 7 • Written Direct, Supplemental Direct and Rebuttal testimony in PWSA’s  
 8 combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement  
 9 Plan (“LTIIIP”) proceeding at Docket Numbers M-2018-2640802 (water), M-  
 10 2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039  
 11 (wastewater).
- 12 • Written Direct, Supplemental Direct, Rebuttal and Rejoinder Testimony in  
 13 support of PWSA’s second base rate proceeding at Docket Numbers R-2020-  
 14 3017951 (water) and R-2020-3017970 (wastewater).
- 15 • Written Direct and Rejoinder Testimony in support of PWSA’s base rate  
 16 proceeding at Docket Numbers R-2021-3024773 (water); R-2021-3024774  
 17 (wastewater) and R-2021-3024779 (stormwater).
- 18 • Written Direct, Rebuttal, Surrebuttal and Rejoinder testimony in support of  
 19 PWSA’s Compliance Plan Stage 2 – Customer Service issues at Docket Numbers  
 20 M-2018-2640802 and M-2018-2640803.
- 21 • Written Direct and Surrebuttal testimony in support of PWSA’s Petition for Pilot  
 22 Private Service Line Leak Repair and Expanded Conservation Program for  
 23 Eligible Low Income Customers and Authorization to Track Costs As a  
 24 Regulatory Asset for Future Base Rate Recovery at Docket No. P-2022-3030253.

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

26 A. The purpose of my testimony is to:

- 27 • To provide customer services and collections updates to include: (1) describing  
 28 how PWSA is enhancing the customer experience; (2) status of Customer Service  
 29 and Collections initiatives under the Compliance Plan, Stage 2 process; and, (3)  
 30 detailing PWSA customer service accomplishments and results of customer  
 31 surveys;
- 32 • Explore the impact of the rate request on future affordability including how  
 33 various proposals are intended to mitigate impacts such as: (1) multiyear request;  
 34 (2) removal of the minimum allowance and proposed new reconcilable charges;  
 35 (3) new stormwater rate mitigation measures; (4) elimination of convenience fee  
 36 pass throughs; and, (5) additional enhancements to low income customer  
 37 assistance programs;

- Offer updates on prior settlements including (1) the complaint root cause analysis; (2) arrearage forgiveness; (3) low income customer assistance programs due to removal of minimum allowance; (4) stormwater and customer service; and, (5) Line Repair and Conservation (“LRC”) pilot program;
- Sponsor the proposed water, wastewater and stormwater Tariff revisions and proposal to display future rate changes in the tariffs.

**Q. ARE YOU SPONSORING ANY EXHIBITS?**

A. Yes. The exhibits I am proposing are set forth in the Table of Exhibits following the Table of Contents of this testimony.

**II. CUSTOMER SERVICE AND COLLECTIONS UPDATES**

**A. Enhancing the Customer Experience**

**Q. HAS THE COMMISSION CONCLUDED ITS REVIEW OF PWSA’S COMPLIANCE PLAN WITH REGARD TO CUSTOMER SERVICE ISSUES?**

A. Yes. I am pleased to report that PWSA received final Commission approval for the customer service issues of its Compliance Plan by Order entered July 14, 2022.<sup>1</sup> The *CP Stage 2 Customer Services Final Order* approved a full settlement that was reached among the parties of the proceeding and addressed nearly every aspect of PWSA’s customer service and collections processes and procedures. A Revised Compliance Plan – Stage 2 Customer Service with Collections Plan was filed on September 12, 2022. PWSA first filed Tariff Supplement Nos. 10 for both its Water and Wastewater Tariffs and Tariff Supplement No. 2 for its Stormwater Tariff on September 12, 2022 to comply with the requirements of the *CP Stage 2 Customer Services Final Order*. Per direction from Commission staff, PWSA subsequently refiled all the tariff supplements on

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<sup>1</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 2* Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Order entered July 14, 2022 (“*CP Stage 2 Customer Services Final Order*”), adopting as own action the Recommended Decision dated May 18, 2022 which recommended approval of the Joint Petition for Settlement dated March 14, 2022.

1 November 15, 2022 and, per Secretarial Letter dated January 11, 2023, all three were  
2 permitted to go into effect on January 14, 2023.

3 **Q. REGARDING PWSA’S INTERNAL PROCESSES, WHAT ACTIONS**  
4 **FOLLOWED APPROVAL OF THE FULL SETTLEMENT IN THE**  
5 **COMPLIANCE PLAN STAGE 2 CUSTOMER SERVICES PROCEEDING?**

6 A. As I testified previously, the Commission’s *CP Stage 2 Customer Services Final Order*  
7 addressed nearly every aspect of PWSA’s customer service and collections processes.  
8 Thus, upon approval, a significant amount of internal work as well as discussions with  
9 the parties about our proposals was undertaken to ensure compliance with our CP Stage 2  
10 Customer Services settlement commitments. To that end, PWSA Customer Service  
11 management staff met to review the Compliance Plan, Stage 2 settlement terms on  
12 September 23, 2022. During that meeting, we walked through PWSA Exhibit JAM-1, a  
13 spreadsheet of the settlement terms that I had compiled in advance. We validated the  
14 “Owner” assigned to each requirement, and we looked back to the settlement document  
15 to clarify the deliverables. I provided management staff with the deadline of November  
16 14, 2022 to complete all revisions and return the updated documents to me. Once all  
17 revised customer-facing notices and internal PWSA training documents were shared with  
18 the parties via email in the Compliance Plan, Stage 2 proceeding, we held two  
19 consecutive all-party meetings on January 18, 2023 and January 31, 2023. These  
20 meetings were instrumental in shaping revisions to the documents to meet each parties’  
21 interests and to resolve their concerns. Following those two meetings, further review and  
22 communication occurred via emails exchanged among the parties. I delivered the  
23 finalized customer-facing notices and internal PWSA training documents to the parties in  
24 the Compliance Plan, Stage 2 via email on February 11, 2023. Over the next month, the  
25 parties exchanged emails that helped to further fine-tune and shape these documents. I

1 received consent to all edits via email from some of the parties by the requested deadline  
 2 of March 15, 2023, while others remained silent on the matter. I then met with Customer  
 3 Service management personnel during the week of April 3, 2023, according to their  
 4 respective sections and areas of responsibility, to introduce them to the finalized  
 5 materials and to plan the implementation of the customer-facing notices and internal  
 6 PWSA training documents. Each of the management staff worked with me to 1) review  
 7 the documents that fall under their section and area of responsibility, 2) determine on  
 8 which customer-facing applications the revised documents must be updated, [pgh2o.com](http://pgh2o.com),  
 9 the [Customer Advantage portal](#), and in the [Customer Service department](#) page on  
 10 SharePoint, 3) decide the staff who would be impacted and would require training, 4)  
 11 plan that training with the Customer Service Training Coordinator who was present  
 12 during these meetings, and 5) agree to meet the deadline to implement all revised  
 13 documents by June 30, 2023.

14 ***1. Artificial Intelligence for Customer Email Handling***

15 **Q. HOW HAS PWSA ENHANCED THE EXPERIENCE OF CUSTOMERS WHO**  
 16 **EMAIL THEIR WATER/SEWER/STORMWATER INQUIRIES TO**  
 17 **[INFO@PGH2O.COM](mailto:INFO@PGH2O.COM)?**

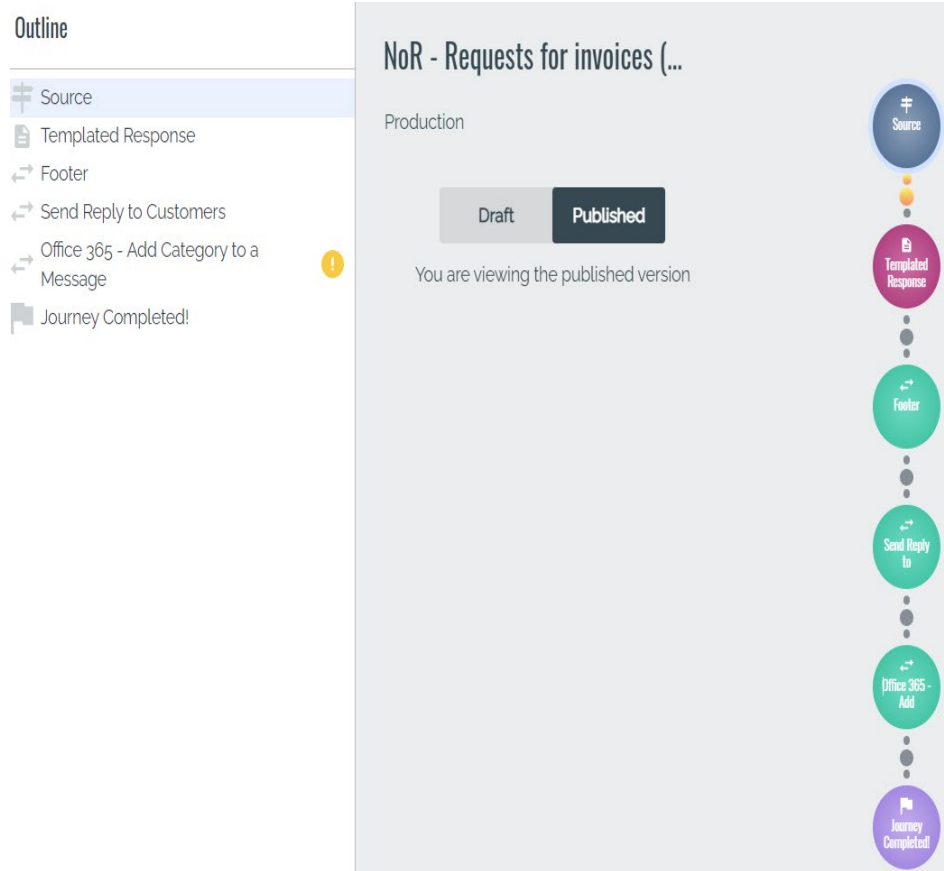
18 A. In July 2022, PWSA partnered with Y Meadows, whose mission is to meet the ever more  
 19 demanding needs of customers through trainable Artificial Intelligence (AI) by serving  
 20 customers faster and removing the burden of repetitive, time-consuming tasks from  
 21 employees. Y Meadows’ software employs Natural Language Processing (NLP). NLP is  
 22 a discipline of machine learning that trains computers to read and interpret information so  
 23 that they can respond as easily as humans do. Through NLP automation, the focus shifts  
 24 from identifying keywords to breaking the email content down to determine the  
 25 customer’s intent. In 2022, PWSA Customer Service responded to 25,120 customer

1 emails. This is a primary job duty for one full time employee, a Corporate Accounts  
 2 Specialist, in the Collections section of Customer Service with a Collections Analyst and  
 3 Collections management personnel trained as back-up’s. This job duty consists of; 1)  
 4 reading a customer’s email inquiry, 2) responding to certain inquiries through (a)  
 5 querying the Customer Information System (CIS) to validate the customer and obtain the  
 6 requested data and/or (b) making the requested update to the customer’s account in the  
 7 CIS, 3) formulating a response email to the customer, which may include providing data  
 8 attachments, and 4) forwarding all other customer email inquiries for processing to  
 9 various group email addresses that are assigned to sections of Customer Service. In  
 10 working with Y Meadows, PWSA was encouraged to achieve the highest percentage of  
 11 efficiency by identifying those customer inquiries that are most repetitive in nature.  
 12 Collections personnel gathered dozens of examples of frequently received customer email  
 13 inquiry types. These inquiry types are listed in the following table:

Application for Service - Tenants	Letters of Authorization
Backflow	Lien Satisfaction
Change of Address	Management Agreement
Customer Advantage Portal	Payment Research
Data Protection Release	Refund Application
Dispatch	Requests for Invoices
Email Attachment to Customer	

18 I then drafted initial email responses tailored to each inquiry type that became templates  
 19 for the machine learning tool to send to the customer through automation. Y Meadows  
 20 built what they refer to as “journeys” to visually display the steps their tool must take to  
 21 respond to a customer’s email inquiry. The below diagram is one such journey.





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Working together, PWSA and Y Meadows tested the efficacy of the newly trained model and established that it was accurately interpreting a customer's request, issuing the appropriate initial templated response, and forwarding the email to the responsible internal group for processing.

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In its first nine months of use, the Y Meadows AI tool saved PWSA 540 labor hours,

7

allowing the Corporate Accounts Specialist to learn and work the dunning process in the

8

CIS and to proactively reach out to corporate account holders with education and

9

assistance, including walking them through navigation of the Customer Advantage portal

10

1 that was built to enhance the customer experience. Here is the monthly report from Y  
 2 Meadows, displaying a 48% handling rate of all PWSA customer email inquiries as of  
 3 April 30, 2023:



Monthly Report – April 2023	
Names of intents	Number of messages April (March)
Email Attachment to Customer	290 (338)
Tenant Owner Form	282 (233)
Customer Advantage Portal	68 (53)
Payment Research	67 (79)
Requests for invoices	34 (31)
Management Agreements	33 (29)
Dispatch	24 (18)
Refund Application	16 (25)
Letters of authorization	14 (5)
Data protection & Account history	7 (13)
Change of address	3 (new)
Lien satisfaction	2 (9)
Back flow	1 (3)
<b>Total number of messages processed by Y Meadows</b>	<b>841 (836)</b>
<b>Percentage of messages processed by Y Meadows</b>	<b>48 % (44%)</b>

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5 **2. Call Back Request Feature**

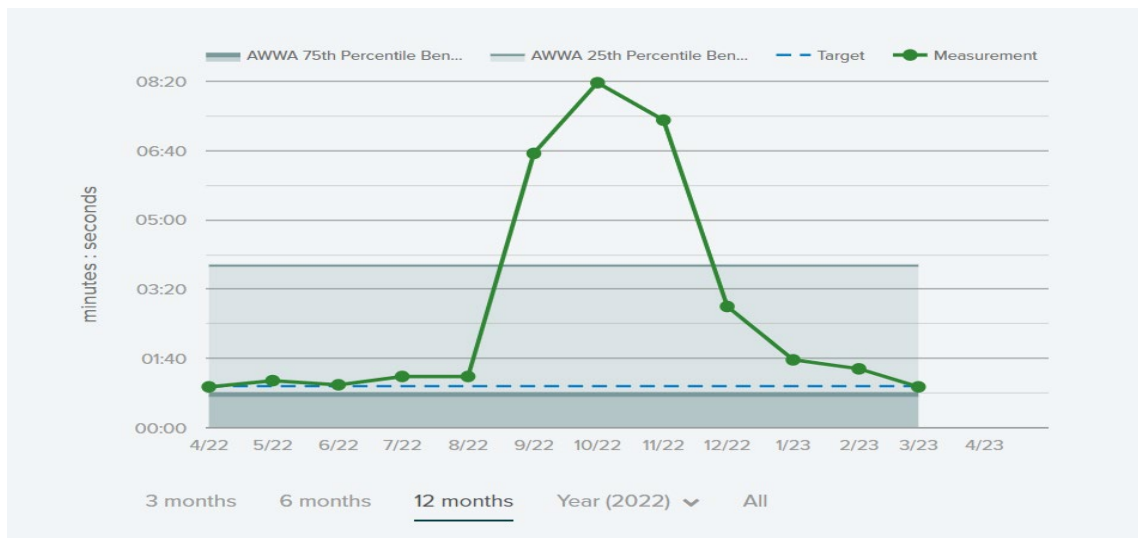
6 **Q. HOW DID PWSA ADDRESS ITS EXCEEDANCES OF CONTACT CENTER**  
 7 **METRICS FOLLOWING THE IMPLEMENTATION OF SAP?**

8 A. On August 8, 2022, PWSA’s implementation of the enterprise resource system SAP and  
 9 its accompanying Customer Advantage portal went live. Following the launch, customer  
 10 call volumes grew in part due to the need for customers who were enrolled in the former  
 11 payment portal to log in to the new portal and in part due to the learning curve of PWSA  
 12 staff leading to longer call handling time.

13 In 2022, PWSA personnel handled 31,104 more customer calls than in 2021. Supporting  
 14 data can be found within PWSA’s Compliance Plan Quarterly Update Reports created

1 and filed with the Commission as a result of its Compliance Plan, Stage 1.<sup>2</sup> As a result,  
 2 the Contact Center exceeded the target goals of 1 minute average speed of answer and  
 3 3% abandonment rate from August 2022 through February 2023. The following graphs  
 4 plot the significant rise in average speed of answer and abandonment rates in September  
 5 through December 2022. As you also see, Customer Service returned to the delivery of  
 6 its customer call response goals, actually exceeding those goals, in March 2023.

7 **Average Speed of Answer**



8

<sup>2</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 1*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Opinion and Order entered March 26, 2020. (“*March 2020 Stage 1 Order*”). Consistent with Partial Settlement, starting on October 31, 2019 and continuing every January 30, April 30, July 30, and October 31 through 2025, PWSA files Quarterly Compliance Plan Progress reports with the Commission. The most recent report was filed on April 27 and call center metrics and customer service monthly reports are provided in Appendix E. See <https://www.puc.pa.gov/pcdocs/1783031.pdf>

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## Call Handling Rate



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To mitigate a customer’s wait time, and as another measure to enhance the overall customer experience, PWSA instituted the call back request feature as of March 1, 2023. For customers reaching the queues without a voicemail option – General, Collections, Billing and Stormwater – customers are now presented with the option to retain their place in the queue and receive a call back from a Customer Service Representative. This new, outgoing messaging was recorded in PWSA’s preferred voice talent to match to all other greetings and on hold messaging in the queue. PWSA’s Contact Center hours are 8 AM to 6 PM, Monday through Friday. Call backs are presented at 2 minutes of wait time, and every two minutes thereafter if not chosen, through 4 PM. This ensures that all call back requests are processed before the close of business at 6 PM. Customer Service management presented training to all staff who answer queue calls and would potentially be presented with a call back request. The following is a report on the call back success rate in the first six full weeks of its use, indicating that 177 of 187 call back requests were

1 successfully handled by PWSA staff. The remaining 10 call back requests could not be  
 2 completed due to an inability to connect with the customer (busy signal, no answer).

**Callback Queue Group Performance by Queue**

1 - All Queues

3/1/2023 - 4/14/2023

Queue ID	ACD Queue	New callbacks	Callbacks handled	Average handling time (hh:mm:ss)	Max retries exceeded	Answer %
P005	AMI	0	0	00:00:00	0	0.0%
P006	AMI 8920	0	0	00:00:00	0	0.0%
P003	BILLING AND METERING	15	15	00:01:25	0	94.1%
P002	COLLECTIONS	19	18	00:01:41	1	80.0%
P004	DISPATCH	0	0	00:00:00	0	0.0%
P001	GENERAL	149	140	00:01:49	9	86.8%
P008	PERMITS	0	0	00:00:00	0	0.0%
P009	STORMWATER	4	4	00:00:31	0	70.0%
<b>Totals</b>		<b>187</b>	<b>177</b>	<b>00:01:44</b>	<b>10</b>	<b>85.8%</b>

**3. Call Quality Campaign**

4 **Q. HOW DOES PWSA MEASURE THE SUCCESS OF ITS CUSTOMER SERVICE REPRESENTATIVES AND THEIR TELEPHONE INTERACTIONS WITH CUSTOMERS?**

7 A. Since January 2023, Customer Service management has embarked on a Call Quality  
 8 Campaign. This is a departure by design from the focus in prior years on solely call  
 9 handling quantity. Each month of this year, Customer Service management evaluates 2  
 10 calls per week for all Customer Service Representatives and Dispatchers. These call  
 11 reviews are guided by an evaluation template in the Mitel telephony software, and they  
 12 can be of live or recorded customer calls. The total calls handled for individual staff  
 13 members in the Contact Center and Dispatch sections of Customer Service is then  
 14 averaged with their 8 call evaluation scores at the end of each month. These averages are  
 15 plotted on a graph, shared with the staff as a whole, and the top scorer receives a cash  
 16 award sponsored by Customer Service management. The sharing of this award serves

1 two purposes; to ensure quality service for our customers and to offer an incentive to staff  
 2 who perform one of the most stressful duties in customer service; meeting the increasing  
 3 demands of the general public. Below is the most recent Call Quality Assurance Award  
 4 graph for April 2023. Once the Senior Manager of Customer Service and the Senior  
 5 Customer Service Coordinator return from extended leaves of absence, Customer Service  
 6 management will have the resources to promote an average score of 3.5 and above for *all*  
 7 Customer Service Representatives and Dispatchers.



8

9 **4. Standard Operating Procedures on SharePoint**

10 **Q. DID THE COMMISSION’S BUREAU OF AUDITS UNDERTAKE A**  
 11 **COMPREHENSIVE REVIEW OF PWSA’S MANAGEMENT AND**  
 12 **OPERATIONS RECENTLY?**

13 **A.** Yes. On April 29, 2021, the Commission’s Bureau of Audits undertook the first detailed  
 14 review of PWSA’s management and operations since PWSA came under the jurisdiction  
 15 of the Commission in 2018. The final Management and Operations Audit Report was

1 issued in March 2023 and was released on April 20, 2023, along with PWSA's 2023  
2 Implementation Plan.<sup>3</sup>

3 **Q. AS PART OF THE AUDIT PROCESS, DID PWSA IDENTIFY ISSUES IT**  
4 **COULD TAKE TO STRENGTHEN THE ACCURACY AND EFFICIENCY OF**  
5 **ITS CUSTOMER SERVICE STAFF IN THE FACE OF TURNOVER AND**  
6 **GROWTH?**

7 A. Yes. The Commission's Management and Operational Audit of PWSA enlightened  
8 Customer Service management to just how few Standard Operating Procedures (SOP's)  
9 were in use. In Q4 of 2022 and Q1 of 2023, managers and coordinators worked  
10 diligently, amidst their existing daily duties of resolving customer inquiries and managing  
11 staff, to create drafts of over 70 SOP's. Each draft was passed to me for editing. I edited  
12 for consistency of construct and for the presence of complete and detailed content. Also  
13 weighing in on editing of Field Operations-facing processes in the SpryMobile  
14 application were Joseph Tewell, Deputy Director of Operations, and Lee Haller, Chief  
15 Information and Performance Officer. I delivered the finalized versions to the Customer  
16 Service Training Coordinator with instructions to create a repository of SOP's by posting  
17 them to the Customer Service department page of PWSA's intranet site on SharePoint.  
18 Below is a visual representation of these procedural documents. Within Q2 of 2023, staff  
19 will be extensively coached to utilize these procedures, along with the revised customer-  
20 facing notices and training materials developed during the Compliance Plan, Stage 2.

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<sup>3</sup> RE: Management and Operations Audit of the Pittsburgh Water & Sewer Authority, PaPUC Management and Operations Audit Issued March 2023 at Docket Nos. D-2021-3025584; D-2021-3025585; D-2022-3030308 released on April 20, 2023 along with PWSA 2023 Implementation Plan.

**Customer Service Standard Operating Procedures by Section**

- ▼ **AMI and Billing**


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- ▲ **Contact Center**
  - Standard Operating Procedures
    - [Affidavit of Vacancy Process](#)
    - [Application for Service - Tenants Flow Chart](#)
    - [Call Back Request Feature](#)
    - [City Book Response Process](#)
    - [Claims for Damages](#)
    - [History Request Response Process](#)
    - [MiCollab SoftPhone Use](#)
    - [PWSA Lien Filing Search](#)
    - [Right to Know Request Response](#)

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- ▼ **Collections**


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- ▼ **Customer Service Training**


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- ▼ **Dispatch**


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- ▼ **Lead Help**


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- ▼ **Permits**


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- ▼ **PGH2O Cares**


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- ▼ **PUC Compliance**


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**A. Collections**

**Q. WHAT IS THE STATUS OF THE COMMISSION’S COMPLIANCE PLAN, STAGE 2 WITH RESPECT TO COLLECTIONS AT PWSA?**

A. In addition to the Collections Life Cycle that guides PWSA’s approach to collecting delinquent charges, PWSA is working to add to its Collections toolkit. Following the launch of SAP, Customer Service Collections management personnel have been working for months with the billing system vendor to promote the automated features of the dunning process in SAP. The automated Dunning Process in SAP is best described within PWSA Exhibit JAM-2. One success that management realized was the issuance



1 of courtesy collections notices en masse, the first step in the collections process, issuing  
2 22,913 since February 2023.

3 In April 2023, Senior Manager of Collections, Sharon Gottschalk and I began drafting a  
4 Request for Proposals (RFP) for Debt Collection Services in order to solicit the services  
5 of, potentially, more than one collection agency. Our target award timeframe is July  
6 2023. Through the issuance of this RFP, PWSA will be seeking firms that are financially  
7 and technically qualified to perform the scope of services as described. Also, responsive  
8 firms must demonstrate that they will consistently provide the protections that are  
9 afforded to customers with unpaid charges as required under 52 Pa. Code Chapter 56.  
10 PWSA's goal in partnering with potentially more than one debt collector is to increase  
11 PWSA's monthly collection rate by 10%. The scope includes debt collection services for  
12 unpaid water, wastewater, and stormwater charges that are:

- 13 • Over \$1,000
- 14 • Past due for  $\geq$  180 days
- 15 • Final bills past due  $\geq$  30 days
- 16 • Active accounts where 1) a tenant payment is received, or 2) a curb stop is unable  
17 to be located and/or operated
- 18 • Inactive accounts where 1) PWSA has ceased to provide service, or 2) a previous  
19 customer has moved out.

20 Also in April 2023, Collections management has been retraining staff with the assistance  
21 of PWSA's Public Affairs personnel on the issuance of outbound collection calls through  
22 PWSA's existing vendor partner, Gannett Fleming, Inc., and their software product  
23 Notify. Ms. Gottschalk and I developed a script of the 3-day notice language, and I  
24 ordered it to be recorded by PWSA's preferred voice talent partner, Captive Audience.  
25 When customers fail to pay in full or to make equitable payment arrangements in

1 response to courtesy and 10-day notices, PWSA Collections staff will be ready to renew  
 2 their 3-day notice outbound collections calling campaign.

3 With the launch of SAP came the launch of the Customer Advantage portal. The portal  
 4 has many customer self-service features; such as viewing and paying PWSA bills,  
 5 viewing usage and setting usage alerts, and start/stop of services. The portal also  
 6 facilitates the viewing of letters and notices issued to a customer because they are  
 7 attached to a customer’s account in Document Advantage, which has been successful in  
 8 its use by PWSA. Furthermore, the billing system vendor purports to allow PWSA to  
 9 communicate with customers via email and SMS (text) messaging through  
 10 Communication Advantage. Ms. Gottschalk, has opened a ticket with the vendor to  
 11 pursue issuing collection notices via email and text message to those customers who are  
 12 enrolled in eBilling or who have provided PWSA with their cellular telephone number.

13 **B. Customer Service Accomplishments and Customer Surveys**

14 **Q. DO YOU HAVE ANY METHOD OF EVALUATING THE EFFECTIVENESS OF**  
 15 **THE SERVICE PROVIDED TO PWSA CUSTOMERS?**

16 **A.** Yes. Consistent with my testimony in PWSA’s three prior Rate Cases, PWSA remains  
 17 committed to the goal of becoming a highly responsive and trusted public utility that is  
 18 recognized for excellence and valued by the customers it serves. In support of that  
 19 statement, I offer the following Customer Service accomplishments for the year of 2022:

<p><b>Advanced Metering Infrastructure (AMI)</b></p>	<ul style="list-style-type: none"> <li>✓ Processed 5,865 meter changes on customer accounts</li> <li>✓ Achieved an actual read rate of 96.91%</li> <li>✓ Encouraged 3,411 non-residential customers to install approved backflow devices</li> <li>✓ Increased the number of non-residential customers reporting annual backflow test results in SpryBackflow to 11,962, an increase of 6,233 tests as compared to the prior year</li> <li>✓ Realized the automatic population of service order data through the integration of SpryMobile with SAP</li> </ul>
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<b>Billing</b>	<ul style="list-style-type: none"> <li>✓ Billed 115,283 water/wastewater/stormwater accounts monthly</li> <li>✓ Garnered \$596K in ALCOSAN Reconciliation credits through a manual review of usage adjustments</li> <li>✓ Laid the groundwork for quarterly ALCOSAN Reconciliation to be automated in SAP</li> </ul>
<b>Collections</b>	<ul style="list-style-type: none"> <li>✓ Reached out to 3,329 delinquent customers via personal telephone calls to offer payment arrangements and the customer assistance programs</li> <li>✓ Collected and posted \$1.6M in LIHWAP grants to customer accounts</li> <li>✓ Issued 1,878 Notices of Intent to Lien and collected \$3.2M in aged debt</li> <li>✓ Brought the Personal Contact at Termination contract in-house to reduce operating costs; trained Field Technicians to perform regulated procedure</li> <li>✓ Continued to build and test the Dunning process in SAP</li> </ul>
<b>Contact Center</b>	<ul style="list-style-type: none"> <li>✓ Hired and trained 14 Customer Service Representatives (CSR's) remotely</li> <li>✓ Handled 163,121 customer calls in 2022, an increase of 31,104 calls as compared to the prior year</li> <li>✓ Secured an average call abandonment rate of 6.7% and an average speed of answer of 2 minutes and 31 seconds</li> <li>✓ Trained CSR's to navigate SAP and the Customer Advantage Portal</li> </ul>
<b>Emergency Dispatch</b>	<ul style="list-style-type: none"> <li>✓ Hired and trained 1 Dispatcher remotely</li> <li>✓ Handled 35,674 customer calls in 2022</li> <li>✓ Secured an average call abandonment rate of 3.0% and an average speed of answer of 22 seconds</li> <li>✓ Responded to 1,333 interruptions of service</li> <li>✓ Trained Dispatchers to enter service orders in SAP that automatically populate in SpryMobile via integration</li> </ul>
<b>Lead Help</b>	<ul style="list-style-type: none"> <li>✓ Handled 15,176 customer calls and 8,566 emails to <a href="mailto:LeadHelp@pgh2o.com">LeadHelp@pgh2o.com</a></li> <li>✓ Facilitated 2,122 pre-construction meetings</li> <li>✓ Secured 2,295 signed agreements from property owners, an increase of 951 agreements as compared to the prior year</li> <li>✓ Processed 304 Private Lead Service Line Replacement Reimbursement applications</li> <li>✓ Facilitated 938 Private Lead Service Line Replacements, an increase of 429 replacements as compared to the prior year</li> <li>✓ Facilitated 1,032 Public Lead Service Line Replacements, an increase of 411 replacements as compared to the prior year</li> <li>✓ Hired/promoted and trained 3 new Lead Program Customer Assistance</li> </ul>

<p><b>Permits</b></p>	<ul style="list-style-type: none"> <li>✓ Responded to 7,424 dye testing certification requests in 10 days or less</li> <li>✓ Collected \$3.6M in permit fees</li> <li>✓ CityGrows became ClearForms with checks and credit cards accepted through the application; Development Permits were added; the application was integrated with SAP to automatically post permit fee payments</li> </ul>
<p><b>PUC Compliance</b></p>	<ul style="list-style-type: none"> <li>✓ Promoted and trained a PUC Compliance Manager and a Compliance Analyst</li> <li>✓ Responded to 1,252 dissatisfied customers (.01% of our customer base) via 901 Disputes, 301 Informal Complaints, and 50 Formal Complaints</li> <li>✓ Identified and billed previously unbilled service charges totaling \$400K</li> <li>✓ Completed a series of trainings by shadowing Field Operations staff performing their daily duties</li> <li>✓ Hired/promoted and trained 2 PGH2O Cares Analysts and 1 Associate</li> <li>✓ PGH2O Cares Team participated in 85 community events, 64 in-person and 21 virtual</li> <li>✓ Made 6,270 outbound calls to promote our customer assistance programs, an increase of 4,201 calls from the prior year</li> <li>✓ Increased Bill Discount Program enrollees to 6,059</li> </ul>
<p><b>Quality Control</b></p>	<ul style="list-style-type: none"> <li>✓ Designed and created 18 additional service/work order types and 3 new task types in SpryMobile</li> <li>✓ Trained 84 PWSA employees/contractors on SpryMobile navigation and proper service/work order completion</li> <li>✓ Convened and conducted 3 SpryMobile Change Control Board meetings</li> <li>✓ Successfully onboarded WTP assets and staff into SpryMobile, including 4 repairmen, 2 electricians, 2 plumbers and management personnel</li> <li>✓ Tested SpryMobile integration with SAP, resolved data migration issues post-go-live, and continuously monitored outstanding notifications to troubleshoot vendor automation</li> </ul>

1

2 **Q. CAN YOU PROVIDE FEEDBACK FROM CUSTOMERS ON THE SERVICES**  
 3 **THAT PWSA PROVIDES?**

4 A. Yes. As shared in my testimony in PWSA’s most recent rate case, customers are asked  
 5 following each telephone queue interaction with PWSA staff to take a brief, after call  
 6 survey. When they accept, customers are asked to rate PWSA on the following:

Your call is now being routed to take a short survey on the quality of PWSA's service. Press 1 to continue, or press 2 to disconnect and end your call.	
1	On a scale of 1 to 5, with 5 being Extremely Satisfied and 1 being Extremely Dissatisfied, please rate your satisfaction with the Customer Service Representative who assisted you today.
2	On a scale of 1 to 5, with 5 being Extremely Satisfied and 1 being Extremely Dissatisfied, please rate your satisfaction with the resolution of your most recent inquiry to PWSA.
3	On a scale of 1 to 5, with 5 being Extremely Satisfied and 1 being Extremely Dissatisfied, please rate your overall satisfaction with PWSA's responsiveness to your questions concerning your water and/or wastewater services.
4	On a scale of 1 to 5, with 5 being Extremely Satisfied and 1 being Extremely Dissatisfied, please rate your overall satisfaction with the quality of the water and/or wastewater services provided to you by PWSA.
5	On a scale of 1 to 5, with 5 being Extremely Satisfied and 1 being Extremely Dissatisfied, please rate PWSA's overall performance as a water and wastewater utility.

1           The analysis of the after call customer survey responses in 2022 is included in PWSA  
 2           Exhibit JAM-3. As the scores illustrate, PWSA’s quality and overall performance scores  
 3           range from 4.25 to 4.67 out of 5.

4   **Q. HAS PWSA CONDUCTED A MORE COMPREHENSIVE SURVEY OF ITS**  
 5   **CUSTOMER BASE?**

6   A.    It has. PWSA Public Affairs and Customer Service personnel joined teams on a selection  
 7       committee to receive proposals from, and to evaluate the offerings of, responsive firms  
 8       who regularly conduct customer satisfaction surveys for utility and governmental entities.  
 9       The selection committee chose Probolsky Research, a woman and Latina-owned, multi-  
 10      lingual market and opinion research firm with three locations across the United States.  
 11      Probolsky Research conducts market research in business, government, non-profit,  
 12      election, and association practice areas. Factors in choosing Probolsky included:

- 13           • The firm and its leaders have proven experience in the government and utility  
 14           spaces, both as market researchers and as former employees themselves.

- 1           • Their utility clients include The Gas Company, Southern California Edison, and
- 2                       government utilities like the Arlington County, Virginia and East Bay Municipal
- 3                       Utility District in California.
- 4           • Their client service philosophy allows unlimited meetings and presentation time,
- 5                       which we appreciated given this was our first foray into conducting a customer
- 6                       satisfaction survey.

7   **Q. CAN YOU DESCRIBE THE METHODOLOGY THAT PWSA UTILIZED TO**  
 8   **CONDUCT THE COMPREHENSIVE CUSTOMER SATISFACTION SURVEY?**

9   A. Yes. The purpose of the survey was to gauge overall customer satisfaction and

10           perceptions of PWSA, measure awareness of programs and services, and to understand

11           customers' preferred methods of communication. The survey was conducted from

12           August 8 through September 14, 2022, using a variety of methods to reach a

13           representative sample of PWSA customers. Probolsky employed a multi-modal approach

14           to reach customers, including outbound telephone calling via land lines and mobile

15           telephones, direct mail, text messaging, email, social media ads, and research panel

16           participant recruiting. Customers were able to respond to the survey in both English and

17           Spanish. In total, PWSA received 430 responses, which, according to Probolsky

18           Research, is a representative sample of its customers. A survey of this size yields a

19           margin of error of about +/-5% with a confidence level of 95%. PWSA received

20           responses from a broad sampling of the Pittsburgh community. The following

21           demographics stood out:

- 22           • The largest age group to respond were those between the ages of 18 - 29 (31%),
- 23                       followed by those who were 50 - 64 (20%).
- 24           • More than one-third of the respondents reported an income of less than \$35,000
- 25                       (35.3%).

- 1 • More than half of the respondents identified as renters.

2 **Q. WHAT WERE THE FINDINGS GLEANED FROM THIS COMPREHENSIVE**  
3 **CUSTOMER SATISFACTION SURVEY?**

4 A. The findings indicate that there is significant name recognition and awareness of PWSA  
5 and that a majority of respondents approve of the job that PWSA is doing. The following  
6 summarizes some of the key findings of the survey results:

7 **Key Findings on Customer Awareness and Approval**

- 8 • 85% have heard of PWSA (5% Unsure)
- 9 • 55% approve of the job PWSA is doing (31% Unsure)
- 10 • 58% rate the water and sewer services in their area as excellent or good (25%  
11 Fair, 6% Unsure)
- 12 • 84% agree the services PWSA provides are valuable (12% Unsure)

13 **Key Findings on Important Activities and Attributes**

- 14 • 93% say it's important to them that PWSA is transparent about drinking water  
15 quality (6% Unsure)
- 16 • 91% say it's important to them that PWSA protects public health (7% Unsure)
- 17 • 91% say it's important to them that PWSA plans for future improvements in the  
18 water system (7% Unsure)
- 19 • 90% say it's important to them that PWSA protects the environment (5.6%  
20 Unsure)
- 21 • 79% support PWSA using ratepayer dollars to invest funds to maintain, improve  
22 & modernize water infrastructure (13% Unsure)

23 **Key Findings on Customer Assistance Programs**

- 24 • 44% are not at all familiar with PWSA's Customer Assistance Programs (25.8%  
25 Somewhat familiar, 9.3% Very familiar)

- 1 • 7.4% are already enrolled
- 2 • 72% support using ratepayer dollars to enhance and expand these programs

3 **Key Findings on PWSA Employees**

- 4 • 86% agree that PWSA employees are important to public health and safety
- 5 • 60% trust that the agencies that provide water services have their family's best
- 6 interest at heart (23.5% Unsure)
- 7 • 47% trust that PWSA makes smart decisions about water and sewer services
- 8 (40.5% Unsure)

9 41% of respondents indicated that email is their preferred method of communication for  
10 receiving information from PWSA and nearly 55% receive information about their  
11 community from local television. KDKA is the most watched network and Facebook is  
12 the most used social media platform. Additionally, water quality (51.2%) and water  
13 safety (48.1%) are the two topics on which PWSA customers would like consistent  
14 updates.

15 PWSA plans to conduct a customer satisfaction survey every two years to track changes  
16 against these benchmark survey findings. With the strategic initiative to rebuild trust and  
17 strengthen the relationship with our customers, these survey findings provide insight into  
18 how we can continue to make progress on this important goal.

19 **III. MITIGATION EFFORTS REGARDING IMPACT OF PROPOSED RATE**  
20 **INCREASE ON FUTURE AFFORDABILITY**

21 **Q. HAS PWSA TAKEN INTO CONSIDERATION THE IMPACT OF THE**  
22 **PROPOSED RATE INCREASE ON FUTURE AFFORDABILITY?**

23 A. Yes. As noted in the testimony of Mr. Pickering, PWSA recognizes that the rate  
24 increases it is seeking over the next three year period are significant but necessary to



1 address the negative impacts of rising inflation and to continue PWSA’s ability to address  
2 decades of deferred infrastructure investment. Other witnesses, including Mr. Barca and  
3 Mr. King describe these needs more fully. Here, I would like to be clear that PWSA has  
4 also considered the impact of its proposed rate increase on future affordability and has  
5 offered several proposals in an effort to mitigate these impacts as part of this rate request.  
6 These mitigation measures include: (1) a request for a three year multiyear increase; (2)  
7 a proposed two year transition period for the removal of the minimum allowance; (3)  
8 introduction of two new charges, to include one to timely and accurately recover the  
9 actual costs of our low income programs; (4) new stormwater rate mitigation measures;  
10 (5) removal of the COVID-19 policy to recover the costs of third party payment  
11 processing fees from all ratepayers; (6) additional enhancements for our low-income  
12 customer assistance programs.  
13

1           **A. Multivear Rate Request**

2   **Q.     WHAT WILL BE THE BILL IMPACTS TO CUSTOMERS IF PWSA’S THREE**  
 3   **YEAR RATE INCREASE IS APPROVED?**

4   A.     The bill impacts to customers starting in 2024 through 2026 are displayed below.

<b>Customer Type</b>	<b>Monthly Bill</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
<b>Residential</b>	5/8” Meter;	\$86.43	\$103.41	\$123.55	\$146.11
<i>Impact (%)</i>	3 Kgal;		19.6%	19.5%	18.3%
<i>Impact (\$)</i>	1 ERU		\$16.98	\$20.14	\$22.56
<b>CAP Customer</b>	5/8” Meter;	\$44.15	\$51.85	\$60.83	\$72.17
<i>Impact (%)</i>	3 Kgal;		17.5%	17.3%	18.7%
<i>Impact (\$)</i>	1 ERU		\$7.70	\$8.98	\$11.34
<b>CAP - 50%FPL</b>	5/8” Meter;	\$22.67	\$26.70	\$31.16	\$36.16
<i>Impact (%)</i>	3 Kgal;		17.7%	16.7%	16.1%
<i>Impact (\$)</i>	1 ERU		\$4.03	\$4.46	\$5.00
<b>Commercial</b>	1” Meter;	\$356.54	\$441.19	\$565.41	\$668.24
<i>Impact (%)</i>	13 Kgal;		23.7%	28.2%	18.2%
<i>Impact (\$)</i>	8 ERU		\$84.65	\$124.22	\$102.83
<b>Industrial</b>	4” Meter;	\$12,934.31	\$16,945.22	\$20,846.87	\$24,648.17
<i>Impact (%)</i>	680 Kgal;		31.0%	23.0%	18.2%
<i>Impact (\$)</i>	30 ERU		\$4,010.91	\$3,901.65	\$3,801.30
<b>Health and Education</b>	1” Meter;	\$1,474.16	\$1,844.81	\$2,371.36	\$2,804.42
<i>Impact (%)</i>	50 Kgal;		25.1%	28.5%	18.3%
<i>Impact (\$)</i>	32 ERU		\$370.65	\$526.55	\$433.06

5  
 6   **Q.     WHY DOES PWSA VIEW ITS MULTIYEAR RATE REQUEST AS A**  
 7   **MITIGATION MEASURE FOR CUSTOMERS?**

8   A.     A multiyear rate request provides more transparency for customers over the three-year  
 9           period as to which increases will be implemented. In addition, preparing for and  
 10          litigating rate cases involves a significant cost that is borne by our ratepayers as we are a  
 11          cash flow municipal authority. If we are able to secure approval for our three-year rate

1 increase, we will be able to allocate the costs that would normally be allocated to the rate  
 2 cases to our operations and capital projects. I would also note that the efforts of PWSA  
 3 staff in preparing for and litigating rate cases are in addition to our regular operational  
 4 duties. Without the added pressure of litigating a rate case for the next three years,  
 5 PWSA staff can more fully concentrate our efforts on operating and improving our  
 6 system for the benefit of our customers.

7 **B. Removal of the Minimum Allowance and Two New Reconcilable Charges**

8 **Q. PLEASE EXPLAIN PWSA’S CURRENT RATE STRUCTURE REGARDING**  
 9 **THE MINIMUM ALLOWANCE.**

10 A. Currently, most residential customers are billed a minimum charge for up to 1,000  
 11 gallons. For every full 1,000 gallons over the minimum, they are assessed a consumption  
 12 charge. The use of a minimum allowance has been a feature of PWSA’s rate structure  
 13 since coming under the jurisdiction of the Commission, and the Commission has  
 14 continued to approve the rate structure through our most recent rate case.

15 **Q. HAS PWSA AGREED TO TRANSITION AWAY FROM THE USE OF THE**  
 16 **MINIMUM ALLOWANCE?**

17 A. Yes. Since early on in our transition to Commission jurisdiction, various stakeholders  
 18 have advocated that PWSA transition away from the use of the minimum allowance. In  
 19 fact, this issue has been a discussion point of stakeholders since PWSA’s initial rate case<sup>4</sup>  
 20 with a firm commitment in PWSA’s most recent rate case settlement to “provide a plan to

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<sup>4</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater) Final Order entered February 27, 2019 (approving settlement term B.7 stating “PWSA agrees to propose the removal of the minimum usage allowances, provided that such removal does not result in an unreasonable increase for affected customers, in which case PWSA will explain the basis for that belief and its alternative proposal in the filing.”)

1 transition away from use of minimum usage allowance” with this filing.<sup>5</sup> Mr. Smith  
 2 explains more fully the proposal to transition away from the minimum allowance and the  
 3 impacts that will flow to customers.

4 **Q. PLEASE EXPLAIN WHY PWSA IS PROPOSING TO MAKE THE TRANSITION**  
 5 **IN YEAR TWO RATHER THAN UPON THE INITIAL RATE EFFECTIVE**  
 6 **DATE?**

7 A. PWSA is proposing the transition in year two for two reasons. First, we are mindful of  
 8 the rate impacts that will flow to customers as a result of the removal of the minimum  
 9 allowance. Second, there will be developmental and operational work necessary to be  
 10 able to implement the new rate structure. PWSA must prepare extensive requirements in  
 11 support of the new rate structure; including but not limited to the impact to customer  
 12 billing, device management, customer financials, front office (appearance to end user),  
 13 daily xml file content for bill creation, bill redesign, and Customer Advantage portal  
 14 impacts. These requirements will result in change requests made to PWSA’s billing  
 15 system vendor *and* PWSA’s bill print and mail vendor who will each then determine a  
 16 timetable for implementation based on their availability of developmental resources.  
 17 Implementation for both vendors will encompass development work, quality assurance  
 18 testing by the vendors, user testing by PWSA, go-live support, a rollback plan, and after-  
 19 go-live hyper care. Without firm Commission approval of the proposal, it is not prudent  
 20 to undertake the work and incur the associated expense that will be involved in updating  
 21 our billing systems and educating customers about the rate structure change before the  
 22 proposal is authorized.

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<sup>5</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021.(adopting Settlement Section B.3.a)

1 **Q. IS PWSA PROPOSING A FURTHER WAY TO MITIGATE THE IMPACT OF**  
2 **THE REMOVAL OF THE MINIMUM ALLOWANCE AND THE IMPACTS OF**  
3 **ITS RATE INCREASE REQUEST IN THIS CASE?**

4 A. Yes. PWSA is seeking authority to implement two new reconcilable charges: (1) an  
5 Infrastructure Improvement Charge (“IIC”); and, (2) a Customer Assistance Charge  
6 (“CAC”). PWSA is also filing a Petition for approval of the CAC and both Mr. Barca  
7 and Mr. Smith discuss the IIC and CAC in their testimony from a rate design perspective  
8 as well as the costs to be removed from base rates and to be recovered through the two  
9 charges. The purpose of my testimony is to explain the mechanics of the two charges as  
10 also described in the water, wastewater and stormwater tariff supplements and to provide  
11 further explanation of why these two new charges are a way to mitigate the impacts of the  
12 removal of the minimum charge and the requested rate increases.

13 **Q. PLEASE EXPLAIN THE REASONS FOR PROPOSING THE IIC AND THE**  
14 **CAC.**

15 A. As explained more fully by Mr. Barca and other PWSA witnesses, PWSA has significant  
16 infrastructure projects which take advantage of favorable government-based funding and  
17 loan programs which provide financing schedules and rates beneficial to PWSA’s  
18 ratepayers compared to private market funding options. The IIC is being proposed to  
19 timely recover principal and interest obligations due by PWSA for loans received from  
20 the Pennsylvania Infrastructure Investment Authority (“PENNVEST”) and the federal  
21 government loan program known as the Water Infrastructure Finance and Innovation Act  
22 (“WIFIA”) between base rate case filings.

23 Regarding the CAC, PWSA has a dedicated team of employees focused on expanding  
24 enrollment in its programs and is proposing, in this case, to expand eligibility for  
25 enrollment while seeking approval for rates for three years thereby not anticipating the

1 filing of another rate case in that time period. While we have used our best judgment to  
2 project the costs of these factors, it is likely that our cost projections will be different than  
3 actual reality thus leading to potential under recovery of PWSA's customer assistance  
4 program costs and operations. The CAC is a way to avoid such outcome and ensure that  
5 ratepayers are asked to pay only the actual costs of the program. The CAC would also  
6 apply to all classes of customers and adjust their bills by adding a charge or credit to  
7 reflect increases or decreases, respectively, in PWSA's customer assistance program  
8 costs. PWSA proposes to include the ability to adjust the CAC on a semi-annual basis  
9 with a yearly reconciliation. Recovering the discounts provided to customers in PWSA's  
10 Bill Discount Program, the operating costs of the PGH20 Cares Team, the costs of  
11 PWSA's Hardship Grant funding, and arrearage forgiveness going forward in this manner  
12 would more closely reflect the costs of these programs in appropriate time periods to be  
13 recovered. Implementation of the CAC is a way to further minimize the need to file a  
14 future rate case because PWSA will not be dependent on having sufficient revenue based  
15 on cost projections in the prior rate case. In other words, the CAC supports PWSA's  
16 proposal for a multi-year rate increase because it ensures that the actual costs of the  
17 customer assistance programs are recovered without the need to file a rate case.

18 **Q. ARE YOU AWARE THAT THE COMMISSION RECENTLY REJECTED A**  
19 **PROPOSAL BY AQUA PENNSYLVANIA, INC.?**

20 A. Yes, I have been advised by counsel about the Commission's decision in May 2022 to  
21 reject the proposal of Aqua Pennsylvania to implement a universal service rider similar to  
22 the riders in tariffs of its affiliated gas companies.<sup>6</sup>

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<sup>6</sup> *Pennsylvania Public Utility Commission v. Aqua Pennsylvania, Inc.*, Final Order entered May 16, 2022 at Docket Nos. R-2021-3027385 and R-2021-3027286 at 302-320.

1 **Q. PLEASE EXPLAIN WHY PWSA HAS ELECTED TO PROPOSE THE CAC**  
2 **NOTWITHSTANDING THIS DECISION?**

3 A. While support for our CAC request is further addressed in the petition we are filing  
4 seeking its approval, I would like to note here that PWSA has a very robust customer  
5 assistance program that has been supported and approved by the Commission since we  
6 came under its jurisdiction in 2018. In fact, throughout that entire period, the customer  
7 assistance programs have significantly evolved and grown largely as a result of the  
8 various case settlements approved by the Commission. As such, we have significant  
9 experience with our customer assistance programs and in order to continue to be able to  
10 effectively grow the programs, it is important to ensure that the actual costs of the  
11 program will be timely recovered. I would also note that our proposed CAC would apply  
12 to all customer classes which is consistent with the way we currently recover these costs  
13 in base rates. In addition, as more fully addressed in our petition, PWSA is a municipal  
14 authority and, therefore, is reliant on ratepayer revenue to recover its costs. Thus, if the  
15 projections of costs for the low income programs in base rates do not bear out, then  
16 PWSA must allocate dollars from other projects to recover the shortfall. This is not a  
17 sustainable path going forward and, at some point, may stymie the ability of PWSA to  
18 continue to grow its low income customer assistance programs due to a concern over the  
19 ability to fully recover the costs. Finally, as more fully developed in our petition, I am  
20 informed by counsel that the legislature recognized the unique nature of PWSA and  
21 specifically authorized the Commission to “suspend or waive the applicability of any

1 provision of this title to the authority.”<sup>7</sup> For all these reasons, the implementation of the  
 2 CAC for PWSA appears to be fully supportable and reasonable.

3 **Q. HOW ARE THE CAC AND IIC BENEFICIAL FROM A CUSTOMER’S**  
 4 **PERSPECTIVE?**

5 A. From a customer perspective, these two new charges provide greater transparency of the  
 6 costs they are recovering and, perhaps most importantly, their reconcilable nature means  
 7 that customers will only pay the actual incurred costs. Importantly, whether these costs  
 8 are recovered through a reconcilable charge or as part of base rates, PWSA is entitled to  
 9 recover their costs. The advantage of a reconcilable charge is that PWSA does not need  
 10 to rely on projections that are approved in a rate case that may or may not be accurate.  
 11 Moreover, by recovering these costs through a reconcilable charge, PWSA ratepayers are  
 12 not expected to incur the costs of rate case litigation to set the charges. Ultimately, the  
 13 charges are a way to save ratepayers the costs of rate case litigation while ensuring that  
 14 they pay no more or no less than the actual costs intended to be recovered by the charges.  
 15 PWSA views this as a significant customer benefit from implementing its two new  
 16 proposed charges.

17 **Q. DO YOU SEE AN ADDED BENEFIT OF THE CUSTOMER ASSISTANCE**  
 18 **CHARGE?**

19 A. Yes. As I will discuss further below, PWSA is implementing a Line Repair and  
 20 Conservation (“LRC”) pilot program but is not now in a position to decide the future of  
 21 the program for timing reasons. By implementing the Customer Assistance Charge,  
 22 PWSA will assure that ratepayer funding is available when PWSA is in a position to  
 23 determine the future of the program. I would note that cost recovery for the LRC pilot

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<sup>7</sup> 66 Pa. C.S. § 3202(b).



1 program was a significant issue in getting initial approval and was only resolved by  
 2 PWSA's agreement to not seek future base rate recovery for the costs of the LRC pilot  
 3 program.<sup>8</sup> Without the ability to seek future base rate recovery, and with no specific  
 4 reconcilable charge available to recover the costs of the LRC pilot program, PWSA  
 5 agreed to utilize ratepayer funding for other programs or projects to fund the Pilot. The  
 6 implementation of a Customer Assistance Charge would avoid this situation in the future.  
 7 While parties would certainly be free to question the proposed costs in any future filing,  
 8 the availability of the charge to recover the costs would not be in dispute nor would  
 9 PWSA be required to await a future rate case filing to seek cost recovery (if the parties  
 10 would even agree to such a settlement term.) In this way, I view the implementation of a  
 11 reconcilable Customer Assistance Charge as a positive incentive for PWSA to consider  
 12 and propose future programs to benefit low income customers.

13 **Q. HOW DOES PWSA PLAN TO INFORM CUSTOMERS ABOUT THE AMOUNTS**  
 14 **TO BE RECOVERED THROUGH THE NEW CHARGES?**

15 A. Because these are costs that customers pay whether they are included in our approved  
 16 base rates or as part of the reconcilable charges we are proposing, PWSA is not proposing  
 17 to separately identify the rates on customer bills. The costs to be included in the charges  
 18 will be calculated consistent with the newly proposed tariff pages and added to the base  
 19 rate charges for display on the customer's bill. While we understand that separately  
 20 displaying each of these charges on the customer's bill may have some value for  
 21 transparency, we are of the view that including the charges as part of the calculation of

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<sup>8</sup> *Petition of The Pittsburgh Water and Sewer Authority for Pilot Private Service Line Leak Repair and Expanded Conservation Program for Eligible Low Income Customers and Authorization to Track Costs As a Regulatory Asset for Future Base Rate Recovery*, Docket No. P-2022-3030253, Final Order adopting Recommended Decision entered March 2, 2023. (Approving Line Repair Settlement at 9, B.2.)

1 the “all-in” rate displayed on the bill is more consistent with the goal of satisfying the  
 2 plain language standards that PWSA sought to achieve through the recent bill redesign  
 3 effort.

4 **C. Stormwater Rate Mitigation Measures**

5 **Q. ARE THERE PROPOSALS INCLUDED WITH THIS RATE FILING**  
 6 **SPECIFICALLY INTENDED TO MITIGATE THE IMPACTS OF INCREASED**  
 7 **STORMWATER RATES?**

8 A. Yes. As described by Mr. Readling, we are proposing to update the credit program to  
 9 permit qualifying lightly developed non-residential properties access to the 45% and 60%  
 10 credits through passive management of stormwater through the property’s green space.  
 11 We are also proposing to offer a one-time \$40 credit for installed rain barrels. In  
 12 addition, while we are proposing to increase the current stormwater rates, we are still  
 13 proposing a gradualism approach whereby some of the costs of the stormwater utility  
 14 continue to be recovered through our wastewater conveyance rates. These proposals are  
 15 reflected in Supplement No. 3 to the Storm Water Tariff which I am sponsoring.

16 **Q. HAVE YOU CONSIDERED THE RATE IMPACTS OF THE PROPOSED**  
 17 **GRADUALISM ADJUSTMENT?**

18 A. Yes, consistent with our commitment in the last rate case settlement,<sup>9</sup> we considered the  
 19 rate impacts of not including a gradualism adjustment which would have resulted in  
 20 stormwater rates increasing by 72% in the first year ultimately resulting in rate close to  
 21 \$18 per ERU by the third year. In PWSA’s judgment this result was not reasonable at  
 22 this time and would result in rates the highest by far of our local peers and among the  
 23 highest of our regional peers. Also, stormwater only customers and low consumption /

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<sup>9</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021.(adopting Settlement Section III.9.B at 10).

1 large impervious area customers would be unreasonably impacted by the complete  
 2 removal of gradualism.

3 **D. Elimination Of Convenience Fee Pass Throughs To All Customers**

4 **Q. IS PWSA PROPOSING TO NO LONGER RECOVER THE COSTS OF THIRD-**  
 5 **PARTY FEES FROM ALL RATEPAYERS?**

6 A. Yes. As explained more fully by Mr. Barca, PWSA proposes to require customers  
 7 electing a bill payment option that includes a convenience fee to directly pay the costs of  
 8 any assessed third-party fees.

9 **Q. WHEN DID PWSA FIRST BEGIN TO RECOVER THE COSTS OF THIRD**  
 10 **PARTY FEES FROM ALL RATEPAYERS?**

11 A. PWSA agreed to eliminate merchant fees for residential customers to make Interactive  
 12 Voice Response and on-line payments as part of its 2020 rate case settlement.<sup>10</sup> At that  
 13 time, PWSA concluded that the agreement was reasonable in light of the global COVID-  
 14 19 pandemic. Prior to then, third party fees had always been paid by the customer  
 15 electing a payment option in which they were assessed by merchant services and  
 16 collected by the vendor.

17 **Q. WHY DO YOU VIEW A RETURN TO THE CUSTOMER FULLY PAYING ANY**  
 18 **THIRD PARTY FEE ASSESSED AS A RATE MITIGATION EFFORT?**

19 A. As a cash flow municipal authority, PWSA’s agreement to change historical practices  
 20 resulted in other ratepayers paying the cost. The cost impact of this is discussed more  
 21 fully by Mr. Barca. By returning the payment responsibility solely to the customer  
 22 electing the option, PWSA is mitigating the cost impact of this decision for other  
 23 ratepayers. Given the relaxing of the COVID-19 pandemic and the overall rate request

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<sup>10</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2020-3017951 (water) and R-2020-3017970 (wastewater) Final Order entered December 3, 2020 (approving Settlement Section III.G.2.).

1 here, as well as the build out of options available to our customers to make payments to  
 2 us, the return to a requirement that customers incurring a third party fee fully pay that fee  
 3 is a reasonable approach.

4 **E. Additional Enhancements To Low Income Customer Assistance Programs**

5 **Q. PLEASE DESCRIBE THE CURRENT PWSA LOW INCOME CUSTOMER**  
 6 **ASSISTANCE PROGRAMS THAT ARE AVAILABLE.**

7 A. PWSA offers the following programs to provide financial assistance to qualifying low-  
 8 income residential customers; (1) the Bill Discount Program, (2) the Hardship Grant  
 9 Program, (3) Winter Moratorium, and (4) the Lead Service Line Replacement  
 10 Reimbursement Program. Please see PWSA Exhibit JAM-4 for the flyer of current  
 11 program offerings in both English and Spanish.

**Bill Discount Program** - assists customers with an annual income of  $\leq 150\%$  of the Federal Poverty Level (FPL). This program applies to tenants when the tenant is the customer/account holder.

- Provides eligible customers with a 100% discount on the fixed monthly water and wastewater conveyance charges. This is a savings of approximately \$33.84 per month.
- Supplies an additional 50% discount on the volumetric charges, which are usage charges over the monthly minimum charges, for customers earning an annual income that is at or below 50% of the FPL.
- Delivers an 85% reduction on stormwater charges.
- Presents an Arrearage Forgiveness Program monthly \$30 credit to reduce past due balances. Customers must be enrolled in the Bill Discount Program, on an active payment plan, and make on-time payments to receive this benefit.
- All verified low-income customers will automatically be enrolled in the Winter Shut Off Moratorium.
- Enrollment is applicable for 2 years without recertification. Currently, 6,290 customers are enrolled in the Bill Discount Program.

**Hardship Grant Program** - promotes grants up to \$300 per year to be allocated to customers  $\leq 150\%$  of the Federal Poverty Level.

- 342 grants were awarded to qualifying customers in 2022.

- Grants are now available to PWSA’s sewage-only customers to apply to past due wastewater charges.
- No sincere effort of payment is required to receive a grant.

**Winter Moratorium** - provides customers with an annual income of  $\leq 300\%$  of FPL with protection from termination due to unpaid water/wastewater charges for the moratorium period of December 1<sup>st</sup> through March 31<sup>st</sup>.

- Customers are expected to pay their monthly current charges. Payment counseling and payment arrangements are offered by PWSA Customer Service.

**Lead Service Line Replacement Reimbursement Program** - assists eligible customers with the cost of replacing a private-side lead service line if a customer proactively hires a plumber to perform the replacement. This income-based reimbursement program is available to eligible customers who replaced their private-side lead service line on or after January 1, 2019. PWSA will verify your income to determine which level of reimbursement to apply.

- Current reimbursement levels:

People in Household	100% reimbursement of eligible costs	75% reimbursement of eligible costs		50% reimbursement of eligible costs		\$1,000 stipend
	Income Less than	Income Between		Income Between		Income Above
1	\$43,740	\$43,741	\$58,320	\$58,321	\$72,900	\$72,900
2	\$59,160	\$59,161	\$78,880	\$78,881	\$98,600	\$98,600
3	\$74,580	\$74,581	\$99,400	\$99,401	\$124,300	\$124,300
4	\$90,000	\$90,001	\$120,000	\$120,001	\$150,000	\$150,000
5	\$105,420	\$105,421	\$140,560	\$140,561	\$175,700	\$175,700
6	\$120,840	\$120,841	\$161,120	\$161,121	\$201,400	\$201,400
7	\$136,260	\$136,261	\$181,680	\$181,681	\$227,100	\$227,100
8	\$151,680	\$151,681	\$202,240	\$202,241	\$252,800	\$252,800
For each additional HH member add:	\$15,420	\$20,560		\$25,700		\$30,840

1

2 **Q. PLEASE DESCRIBE PWSA’S LOW INCOME ASSISTANCE ADVISORY**

3 **COMMITTEE (“LIAAC”).**

4 A. PWSA continues to gain more experience with these programs through its own

5 interactions with customers and through the feedback received as part of the Low Income

6 Assistance Advisory Committee (“LIAAC”). PWSA formed the LIAAC committee in

7 March 2019. Since that time, PWSA has facilitated eighteen meetings of the LIAAC. In

8 these meetings, PWSA shares PGH2O progress, program enrollment data, and

9 information about its low income customer program enhancements and facilitates

1 discussion to receive feedback and other ideas from committee members. These  
2 meetings continue to be very valuable, and I am proud of what we have been able to  
3 achieve collaboratively.

4 **Q. HOW DID PWSA EXPAND UPON ITS OUTREACH EFFORTS IN 2022?**

5 A. The PGH2O Cares team reached its target of 6,000 enrollees, an increase of 20% of the  
6 low-income customers enrolled in its programs in 2021. Accomplishing this goal was in  
7 part due to the expansion of the team. In the spring of 2022, PGH2O Cares management  
8 successfully promoted one Customer Service Representative to the role of PGH2O Cares  
9 Analyst, hired an external candidate for the role of PGH2O Cares Analyst, and hired one  
10 PGH2O Cares Associate. For the majority of 2022, five employees comprised the  
11 PGH2O Cares team. With the ability to reach greater numbers of needy customers, the  
12 team made 4,201 *more* cold calls than in 2021 to educate and enroll eligible customers in  
13 PWSA's assistance programs. PGH2O Cares was also present in 21 virtual group  
14 meetings and appeared at 64 in-person community events, setting up their table of  
15 materials and giveaways to interact with PWSA customers on a variety of topics. In early  
16 2023, PGH2O Cares Coordinator, Sarah Viszneki and I held several virtual meetings and  
17 telephone conversations with administrators of the Jewish Family and Community  
18 Services (JFCS) of Pittsburgh. These planning sessions led to a schedule of office hours  
19 where PGH2O Cares personnel are stationed at JFCS' Hazelwood and Squirrel Hill food  
20 pantry sites to enroll confirmed low-income customers by appointment and walk-in's.  
21 Small office space is allocated to Cares members at these locations so that they can make  
22 outbound calls and perform data entry duties when there is no active customer interaction  
23 at the food pantries.

1 **Q. IS PWSA PROPOSING FURTHER ENHANCEMENTS TO ITS EXISTING LOW**  
2 **INCOME CUSTOMER ASSISTANCE PROGRAMS IN THIS PROCEEDING?**

3 A. Yes. We are proposing a number of enhancements as part of our rate increase request in  
4 this proceeding.

5 ***1. Proposed Bill Discount Program Enhancements***

6 **Q. PLEASE DESCRIBE THE ENHANCEMENTS PWSA IS PROPOSING FOR ITS**  
7 **BILL DISCOUNT PROGRAM.**

8 A. To promote an ever-increasing customer base enrolled in its programs, PWSA is  
9 proposing to reach more potentially eligible customers by expanding the eligibility from  
10 150% FPL to 200% FPL. Additionally, and to mitigate the impact of two new  
11 reconcilable charges on its most vulnerable customers, PWSA proposes to offer a 50%  
12 reduction to the IIC and a 100% reduction to the CAC.

13 **Q. ARE ADDITIONAL PROGRAM CHANGES PROPOSED TO COINCIDE WITH**  
14 **PWSA'S CHANGES TO ITS RATE STRUCTURE?**

15 A. Yes; as I describe more fully below, and in consideration of the removal of the minimum  
16 allowance, PWSA is proposing a fixed bill discount for qualifying low income customers  
17 to offset the cost of the change in rate structure and to coincide with the implementation  
18 of a new rate structure in 2025.

19 ***2. Proposed Hardship Grant Programs***

20 **Q. PLEASE DESCRIBE THE ENHANCEMENTS PWSA IS PROPOSING FOR ITS**  
21 **HARDSHIP GRANT PROGRAM.**

22 A. To increase the impact of its Hardship Grant program, PWSA proposes to allocate  
23 two, separate \$300 annual grants; one to be distributed to eligible water customers  
24 and one to be distributed to eligible wastewater customers. PWSA also proposes to  
25 fund these two hardship grants through rates.

1           **3.       *Future Enhancement to Low Income Programs Upon Removal of Minimum***  
 2           ***Allowance***

3 **Q.       WHEN PWSA REMOVES THE MINIMUM ALLOWANCE FROM ITS RATE**  
 4 **STRUCTURE, HOW IS PWSA PROPOSING TO ADDRESS THE IMPACTS TO**  
 5 **QUALIFYING LOW INCOME CUSTOMERS?**

6 A.       PWSA proposes that beginning in 2025, qualifying customers will receive a bill credit up  
 7 to the following amounts:

	2025	2026
<b>CAP Customers above 50% - 200% of FPL</b>	\$17.00 per bill for water charges	\$20.00 per bill for water charges
	\$5.00 per bill for wastewater conveyance charges	\$6.00 per bill for wastewater conveyance charges
<b>CAP Customers at or below 50% of FPL</b>	\$10.00 per bill for water charges	\$12.00 per bill for water charges
	\$3.00 per bill for wastewater conveyance charges	\$4.00 per bill for wastewater conveyance charges

8 **Q.       HOW DOES THIS PROPOSAL ASSIST ELIGIBLE CUSTOMERS?**

9 A.       The bill credit will allow eligible customers to receive additional discounts to offset the  
 10 transition to the new rate structure, which currently results in no payment from customers  
 11 for their first 1,000 gallons of consumption per month.

12



1 **IV. PRIOR COMMISSION APPROVED SETTLEMENT COMMITMENTS**

2 **A. Last Rate Case**

3 ***1. Actioned Findings of the Complaint Root Cause Analysis***

4 **Q. PLEASE EXPLAIN HOW PWSA HAS SATISFIED ITS COMMITMENT IN ITS**  
 5 **LAST RATE CASE TO “UNDERTAKE A ROOT CAUSE ANALYSIS OF**  
 6 **INFORMAL AND FORMAL COMPLAINTS AND IDENTIFY AND ADOPT**  
 7 **REFORMS TO REDUCE FORMAL COMPLAINTS, VERIFIED COMPLAINTS**  
 8 **AND JUSTIFIED COMPLAINTS?”<sup>11</sup>**

9 A. PWSA commissioned Raftelis Financial Consultants, Inc. (“Raftelis”) to perform the root  
 10 cause analysis of Informal and Formal Complaints to the Commission by PWSA  
 11 customers. Raftelis personnel reviewed the data recorded by the PWSA PUC  
 12 Compliance team and interviewed various PWSA personnel from multiple departments.  
 13 On February 25, 2022, Raftelis presented their preliminary findings to PWSA’s then  
 14 Senior PUC Compliance Manager and its Director of Customer Service, who offered  
 15 clarification and direction for the remainder of the investigatory period. Raftelis  
 16 presented their final report in Q2 2022. PWSA has actioned many of the listed  
 17 recommendations in this analysis. I will revisit each recommendation in the following  
 18 narrative so as to describe the work that Customer Service has completed thus far in our  
 19 initiative to reduce customer complaint volumes.

- 20 • **Recommendation 1: Provide detailed training to Customer Service**  
 21 **Representatives on how to address common customer concerns and**  
 22 **effectively resolve conflicts.**

23 Customer Service management initiated detailed training of Contact Center staff on how  
 24 to address common customer concerns in part, and we completed the conflict resolution  
 25 training with staff.

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<sup>11</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021 adopting Recommended Decision dated October 6, 2021 at p. 27 Section 9, E,8,c.

1 Brittany Schacht, Deputy Director of Customer Service, developed detailed call scripts  
2 and call checklists for use by Customer Service Representatives when assisting customers  
3 with higher than usual bills due to high consumption. I then reviewed these materials and  
4 provided my edits. The five call checklists address; 1) if there has been no change in the  
5 customer's historical water consumption, 2) if daily high consumption is still occurring,  
6 3) if daily high consumption is no longer occurring, and 4) if the customer requests a  
7 meter test. Rhonda Lea, Customer Service Training Coordinator, began to work with the  
8 Contact Center and Team Lead Line staff in April 2023 to walk through the checklists  
9 and call scripts so that those individuals could put these training materials to use in their  
10 interactions with customers. Future scripts and checklists are planned to address other  
11 common customer concerns.

12 I worked with PWSA Human Resources to craft de-escalation training for both the Field  
13 Technicians performing personal contact at the time of termination and for the Contact  
14 Center and Team Lead Line staff. Both training courses were assigned to staff through  
15 PWSA's learning management system. The Contact Center and Team Lead Line  
16 personnel completed their de-escalation training and accompanying quizzes within the  
17 period of February 28, 2023 to March 30, 2023.

- 18 • **Recommendation 2: Provide specific training to Customer Service**  
19 **Representatives on how to respond when customers request a meter test.**

20 Deputy Director of Customer Service, Brittany Schacht provisioned on-site training of  
21 Customer Service Representatives (CSR's) at PWSA's Central Warehouse from March  
22 21 – 24, 2023. The CSR's had the opportunity to view PWSA's multi-meter testing  
23 bench and to hear Field Operations personnel explain meter mechanics and describe how  
24 meter tests are performed and recorded. The CSR's were also able to either view a meter

1 test being performed live or view a recording of a live meter test. As an additional  
2 training tool for both customers and Customer Service staff, Public Affairs created  
3 website content specific to PWSA water meters: [Understanding Your Water Meter |](#)  
4 [Pittsburgh Water & Sewer Authority \(pgh2o.com\)](#).

5 In July 2022, PWSA's PUC Compliance section of Customer Service initiated the  
6 tracking of meter test failure rates. When a year of data has been collected, Customer  
7 Service management will share the results with staff as an additional talking point to  
8 attempt to dissuade customers from scheduling a meter pull and test appointment instead  
9 of checking their property for leaks.

10 In compliance with PWSA's commitments in the Commission approved settlement of its  
11 Stage 1 Compliance Plan, pertaining to water meters,<sup>12</sup> PWSA continues to work the  
12 non-access process to upgrade aged and non-registering water meters with new meters  
13 that read down to the tenth of a gallon. This granularity of meter readings promotes  
14 improved leak detection and conservation. From January 2019 to December 2022,  
15 PWSA successfully upgraded 28,677 meters.

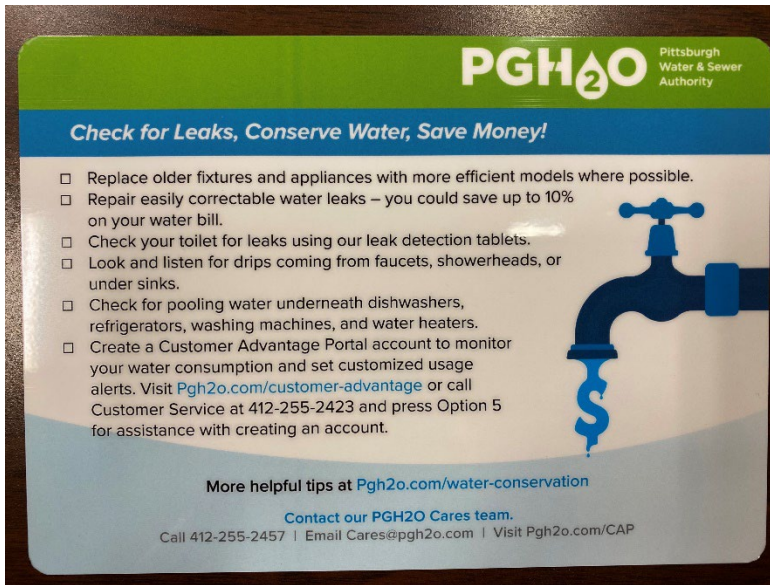
- 16 • **Recommendation 3: Consider dispatching Plumbers to examine a property**  
17 **for potential leaks before doing a meter test.**

18 In August 2022, Quality Control Manager, Kenneth Thurston conducted water meter  
19 installation and leak detection training of PWSA Plumbers at their Howard Street yard.  
20 Customer Service and Field Operations management then joined together to develop a  
21 leak detection tips card, both sides of which are pictured below. Once printed, laminated,

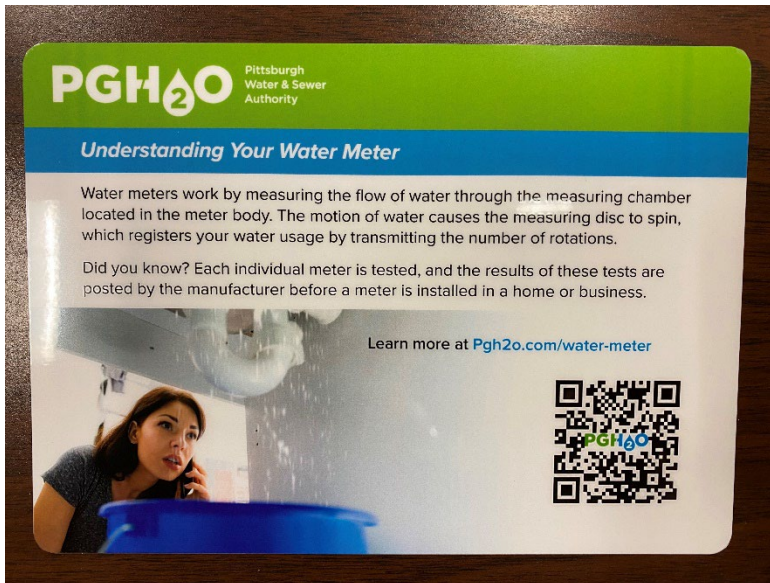
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<sup>12</sup> *Implementation of Chapter 32 of the Public Utility Code Regarding Pittsburgh Water and Sewer Authority – Stage 1*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Opinion and Order entered March 26, 2020. See [Joint Petition for Partial Settlement](#), filed September 13, 2019 at 23-25 for specific settlement terms.

1 and delivered to the Howard Street yard, PWSA Plumbers began providing this tip card  
2 and leak detection tablets to customers in January 2023.



3



4

5 To further reduce customer complaints to the PA PUC regarding high consumption,  
6 Customer Service management coached Contact Center and Dispatch employees to  
7 schedule service orders to educate customers on leak detection when they cannot  
8 determine what is causing their high consumption, beginning in February 2023. Here are  
9 the steps that they shared:

- 1           • Customer calls in response to a high bill due to increased consumption.
- 2           • Ask the customer to check the property for leaks, including performing a dye test
- 3           on their commode(s).
- 4           • The customer checks for leaks and does not find any, they refuse to check for
- 5           leaks on their own, or they refuse to call a private plumber.
- 6           • Schedule an MD RES or MD COM service order with the description "Please
- 7           educate customer on leak detection tips."
- 8           • A PWSA Plumber will visit the property, check for an indication of a leak at the
- 9           water meter, give the customer leak detection tablets, and leave a leak detection
- 10          tips card with the customer.

11          Since receiving training on this new process, PWSA plumbers have provided 72 leak  
 12          detection tip cards and 133 leak detection tablets to customers experiencing higher than  
 13          usual consumption in their properties. Please see PWSA Exhibit JAM-9 for additional  
 14          tracking details garnered from the SpryMobile Work Order and Asset Management  
 15          application.

- 16          • **Recommendation 4: Call customers with results of meter test.**

17          PWSA’s PUC Compliance section of Customer Service instituted the practice of calling  
 18          customers to explain their meter test results in detail as of August 1, 2022. The PUC  
 19          Compliance Analysts are the primary deliverers of this helpful information.

- 20          • **Recommendation 5: Train Customer Service and Field Operations staff on**
- 21          **other teams’ responsibilities.**

22          In response to Recommendation #2, the Customer Service Representatives observed  
 23          Field Operations personnel in action at the Central Warehouse. Additionally, ride-along

1 opportunities are currently being scheduled for Dispatchers to observe water and sewer  
2 asset work in the field during the 2023 construction season.

3 • **Recommendation 6: Increase pre-billing consumption screening with AMI**  
4 **tools.**

5 As stated earlier in my testimony, the launch of SAP on August 8, 2022 included the  
6 Customer Advantage portal. One success of the portal was the merging of the disparate  
7 online billing and online usage tools that PWSA historically provided to customers.  
8 Under one username and password, all customers can now view and pay their monthly  
9 PWSA bills, PWSA water customers can see their daily usage and set usage alerts, and  
10 all customers may start and stop service. The usage alerts currently available in the  
11 Customer Advantage portal are the High Use and Unplanned Use Notifications. Still  
12 being tested prior to enabling are leak alerts, including notifications of burst pipes and  
13 continuous use. All alerts are currently issued via email, and a ticket is open with the  
14 billing system vendor to utilize SMS, or text, messaging for usage alerts in the future.  
15 Additionally, in July 2022, Advanced Metering and Infrastructure (AMI) and Billing  
16 personnel in the Customer Service department created a Continuous Consumption Report  
17 Standard Operating Procedure to document the process of identifying unexpected usage  
18 and communicating same to customers so that they could engage in leak detection to  
19 mitigate potential high consumption bills. This procedure can be found at PWSA Exhibit  
20 JAM-6.

21

- **Recommendation 9: Enhance data tracking related to customer Disputes and Complaints.**

Effective August 1, 2022, PWSA’s PUC Compliance management personnel enhanced the data tracking of customer disputes and complaints in the following manner:

- a. Expanded dispute categories;
- b. Added billing system clarification case numbers to track disputes through to possible informal and/or formal complaints to the Commission;
- c. Standardized meter test results; and
- d. Updated Compliance tracking to include billing errors.

Still to be addressed under this recommendation are first call resolution and escalated call rates by CSR’s. Customer Service management is working with PWSA’s telephony system vendor to develop reporting mechanisms to track these rates.

Lastly, Customer Service management will continue to pursue changes in processes and to design and perform staff training related to the two remaining customer complaint root cause analysis recommendations.

***2. Arrearage Forgiveness Program***

**Q. PLEASE DESCRIBE PWSA’S CURRENT ARREARAGE FORGIVENESS PROGRAM (“AFP”) AND THE COMMITMENTS REGARDING THE AFP AGREED TO BY PWSA AS PART OF ITS LAST RATE CASE SETTLEMENT.**

A. Eligible participants in our Bill Discount Program on an active payment plan receive a \$30 credit for each on-time payment (“AFP credit”). If eligible customers are not past due on their payment arrangement, PWSA automatically provides a \$30 AFP credit to their bill. PWSA first implemented the AFP effective January 14, 2021 consistent with

1 the Commission approved settlement of PWSA’s second base rate case.<sup>13</sup> As part of the  
 2 settlement of PWSA’s most recent base rate case, PWSA committed to the long-term  
 3 continuation of the program, expanded the credit amount to the current \$30, agreed to  
 4 work with its vendor as part of the implementation of its new customer information and  
 5 billing system (“SAP”) to put into place the functional ability to accommodate a different  
 6 structure for the AFP, and to undertake a cost-benefit analysis regarding the new  
 7 structure.<sup>14</sup>

8 **Q. IS PWSA PROPOSING ANY CHANGES IN THIS FILING TO ITS EXISTING**  
 9 **AFP?**

10 A. No. As explained more fully in the testimony of Mr. Barca, PWSA undertook a cost-  
 11 benefit analysis of revising its structure consistent with the functionality requested as part  
 12 of the last rate case settlement which would involve other PWSA ratepayers paying the  
 13 full arrearage of a Bill Discount Program participant over a period of three years. This  
 14 structure results in a higher cost to other ratepayers because it does not have a fixed cost  
 15 component and requires other ratepayers to cover the full cost of the arrearage over three  
 16 years without regard for the cost. As Mr. Barca explains, PWSA does not judge the  
 17 potential costs of such a restructuring as in the best interests of all its ratepayers and is  
 18 not recommending any changes to the current AFP.

19 **Q. NOTWITHSTANDING THAT PWSA IS NOT RECOMMENDING ANY**  
 20 **CHANGES TO THE CURRENT AFP STRUCTURE, COULD THE CURRENT**

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<sup>13</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2020-3017951 (water) and R-2020-3017970 (wastewater) Final Order entered December 3, 2020. See Joint Petition for Settlement dated September 20, 2020 at 11.

<sup>14</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021. See Joint Petition for Settlement dated September 7, 2021 at 20-21.



1 **SYSTEM ACCOMMODATE REVISIONS IN THE FUTURE CONSISTENT**  
 2 **WITH THE LAST RATE CASE SETTLEMENT?**

3 A. Yes. I do want to be clear that while PWSA does not believe the costs of implementing a  
 4 change to the AFP as suggested by the last rate case settlement are reasonable, we did  
 5 ensure that the functionality was included in our current system to be able to  
 6 accommodate the revised structure contemplated by the settlement if PWSA elects to  
 7 implement it in the future.

8 **3. *Future Changes to Low Income Customer Assistance Programs Resulting***  
 9 ***from Proposed Rate Structure Changes***

10 **Q. WHAT COMMITMENTS DID PWSA MAKE IN THE LAST RATE CASE**  
 11 **SETTLEMENT REGARDING THE TRANSITION AWAY FROM THE**  
 12 **CURRENT MINIMUM ALLOWANCE STRUCTURE AND LOW INCOME**  
 13 **CUSTOMERS?**

14 A. As I testified previously, the desire of stakeholders for PWSA to transition away from its  
 15 current minimum allowance structure has been a feature of nearly all our previous cases  
 16 with PWSA making the commitment in the last rate case to “provide a plan” as part of  
 17 this rate case.<sup>15</sup> PWSA also agreed to consider and propose changes to its low income  
 18 customer assistance program as part of its proposed plan to transition away from the  
 19 minimum allowance. More specifically, the settlement sought to ensure that participants  
 20 in PWSA’s Bill Discount Program would retain, at minimum, the same level of benefits  
 21 currently offered notwithstanding the rate structure change. In support of its proposal,  
 22 PWSA committed to provide:

- 23 • A comparison of the level of benefits pursuant to the current program structure
- 24 with the level of benefits anticipated under the new proposed structure

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<sup>15</sup> *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2021-3024773 (water), R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater), Final Order entered November 18, 2021.(adopting Settlement Section III.B.9 3 at 8).

- A comparison of the resulting water and wastewater cost in relation to income under the current and new proposed structure for a 2-person and 4-person household at 50% of the FPL, 100% of the FPL and 150% of the FPL

**Q. HAS PWSA PERFORMED THIS ANALYSIS?**

A. Yes. The table below shows the breakdown of the current program structure with no program changes for FY 25 and FY 26 (top chart) and the benefits with PWSA’s proposed program changes for FY 25 and 26 (bottom chart).

	FY 2023 FTY	FY 2024 FPFTY	FY 2025 Proposed	FY 2026 Proposed
<b><i>Benefits on Monthly Water, Wastewater, and Stormwater Bill</i></b>				
<b><u>Water BDP Reductions</u></b>				
Water Base Charge Discount	\$ 26.52	\$ 32.43	\$ 16.82	\$ 20.13
Reduction of DSIC*	\$ 1.33	\$ 2.43	\$ 1.26	\$ 1.51
	<u>\$ 27.85</u>	<u>\$ 34.86</u>	<u>\$ 18.08</u>	<u>\$ 21.64</u>
<b><u>Wastewater BDP Reductions</u></b>				
Wastewater Base Charge Discount	\$ 7.32	\$ 7.42	\$ 3.98	\$ 4.63
Reduction of DSIC*	\$ 0.37	\$ 0.56	\$ 0.30	\$ 0.35
	<u>\$ 7.69</u>	<u>\$ 7.98</u>	<u>\$ 4.28</u>	<u>\$ 4.98</u>
<b><u>Stormwater BDP Reductions</u></b>				
Stormwater Discount	\$ 6.76	\$ 8.72	\$ 10.32	\$ 12.07
	<u>\$ 6.76</u>	<u>\$ 8.72</u>	<u>\$ 10.32</u>	<u>\$ 12.07</u>
<b>Current Program: Total BDP Reductions</b>	<b>\$ 42.29</b>	<b>\$ 51.56</b>	<b>\$ 32.68</b>	<b>\$ 38.69</b>
<b><i>Benefits on Monthly Water, Wastewater, and Stormwater Bill</i></b>				
<b><u>Water BDP Reductions</u></b>				
Water Base Charge Discount	\$ 26.52	\$ 32.43	\$ 16.82	\$ 20.13
Water BDP Bill Credit	\$ -	\$ -	\$ 17.00	\$ 20.00
Discount on IIC	\$ -	\$ -	\$ 3.14	\$ 3.59
Discount on CAC	\$ -	\$ -	\$ 1.41	\$ 1.65
Reduction of DSIC*	\$ 1.33	\$ 2.43	\$ 2.88	\$ 3.40
	<u>\$ 27.85</u>	<u>\$ 34.86</u>	<u>\$ 41.24</u>	<u>\$ 48.77</u>
<b><u>Wastewater BDP Reductions</u></b>				
Wastewater Base Charge Discount	\$ 7.32	\$ 7.42	\$ 3.98	\$ 4.63
Wastewater BDP Bill Credit	\$ -	\$ -	\$ 5.00	\$ 6.00
Discount on IIC	\$ -	\$ -	\$ 0.56	\$ 0.57
Discount on CAC	\$ -	\$ -	\$ 0.51	\$ 0.60
Reduction of DSIC*	\$ 0.37	\$ 0.56	\$ 0.75	\$ 0.89
	<u>\$ 7.69</u>	<u>\$ 7.98</u>	<u>\$ 10.80</u>	<u>\$ 12.69</u>
<b><u>Stormwater BDP Reductions</u></b>				
Stormwater Discount	\$ 6.76	\$ 8.72	\$ 10.32	\$ 12.07
Discount on CAC	\$ -	\$ -	\$ 0.36	\$ 0.42
	<u>\$ 6.76</u>	<u>\$ 8.72</u>	<u>\$ 10.68</u>	<u>\$ 12.49</u>
<b>Proposed Program: Total BDP Reductions</b>	<b>\$ 42.29</b>	<b>\$ 51.56</b>	<b>\$ 62.72</b>	<b>\$ 73.94</b>

\*DSIC cost is a percentage of total bill. If the total bill is reduced, the DSIC charge is reduced, providing additional benefit.

- 1 The Table below shows the comparison of the resulting water, wastewater, stormwater cost in
- 2 relation to income under the current and new proposed structure for households at 50% of the
- 3 FPL, 100% of the FPL and 150% of the FPL for 2-person, 4-person and 6-person households.

	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>
	FTY	FPFTY	Proposed	Proposed
<b>50% FPL Scenario</b>				
Monthly Bill	\$ 22.67	\$ 26.70	\$ 31.16	\$ 36.16
<b>Annual Bill*</b>	<b>\$ 272.07</b>	<b>\$ 320.34</b>	<b>\$ 373.88</b>	<b>\$ 433.91</b>
<b>Annual Income at 50%FPL**</b>				
2-person Household	\$ 9,860.00	\$ 9,860.00	\$ 9,860.00	\$ 9,860.00
<i>Bill as % of Income</i>	2.8%	3.2%	3.8%	4.4%
4-person Household	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00	\$ 15,000.00
<i>Bill as % of Income</i>	1.8%	2.1%	2.5%	2.9%
6-person Household	\$ 20,140.00	\$ 20,140.00	\$ 20,140.00	\$ 20,140.00
<i>Bill as % of Income</i>	1.4%	1.6%	1.9%	2.2%
<b>100% FPL Scenario</b>				
Monthly Bill	\$ 44.15	\$ 51.85	\$ 60.83	\$ 72.17
<b>Annual Bill</b>	<b>\$ 529.74</b>	<b>\$ 622.20</b>	<b>\$ 729.92</b>	<b>\$ 866.06</b>
<b>Annual Income at 100%FPL**</b>				
2-person Household	\$ 19,720.00	\$ 19,720.00	\$ 19,720.00	\$ 19,720.00
<i>Bill as % of Income</i>	2.7%	3.2%	3.7%	4.4%
4-person Household	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00
<i>Bill as % of Income</i>	1.8%	2.1%	2.4%	2.9%
6-person Household	\$ 40,280.00	\$ 40,280.00	\$ 40,280.00	\$ 40,280.00
<i>Bill as % of Income</i>	1.3%	1.5%	1.8%	2.2%
<b>150% FPL Scenario</b>				
Monthly Bill	\$ 44.15	\$ 51.85	\$ 60.83	\$ 72.17
<b>Annual Bill</b>	<b>\$ 529.74</b>	<b>\$ 622.20</b>	<b>\$ 729.92</b>	<b>\$ 866.06</b>
<b>Annual Income at 150%FPL**</b>				
2-person Household	\$ 29,580.00	\$ 29,580.00	\$ 29,580.00	\$ 29,580.00
<i>Bill as % of Income</i>	1.8%	2.1%	2.5%	2.9%
4-person Household	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00	\$ 45,000.00
<i>Bill as % of Income</i>	1.2%	1.4%	1.6%	1.9%
6-person Household	\$ 60,420.00	\$ 60,420.00	\$ 60,420.00	\$ 60,420.00
<i>Bill as % of Income</i>	0.9%	1.0%	1.2%	1.4%

\*Customers at 50% FPL or below receive an additional volumetric discount on water and wastewater charges

\*\* Assumes no change in income from 2023 through 2026

1 **Q. DID THESE RESULTS INFORM THE PROPOSED CHANGES TO THE BDP**  
 2 **YOU DESCRIBED ABOVE FOR IMPLEMENTATION IN 2025 ALONG WITH**  
 3 **THE RATE STRUCTURE CHANGE?**

4 A. Yes. As shown above, PWSA included the proposed changes to offset the rate structure  
 5 change and removal of the minimum allowance in 2025. In fact, customers receive an  
 6 increased benefit from the proposed program changes.

7 **4. Stormwater Customer Service Issues**

8 **Q. WHAT INFORMATION DID PWSA AGREE TO PROVIDE AS PART OF THE**  
 9 **LAST RATE CASE SETTLEMENT IN THIS FILING?**

10 A. PWSA agreed to provide the following information regarding Stormwater:

- 11 • Call statistics regarding stormwater charges and bill impacts;
- 12 • Number of disputes regarding stormwater charges;
- 13 • Number of customers in arrears for stormwater by customer class; and,
- 14 • Collections activities by type for customers with overdue stormwater charges.

15 **Q. WHAT WAS THE IMPACT IN 2022 OF THE NEWLY IMPLEMENTED**  
 16 **STORMWATER CHARGES ON CUSTOMER SERVICE, SPECIFICALLY THE**  
 17 **CONTACT CENTER?**

18 A. In 2022, PWSA handled 3,202 customer calls pertaining to stormwater inquiries, which  
 19 equates to hearing from 2.8% of its stormwater customer base. Detailed 2022 stormwater  
 20 customer call handling data can be found within PWSA Exhibit JAM-4. This data  
 21 illustrates that, in the first six months of stormwater charges appearing on customer's  
 22 bills, the Customer Service Contact Center yielded an average customer call handling rate  
 23 of 95.36%. From January through April 21, 2023, the Contact Center handled 468  
 24 stormwater-related calls from customers while maintaining an average call handling rate  
 25 for the stormwater queue of 94.4%. Detailed 2023 year-to-date stormwater customer call  
 26 handling data can be found within PWSA Exhibit JAM-8.

1 **Q. HOW MANY DISPUTES OF STORMWATER CHARGES HAS PWSA**  
 2 **HANDLED?**

3 A. PWSA handled 58 disputes filed by customers challenging the calculation of their  
 4 stormwater charges in 2022. In the first three and a half months of 2023, PWSA  
 5 processed 24 stormwater disputes.

6 **Q. WHAT IS THE STATUS OF THE COLLECTION OF STORMWATER**  
 7 **CHARGES?**

8 A. To date, 23,994 customers carry a balance that includes unpaid stormwater charges. Of  
 9 these accounts, 7,023 customers are on an active payment plan. Excluding those  
 10 customers who are making monthly payments to reduce their arrearages, the number of  
 11 customers with outstanding stormwater charges equates to 15% of PWSA’s stormwater  
 12 customer base. Of this number, only 2,505 carry balances that are  $\geq$  \$100.00, which is  
 13 PWSA’s lien threshold due to the fee assessed by the County of Allegheny for PWSA to  
 14 file a lien. Please see the below table for the breakdown of these charges by customer  
 15 class.

<b>Customer Class</b>	<b>Number of Stormwater Accounts Past Due</b>	<b>Dollars Due</b>
<b>Residential</b>	19,653	\$925,421.12
<b>Commercial</b>	2,700	\$805,206.21
<b>Municipal</b>	1,641	\$652,708.95
<b>Totals</b>	23,994	\$2,383,336.28

16  
 17 The Collections section of Customer Service has employed the lien process as a means of  
 18 attempting to reduce these stormwater arrearages. See the lien process standard operating  
 19 procedure in PWSA Exhibit JAM-7. To date, PWSA Collections has issued notices of  
 20 intent to lien to 395 residential customers and 376 commercial customers.

1 **B. Line Repair and Conservation “LRC” Pilot Program**

2 **Q. CAN YOU PROVIDE THE CURRENT STATUS OF THE LRC PILOT?**

3 A. Yes. The request for proposals in the LRC pilot was released to the public on March 30,  
4 2023. It included this solicitation schedule:

Task	Date
Advertisement of RFP	03/30/23
Preproposal Meeting	04/04/23
Deadline for Questions	04/13/23
Proposals Due	04/27/23
Presentations	Week of May 15 <sup>th</sup>
Project Award	End of May 2023

5

6 **Q. WHAT WAS THE OUTCOME OF THE LRC PREPROPOSAL MEETING ON**  
7 **APRIL 4, 2023?**

8 A. PWSA held the preproposal meeting and had prepared the slides found at PWSA Exhibit  
9 JAM-10 to share with interested parties. Disappointingly, no potential bidders were in  
10 attendance. PWSA was left with the impression that the firms who had previously  
11 accessed the offering were apparently uninterested in bidding, as the preproposal meeting  
12 was listed as mandatory.

13 **Q. WHICH STEPS DID PWSA TAKE TO FURTHER SOLICIT INTEREST IN THE**  
14 **LRC RFP?**

15 A. Daniel T. Duffy, PE, Consultant to PWSA as LSLR Program Manager and Technical  
16 Advisor for the LRC selection committee, provided a contact within the County of  
17 Allegheny Plumbing Division who agreed to share the program offering with their  
18 network. I emailed the Post Gazette advertisement of the LRC RFP to the plumbing  
19 contact on April 4, 2023, and he confirmed receipt. On that same date, I also provided

1 the advertisement to Sarah Viszneki, PGH2O Cares Coordinator, who agreed to share the  
2 offering with her network of community based organizations. On April 24, 2023, I  
3 shared the lack of interested bidders in this RFP with the collaborative of low income  
4 advocates who are participating in meetings to identify data to be tracked throughout the  
5 Pilot. These advocates stated that they also would share the advertisement of this  
6 opportunity with their networks. I provided the advertisement to the advocates following  
7 that April meeting.

8 **Q. IS PWSA PROCUREMENT EXTENDING THE SOLICITATION SCHEDULE**  
9 **OF THE LRC RFP?**

10 A. Yes, the solicitation schedule has been extended to allow questions to be submitted  
11 through May 9, 2023 with proposals now due on May 23, 2023. Additionally, an  
12 informational preproposal meeting was offered by PWSA on May 2, 2023, and two  
13 interested bidders attended. The potential bidders were engaged throughout the  
14 presentation and asked thoughtful questions about the Pilot.

15 **Q. CAN YOU EXPAND UPON THE DEVELOPMENT OF DATA TRACKING IN**  
16 **ADVANCE OF THE LRC PILOT LAUNCH?**

17 A. Yes. In addition to working with PWSA Procurement to issue the RFP and designing the  
18 preproposal meeting slides, I have been gathering the data tracking requirements with a  
19 sub-group of members of the Low Income Assistance Advisory Committee. Our initial  
20 meeting was held on March 30, 2023, and our second meeting was held on April 24,  
21 2023. We have made good progress in our efforts to determine which data should be  
22 captured and analyzed throughout the program. I am currently organizing our working  
23 document and plan to issue that to the group for feedback and/or acceptance. Lastly, I  
24 have met with PWSA Legal to launch the formation of the agreement and other materials

1 that will be necessary to conduct work on customers' private plumbing with a July 2023  
2 launch in mind.

3 **Q. WHAT COMMITMENTS DID PWSA MAKE AS PART OF THE LRC**  
4 **SETTLEMENT PERTAINING TO THIS RATE CASE FILING?**

5 A. PWSA agreed to share an evaluation of the LRC pilot and to make a proposal for the  
6 future of the program.<sup>16</sup>

7 **Q. IS PWSA ABLE TO DO THAT WITH THIS FILING?**

8 A. No; as I explained previously, we are still in the process of implementing the LRC pilot  
9 and it will not likely be underway for a sufficient amount of time to perform the data  
10 tracking necessary to make an evaluation in the course of this base rate proceeding.

11 **Q. HOW DOES PWSA PROPOSE TO ADDRESS THE FUTURE OF THE LRC?**

12 A. Since we are unable to propose the future for the LRC as part of this filing, and  
13 recognizing that if the Commission approves our request here, PWSA would not  
14 potentially be filing the next rate case until 2026, our recommendation is that we submit a  
15 filing with the Commission once we have evaluated the Pilot LRC and propose our  
16 recommendations for the future of the program in that filing. As I testified previously, if  
17 our Customer Assistance Charge is approved as proposed, then the cost recovery  
18 mechanism would be in place to fund any proposal to continue the LRC, and the parties  
19 could focus on the evaluation of the Pilot and the best path forward.

---

<sup>16</sup> *Petition of The Pittsburgh Water and Sewer Authority for Pilot Private Service Line Leak Repair and Expanded Conservation Program for Eligible Low Income Customers and Authorization to Track Costs As a Regulatory Asset for Future Base Rate Recovery*, Docket No. P-2022-3030253, Final Order adopting Recommended Decision entered March 2, 2023. (Adopting Settlement Section A.4.b)



1 **V. WATER, WASTEWATER AND STORMWATER TARIFF REVISIONS**

2 **Q. IS PWSA PROPOSING REVISIONS TO ITS WATER AND WASTEWATER**  
 3 **TARIFFS AS PART OF THIS RATE CASE?**

4 A. Yes, A complete list of tariff modifications can be found in the List of Changes Made in  
 5 each Tariff Supplement section as provided in Proposed Tariff Supplement No. 12 to  
 6 PWSA Water Tariff – Pa P.U.C. No. 1 provided in Exhibits JAM-11 (clean) and JAM-12  
 7 (red-lined), Proposed Tariff Supplement No. 11 to PWSA Wastewater Tariff – Pa P.U.C.  
 8 No. 1 provided in Exhibits JAM-13 (clean) and JAM-14 (red-lined) and Proposed Tariff  
 9 Supplement No. 3 to PWSA Stormwater Tariff – Pa P.U.C. No. 1 provided in Exhibits  
 10 JAM-15 (clean) and JAM-16 (red-line). The proposed effective date of the tariff changes  
 11 is July 8, 2023. In sum, the proposed changes include the new rates for the three year  
 12 period, an increase in the cap for the DSIC rate, the two new reconcilable charges I  
 13 discussed earlier, the IIC and CAC, and revisions to the Bill Discount Program. In  
 14 addition, the Stormwater Tariff includes revised text regarding the Stormwater Credits  
 15 program as detailed by Mr. Readling.

16 **A. Customer Notice Of Rate Filing To Existing And Future Customers**

17 **Q. HOW IS PWSA PROVIDING NOTICE OF THIS RATE FILING TO ITS**  
 18 **EXISTING CUSTOMERS?**

19 A. PWSA will provide customers notices of this rate filing consistent with the Commission’s  
 20 regulations. A copy of the Notice of Proposed Rate Changes that PWSA is providing to  
 21 existing customers is included in Volume 1, Tab 2 of the Rate Filing Package. I would  
 22 note, too, that this version of the customer notice includes the language as agreed to in  
 23 PWSA’s last rate case settlement namely noting that the rates are exclusive of  
 24 ALCOSAN and referring to wastewater conveyance rather than simply wastewater.

1           **B. Display of Multi-Year Rates**

2   **Q.   HOW IS PWSA DISPLAYING THE PROPOSED RATE INCREASE FOR YEAR**  
3   **1, YEAR 2, AND YEAR 3?**

4   A.   In its proposed tariff supplement, PWSA presents the rates for all three years noting that  
5       effective 2025 the minimum charge is removed and a new base charge becomes effective.  
6       Regarding the newly proposed IIC and CAC, the charge for 2024 is listed as \$0.00  
7       because the charges will not be in effect until 2025. As proposed, PWSA will submit  
8       supporting schedules for the rates to be implemented in 2025 and thereafter.

9   **Q.   HOW DOES PWSA PROPOSE TO PROVIDE CUSTOMER NOTICE PRIOR TO**  
10 **THE IMPOSITION OF NEW RATES?**

11 A.   Consistent with past practice, upon final approval from the Commission of PWSA's  
12       tariffs, PWSA provides customers with notice through bill messaging, website content,  
13       and press release. Because years 2 and 3 rate changes would be part of an already  
14       approved Commission process, PWSA's customer notice process would propose to notify  
15       customers of the three year phase in pursuant to bill notices when it implements the first  
16       year's rates with a reminder notice in the same manner when it implements the second  
17       and third year's rates. Regarding the IIC and CAC, PWSA proposes to make semi-  
18       annual filings with the Commission to support the rates and propose the level of the new  
19       charges consistent to be implemented in a tariff supplement.

20 **VI. CONCLUSION**

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

22 A.   Yes; however, I do reserve the right to supplement this testimony as may be appropriate.

# Exhibit JAM-1

**2022 Compliance Plan Stage 2 Settlement Terms**

Citation	Page	Owner	Description	Due Date - Delivery Method
III.A	10	Brittany Schacht	Adopt the regulatory definitions of Customer, Applicant, Occupant, Unauthorized Use of Utility Service, and Person.	11/14/22 - Share updated Notices and Training Materials with J.M. for review by the Parties in the settlement.
III.B.1.a.ii	10	Tishla Jones	Revise the Tenant/Owner form to the specifications given in (a) through (d).	11/14/22 - Share updated the Tenant/Owner form with J.M. for review by the Parties in the settlement.
III.B.1.a.iii	10-11	Tishla Jones	Accept other proof of tenancy.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.B.1.b.i-v	11-12	Tishla Jones	Notify tenant that owner receives copies of bills and notices and develop an opt-out procedure.	11/14/22 - Share updated Notices and Training Materials with J.M. for review by the Parties in the settlement.
III.B.1.c.i-ii	12	Tishla Jones	Remove the approval of a tenant by the property owner and create a Property Owner letter.	11/14/22 - Share new Property Owner letter with J.M. for review by the Parties in the settlement.
III.B.1.d.i-ii	12-13	Tishla Jones	Create a Tenant Welcome letter.	11/14/22 - Share new Tenant Welcome letter with J.M. for review by the Parties in the settlement.
III.B.2.a-b	13	Zachary Larimer	Ensure that tenants are vetted for customer assistance programs.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.B.3.a-c	13	Sharon Gottschalk	Ensure rights of tenants under DSLPA who do not become customers.	11/14/22 - Share updated Training Materials and DSLPA flyer with J.M. for review by the parties in the settlement.
III.B.4.a-c	13-14	Brittany Schacht	Develop process to educate, identify, protect victims of domestic violence.	11/14/22 - Share updated Training Materials, Tenant Welcome letter, and Customer Advantage portal content with J.M. for review by Parties in the settlement.
III.C.1	14	Sharon Gottschalk	Remove the requirement to satisfy account balance to become a residential customer and eliminate the Assumption Affidavit.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.D.1	14	Sharon Gottschalk	Add a 14 day follow-up period by Collections personnel after a successful Personal Contact Attempt.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.E.1.a	15	Tracy Willy	Adjust usage occurring after a customer requested shut.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.E.1.b	15	Kenneth Thurston	Proactively identify, repair/replace inoperable curb boxes.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.E.2	15	Tracy Willy	Develop process to identify and address with customers any known curb box tampering.	11/14/22 - Share updated Notices and Training Materials with J.M. for review by the Parties in the settlement.
III.E.3	15	Kenneth Thurston	Quantify costs to PWSA to correct curb box tampering by the customer and work with Legal to recover costs from the customer.	11/14/22 - Share updated Notices and Training Materials with J.M. for review by the Parties in the settlement.
III.F.1-2	15	Brittany Schacht	Provide additional Waste of Water Notice to property address and advise tenants to contact PWSA if they are working with the owner to make repairs.	11/14/22 - Share updated Notices and Training Materials with J.M. for review by the Parties in the settlement.
III.G	16	Brittany Schacht	Use reasonable efforts to avoid termination due to property owner refusal with LSR notices and initiate discussion with CLRAC members.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
III.H	16-18	Julie Mechling	Draft multi-faceted Collections Plan.	8/14/22 - Convene meeting with the Parties to review and discuss the draft plan.
III.I	18-19	Sharon Gottschalk	Continue to pursue debt collection via the lien process and review the Lien SOP for possible updates per these terms.	11/14/22 - Share updated Lien SOP with J.M. for review by the Parties in the settlement.
III.J	19	Eckert Seamans	Draft Compliance Tariffs.	8/29/22 - Share updated Compliance Tariffs with J.M. for review by the Parties in the settlement.
III.K	19-20	Eckert Seamans	File an updated Stage 2 Compliance Plan.	9/14/22 - File updated Stage 2 Compliance Plan.
III.L	20-21	Julie Mechling	Ensure that all listed Notices have been updated consistent with the settlement language.	11/14/22 - Share updated Notices for review by the Parties in the settlement.
III.M.1-2	21	Julie Mechling	Ensure that all affected Training Materials have been updated consistent with the settlement language.	11/14/22 - Share updated Training Materials for review by the Parties in the settlement.
III.M.3.a-b	21	Sharon Gottschalk	Strengthen Training Materials with respect to medically vulnerable tenants and medical certificate renewals.	11/14/22 - Share updated Training Materials with J.M. for review by the Parties in the settlement.
BCS Edit		Sharon Gottschalk	Develop a letter that will include the required contents of 52 PA Code § 56.36(b)(1) to be sent to any applicant denied service due to outstanding balance.	11/14/22 - Share new letter with J.M. for review by the Parties in the settlement.

- = Outstanding
- = In Progress
- = Complete

Timing	Action
<i>TBD</i>	<i>Commission Final Order</i>
Within 30 days of Commission Final Order	PWSA shares draft Collection Plan with parties, convenes collaborative to discuss
Within 45 days of Commission Final Order	PWSA uses best efforts to draft tariffs and share drafts with parties
Within 60 days of Commission Final Order	PWSA files Updated Stage 2 Plan (with Collections Plan) and Compliance Tariffs
Within 30 days after Compliance filing	Initial Comment period for all parties
With 15 days after Initial Comment Period	Reply Comment period for all parties
<i>TBD</i>	<i>Final Commission Action Regarding Compliance Filing</i>
30 days after Final Commission Action Regarding Compliance Filing	PWSA shares proposed revisions to customer notices and its updated training materials with parties

# Exhibit JAM-2



## PWSA Standard Operating Procedure

**Division:** Customer Service

**Scope:** How to Work the Dunning Process in SAP

**Job Title:** Customer Service Representative II (CSR II), Customer Service Representative III (CSR III), Collections Analyst, Senior Collections Coordinator

**Subject:** Dunning Process in SAP

The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator begins the Dunning Process in SAP with Capacity Planning. During this stage of the process, all accounts are verified through the system to locate payments that were posted the day before to ensure that those accounts that are *not* eligible for termination of service are not displayed. After Capacity Planning is complete, accounts that are eligible to receive termination of service notices are determined based on high delinquent dollar amounts. SAP locates these accounts based on their location class. The location class will determine if the account receives a 10-day termination of service notice or a 37-day termination of service notice.

To obtain the 10-day termination notices:

1. Choose Capacity Planning.
2. Select the 10-day option.
3. Add the total amount of notices desired to generate.
4. Click Save.

After an overnight batch runs, the process is complete. SAP then uploads the eligible accounts to Document Advantage. Notices are automatically transferred to KUBRA, PWSA's print and mail vendor. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator verifies, reviews, and approves the notices in KUBRA's iDox application. KUBRA will then mail the notices to PWSA customers.



To obtain the 37-day termination notices:

1. Choose Capacity Planning.
2. Select the 37-day option.
3. Add the total amount of notices desired to generate.
4. Click Save.

After an overnight batch runs, the process is complete. SAP then creates an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file, and then they open the file of the 37-day notices. The next step is to create a mail merge. Once the mail merge is complete, they print and mail the letters for the certified and regular mailings.

On the 8<sup>th</sup> day, the CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator creates a file of accounts that are carrying an unaddressed delinquent balance, making them eligible for a call or posting of the 10-day termination notice. They then update the Capacity Planning and add the total number of postings under the correct 3-day option. After an overnight batch runs, this process is complete. SAP will create an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file, and then they open the file of the 3-day notices. The next step is to create a mail merge. Once the mail merge is complete, they print the postings at the Howard Street field office or create a .csv file for outbound calling.

For step two of the 37-day notice process, update the capacity total, and an overnight batch will run. SAP will create an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file. They then go to the file of 30-day notices and create a mail merge, adding a column with the tenant payment amount. Once this process is complete, print the 30-day postings to the Howard Street field office. For the second 30-day postings, update the capacity total, and an overnight batch will run. SAP will create an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file, and then they open the file of the 37-day notices. They then go to the file of the 30-day notices and create a mail merge, adding a column with the tenant payment amount. They remove any accounts with past due charges paid in full or with tenant payments and print the postings at the Howard Street field office for a second 30-day posting on the next day.



During the winter months from December 1<sup>st</sup> through March 31<sup>st</sup>, select the Capacity Planning option to create the 48-hour posting notice to identify those accounts that are eligible for a 10-day termination of service notice. Update the amount for the capacity. After an overnight batch runs, this process is complete. SAP will create an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file. The next step is to create a mail merge. Once the mail merge is complete, print the postings at the Howard Street field office.

For the 10-day process and the 37-day process of residential accounts eligible for termination of service notices, PWSA Field Technicians attempt to make personal contact with the customers on the day of the termination. In SAP, update the capacity. After an overnight batch runs, this process is complete. SAP will create an in-house print file of those eligible accounts. The CSR II, CSR III, Collections Analyst, or Senior Collections Coordinator downloads, exports, and names the file. The next step is to create a mail merge. Once the mail merge is complete, print the postings at the Howard Street field office.



# Exhibit JAM-3

Survey Question	Average	Score of 5	Score of 4	Score of 3	Score of 2	Score of 1	No Response
Question 1	4.666228301	20176	752	257	160	1467	0
Question 2	4.625449479	18681	1372	765	289	1141	564
Question 3	4.678809747	18159	0	742	306	1024	2581
Question 4	4.365354104	14074	2982	2079	596	1068	2013
Question 5	4.259651245	12361	3317	2271	741	1152	2970

CSR Focused (Q1 - Q3)	4.656829176
PWSA Focused (Q4 and Q5)	4.312502674

# Exhibit JAM-4



# Customer Assistance Programs

## Which are right for you?

Exhibit JAM-4

Join the thousands of customers who are receiving assistance with their monthly bills! Our Customer Assistance Programs provide financial relief for income-qualified, residential customers who are having difficulty paying their PGH2O bill. Many options are available, and no one should have to choose between paying their water/wastewater bill and other essential expenses. To discuss which options are right for you, please call our PGH2O Cares team at **412-255-2457** or e-mail the team at [cares@pgh2o.com](mailto:cares@pgh2o.com).

**Bill Discount Program (BDP):** For customers who are at or below 150% of the Federal Poverty Level (FPL), your first 1,000 gallons of water and wastewater conveyance service is free, and you pay only 15% of the monthly stormwater fee. For customers who are at or below 50% of the FPL, you also receive a 50% reduction of your usage over 1,000 gallons. If you qualify, carry a balance, and are on an active payment plan, you receive a \$30 monthly credit for each on-time payment to reduce your past due charges.

**Hardship Grants + Clean Water Assistance Fund (CWAFF):** Customers who are at or below 150% of the FPL can qualify for a grant of up to \$300. Our Cares team can also assist you with applying for the ALCOSAN Clean Water Assistance Fund grant.

**Payment Arrangements with Arrearage Forgiveness:** Income-based payment arrangements are available to help residential customers and small business owners pay down high balances without accruing late charges. Residential customers who are in the Bill Discount Program and have a past due balance will receive a \$30 credit for each on-time payment while enrolled in an active payment plan.

**Winter Moratorium (WM):** Customers who are at or below 300% of the FPL can qualify for protection from termination of water service in the winter months of December through March.

**Lead Service Line Replacement Reimbursement Program (LSLRRP):** When you choose to proactively hire a plumber to replace a lead service line, you can qualify for reimbursement of some of the cost. For more information, please visit [lead.pgh2o.com/leadreimbursement](http://lead.pgh2o.com/leadreimbursement).



### 2023 Annual Income Guidelines

People in Household	50% of FPL	150% of FPL	300% of FPL
1	\$7,290	\$21,870	\$43,740
2	\$9,860	\$29,580	\$59,160
3	\$12,430	\$37,290	\$74,580
4	\$15,000	\$45,000	\$90,000
5	\$17,570	\$52,710	\$105,420
6	\$20,140	\$60,420	\$120,840
7	\$22,710	\$68,130	\$136,260
8	\$25,280	\$75,840	\$151,680
For each additional household member add:	\$2,570	\$7,710	\$15,420

To learn more about these programs and other assistance options, please visit [www.pgh2o.com/CAP](http://www.pgh2o.com/CAP).



Penn Liberty Plaza 1  
1200 Penn Avenue  
Pittsburgh, PA 15222  
[www.pgh2o.com](http://www.pgh2o.com)

**Customer Service\***  
T 412.255.2423 (Choose Option #5)  
F 412.255.2475  
[info@pgh2o.com](mailto:info@pgh2o.com)

**Emergency Dispatch\***  
T 412.255.2423 (Choose Option #1)  
Available 24/7

- Translation services available |
- Servicios de traducción disponibles |
- 提供翻译服务 | • Доступные услуги перевода |
- قرفونتم تمچرئلا تامادخ



# Programas de asistencia al cliente

## ¿Cuál es el adecuado para usted?

Exhibit JAM-4

¡Únase a los miles de clientes que reciben ayuda con sus facturas mensuales! Nuestros programas de asistencia al cliente brindan alivio financiero a los clientes residenciales que reúnen los requisitos de ingresos y tienen dificultades para pagar su factura de PGH2O. Hay muchas opciones disponibles y nadie debería tener que elegir entre pagar su factura de agua/aguas residuales y otros gastos esenciales. Para analizar qué opciones se adaptan mejor a sus necesidades, llame a nuestro equipo PGH2O Cares al **412-255-2457** o envíe un correo electrónico a [cares@pgh2o.com](mailto:cares@pgh2o.com).

**Programa de Descuento de Facturas (BDP):** En el caso de los clientes que se sitúan en el 150 % o por debajo de este porcentaje del Nivel Federal de Pobreza (FPL), los primeros 1,000 galones de agua y el servicio de transporte de aguas residuales son gratuitos, y solo pagan el 15 % de la cuota mensual de aguas pluviales. Los clientes que se sitúan en el 50 % o por debajo de este porcentaje del FPL también obtienen una reducción del 50 % para el consumo superior a 1,000 galones. Si califica, tiene un saldo pendiente y está en un plan de pago activo, recibirá un crédito mensual de \$30 por cada pago que realice a tiempo para reducir sus cargos vencidos.

**Subsidios por dificultades extremas + Fondo de Asistencia de Agua Limpia (CWAFF):** Los clientes que se sitúan en el 150 % o por debajo de este porcentaje del FPL pueden calificar para recibir un subsidio de hasta \$300. Nuestro equipo Cares también puede ayudarlo a solicitar el subsidio del Fondo de Asistencia de Agua Limpia de ALCOSAN.

**Convenios de pago con condonación de atrasos:** Hay disponibles convenios de pago basados en los ingresos para ayudar a los clientes residenciales y a los propietarios de pequeñas empresas a pagar en cuotas saldos altos sin acumular cargos por mora. Los clientes residenciales que estén en el Programa de Descuento de Facturas y tengan un saldo vencido recibirán un crédito de \$30 por cada pago que realicen a tiempo mientras estén inscritos en un plan de pago activo.

**Moratoria de invierno (WM):** Los clientes que se sitúan en el 300 % o por debajo de este porcentaje del FPL pueden calificar para obtener protección contra la finalización del servicio de agua en los meses invernales de diciembre a marzo.

**Programa de reembolso por sustitución de línea de servicio de plomo (LSLRRP):** Si opta por contratar proactivamente a un plomero para sustituir una línea (tubería) de servicio de plomo, puede calificar para un reembolso por parte del costo. Para obtener más información, visite [lead.pgh2o.com/leadreimbursement](http://lead.pgh2o.com/leadreimbursement).



### Pautas de ingresos anuales para 2023

Personas en el hogar	50 % del FPL	150 % del FPL	300 % del FPL
1	\$7,290	\$21,870	\$43,740
2	\$9,860	\$29,580	\$59,160
3	\$12,430	\$37,290	\$74,580
4	\$15,000	\$45,000	\$90,000
5	\$17,570	\$52,710	\$105,420
6	\$20,140	\$60,420	\$120,840
7	\$22,710	\$68,130	\$136,260
8	\$25,280	\$75,840	\$151,680
Por cada miembro adicional del hogar agregue:	\$2,570	\$7,710	\$15,420

Para obtener más información sobre estos programas y otras opciones de ayuda, visite [www.pgh2o.com/CAP](http://www.pgh2o.com/CAP).



Penn Liberty Plaza 1  
1200 Penn Avenue  
Pittsburgh, PA 15222  
[www.pgh2o.com](http://www.pgh2o.com)

**Servicio al Cliente\***  
T 412-255-2423 (Elija la opción 5)  
F 412-255-2475  
[info@pgh2o.com](mailto:info@pgh2o.com)

**Despacho de Emergencias\***  
T 412-255-2423 (Elija la opción 1)  
Disponibles las 24 horas del día,  
los 7 días de la semana

• Translation services available |  
• Servicios de traducción disponibles |  
• 提供翻译服务 | • Доступные услуги перевода |  
• خدمات الترجمة متوفرة

# Exhibit JAM-5

Is the customer already aware of active leaks in the property?	Count
NO	1,778
YES	14
Total Service Orders	1,792

Did you share any leak information with the customer?	Count
NO	3,913
YES	96
Total Service Orders	4,009

Did you provide any leak detection tablets to the customer?	Count
NO	3,953
YES	56
Total Service Orders	4,009

Number of leak detection tablets given	Count
9	1
5	1
4	7
3	13
2	19
1	14
0	3,850
No Answer	104
Total Leak Detection Tablets	133
Total Service Orders	4,009

Did you provide any leak detection tip cards to the customer?	Count
NO	2,391
YES	52
No Answer	3
Total Service Orders	2,446

Number of leak detection tip cards given	Count
4	1
3	1
2	15
1	35
0	2,391
No Answer	3
Total Leak Detection Tip Cards	72
Total Service Orders	2,446

# Exhibit JAM-6



# PWSA Standard Operating Procedure

**Division:** Customer Service

**Scope:** How to Run the Continuous Consumption Report

**Job Title:** RNI Data Analyst, AMI and Billing Analyst, AMI and Billing Manager

**Subject:** Continuous Consumption Report

Daily Continuous Consumption reports are generated in Sensus Analytics and are reviewed by the RNI Data Analyst, AMI and Billing Analyst, and/or the AMI and Billing Manager (<https://pwsa.sensus-analytics.com>). These reports must be saved in the shared drive via this link: <S:\Customer Service\BILLING AND METERING DEPARTMENT\Billing files\Continuous Consumption Report>.

The report criteria must *exclude* cycle/portion 77 and *include* only 5/8" and 3/4" meters. Filter the output to view accounts where the hourly average consumption is 150 gallons or more over the most recent 72 hours. Research these accounts to determine if the spike in consumption could be the result of a leak at the property. The threshold of 150 gallons is used to make certain that potential leaking toilets are discovered. The average household toilet holds 1.5 gallons and has a 30 second tank refill time. Leaking toilets would average out to about 3 gallons per minute or 180 gallons per hour. **Please note that during the winter months, continuous usage of 150 gallons or more for any amount of time will be reviewed. Additional assistance from AMI personnel can be requested to review and contact customers.**

Each account should be thoroughly reviewed, including researching the usage history, account comments, and service orders, to determine which of the following, or any combination thereof, should be performed:

1. Call the customer to advise them of the reported higher than usual consumption and provide them with ways to check the property for leaks.
2. After you speak with the customer, or when you are unable to speak with the customer, mail the letter titled, "High Consumption Notice". Letters must be saved in the subfolder at the following path: <S:\Customer Service\BILLING AND METERING DEPARTMENT\Billing files\Continuous Consumption Report>.
3. If our records indicate that a property is vacant, or if the usage is over 4,000 gallons per day and you cannot reach the customer, issue a request for an emergency shut at the curb via Dispatch at [dispatch@pgh2o.com](mailto:dispatch@pgh2o.com) or 412-255-2423 and choose Option #1.

# Exhibit JAM-7

## Queue Performance by Month

[3300 ICP] P009 - STORMWATER

Activity period	ACD calls offered	ACD calls handled	Calls abandoned (short)	Calls abandoned (long)	Calls interflowed	Average speed of answer (hh:mm:ss)	Average delay to abandon (hh:mm:ss)	Average delay to interflow (hh:mm:ss)	ACD handling time (hh:mm:ss)	Average ACD handling time (hh:mm:ss)	Abandon %	Service level %	Answer %
January	281	269	1	12	0	00:01:13	00:03:24	00:00:00	35:16:16	00:07:52	4.3%	85.1%	95.7%
February	427	409	5	18	0	00:01:09	00:02:57	00:00:00	47:48:02	00:07:01	4.2%	78.2%	95.8%
March	753	723	1	27	3	00:01:30	00:01:40	00:02:59	91:47:20	00:07:37	3.6%	71.7%	96.0%
April	509	485	0	23	1	00:01:25	00:02:29	00:04:20	58:46:32	00:07:16	4.5%	72.3%	95.3%
May	377	363	0	14	0	00:01:21	00:03:52	00:00:00	41:57:19	00:06:56	3.7%	76.1%	96.3%
June	233	217	1	16	0	00:01:22	00:02:31	00:00:00	26:38:38	00:07:22	6.9%	73.8%	93.1%
July	226	198	1	28	0	00:02:02	00:01:50	00:00:00	23:39:01	00:07:10	12.4%	59.7%	87.6%
August	161	123	0	38	0	00:06:04	00:06:59	00:00:00	12:19:10	00:06:01	23.6%	37.3%	76.4%
September	209	139	1	70	0	00:08:08	00:05:55	00:00:00	19:38:45	00:08:29	33.5%	23.4%	66.5%
October	234	158	3	76	0	00:07:53	00:06:48	00:00:00	26:00:19	00:09:53	32.5%	26.1%	67.5%
November	163	54	0	109	0	00:02:44	00:02:48	00:00:00	07:11:35	00:08:00	66.9%	60.1%	33.1%
December	103	64	0	39	0	00:03:05	00:01:59	00:00:00	07:48:01	00:07:19	37.9%	62.1%	62.1%
<b>Totals</b>	<b>3676</b>	<b>3202</b>	<b>13</b>	<b>470</b>	<b>4</b>	<b>00:02:15</b>	<b>00:04:05</b>	<b>00:03:19</b>	<b>398:50:58</b>	<b>00:07:28</b>	<b>12.8%</b>	<b>65.5%</b>	<b>87.1%</b>

# Exhibit JAM-8

## Queue Performance by Month

[3300 ICP] P009 - STORMWATER

Activity period	ACD calls offered	ACD calls handled	Calls abandoned (short)	Calls abandoned (long)	Calls interflowed	Average speed of answer (hh:mm:ss)	Average delay to abandon (hh:mm:ss)	Average delay to interflow (hh:mm:ss)	ACD handling time (hh:mm:ss)	Average ACD handling time (hh:mm:ss)	Abandon %	Service level %	Answer %
January	100	95	1	5	0	00:02:17	00:06:37	00:00:00	15:46:23	00:09:58	5.0%	76.0%	95.0%
February	152	142	2	10	0	00:01:24	00:02:20	00:00:00	17:27:24	00:07:23	6.6%	72.4%	93.4%
March	143	137	1	3	3	00:00:52	00:00:23	00:02:59	17:50:24	00:07:49	2.1%	81.8%	95.8%
April	101	94	0	6	1	00:01:19	00:02:12	00:04:20	10:19:39	00:06:36	5.9%	69.3%	93.1%
<b>Totals</b>	<b>496</b>	<b>468</b>	<b>4</b>	<b>24</b>	<b>4</b>	<b>00:01:25</b>	<b>00:02:57</b>	<b>00:03:19</b>	<b>61:23:50</b>	<b>00:07:52</b>	<b>4.8%</b>	<b>75.2%</b>	<b>94.4%</b>

# Exhibit JAM-9

# PWSA Standard Operating Procedure

**Division:** Customer Service; Legal

**Scope:** How to Perfect a Lien Against a Property

**Job Title:** CSR 3; Paralegal

**Subject:** Lien Process

The Senior Customer Service Manager or Senior Collections Coordinator reviews accounts on the pending lien report in our Customer Information System (CIS) to determine if PWSA has exhausted all collections activities. The accounts are added to the lien spreadsheet located in the shared drive [\\fs1\Shared\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Liens \(version 1\).xlsx](\\fs1\Shared\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Liens (version 1).xlsx). A 30-day lien notice [S:\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Lien Letter \(30-day\) JQ.docx](S:\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Lien Letter (30-day) JQ.docx) is mailed via first class letter to customers and their mortgage holders whose debt has, at minimum, one of the following attributes:

- Debt over 4 years old that cannot be debited to the active account per PA PUC regulation
- Unpaid final bill
- Unpaid debt accrued by a tenant who moved out of the property
- Sewage-only account
- Flat/party line account
- Water provider is West View Water Authority (termination process is costly)
- High dollar account where PWSA has attempted termination and there is an inoperable curb box at the property
- Active bankruptcy
- Shut account

After 30 days, the accounts are researched for payment. If payment in full has not been made, a 10-day lien notice [\\fs1\Shared\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Lien Letter \(10-day\) JQ mail merge.docx](#) is mailed via first class letter.

After 10 days, the accounts are researched for payment. If payment in full has not been made, the row containing the delinquent account is highlighted on our lien spreadsheet [\\fs1\Shared\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Liens \(version 1\).xlsx](#).

The Paralegal files liens on the highlighted accounts electronically and sends the filing letter [S:\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\LIEN COVER LETTER TEMPLATE \(003\).docx](#) to the customer and mortgage holder, which states that the balance must be paid in full along with a \$78.00 filing fee. A lien filing fee is assessed by the County of Allegheny to The Pittsburgh Water and Sewer Authority in order to perfect the lien. The filing fee is then passed to the customer.

The Paralegal also adds the General Docket (GD) number and filing date to the lien spreadsheet [\\fs1\Shared\Customer Service\COLLECTIONS TERM LETTER FOLDER\Liens 2019\Liens \(version 1\).xlsx](#).

A Customer Service Representative 1 reviews the spreadsheet weekly to add the GD numbers to the associated accounts in the CIS.

Once payment in full is received, including payment of the lien filing fee, the GD number is emailed to the Paralegal with a request to electronically satisfy the lien.



# Exhibit JAM-10

# **Pilot Private Service Line Leak Repair and Expanded Conservation Program for Low-Income Customers**

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**PWSA Project No. 2023-008-OPS**

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*April 4, 2023*

# Agenda

- Introductions
- Schedule
- General Information
- Overview of Project
- Requirements
- Scope of Work



# Introductions

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## Key PWSA Staff

- Julie Mechling, Director of Customer Service
- Brittany Schacht, Deputy Director of Customer Service
- Susan Kemery, Senior Contract Specialist (Procurement)
- Emily Pontarelli, Senior Manager Performance
- Zachary Larimer, PUC Compliance Manager
- Sarah Viszneki, PGH2O Cares Coordinator

## Sign-In Sheet

- Please make sure everyone present signs in using the chat feature in Microsoft Teams. Note Contact Name, Company Name, email address, phone number and list if your company is certified as a MBE, WBE, DBE, SBE, VBE, and/or SDVBE.

# Schedule

Date	Activity
March 30, 2023	✓ Advertising
April 4, 2023	✓ Mandatory Pre-Proposal Meeting
April 13, 2023	✓ Deadline for questions
April 27, 2023	✓ Proposals Due
Week of May 15, 2023	✓ Presentations
June 2023	✓ Anticipated Construction Start Date
Until budget is expended	✓ Substantial Completion

# General Information

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- Items discussed during this meeting will be memorialized in an Addenda. All bidders must rely on published Addenda for official answers to questions that are not covered in the Bid Documents.
- Contractors shall ONLY contact the Procurement Department via the Bonfire Procurement Portal.
- Bid/Proposal Format: Vendors shall submit their bids/proposals in the Bonfire Procurement Portal per the instructions in the solicitation.

# General Information – Supplier Diversity Program

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- Includes MBE, WBE, SBE, VBE, DOBE, LGTBE
- Goal of 10% to 25%
- Complete the SDP Commitment Form
- If you are unable to meet the minimum goal of 10% you must complete the Good Faith Effort Waiver Request Form.

# General Information – Supplier Diversity Program

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- All bids/proposals must be accompanied with your backup documentation (email correspondence, bids/proposals received, certifications).
- Document your attempts (must be timely and reasonable) to engage sub participation.
- If you do not select a sub for which you received a quote, you must indicate your reason.



# Overview of Project

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- PWSA has remained committed to increasing enrollment in its customer assistance programs for low-income, residential customers and to serving as mindful stewards of our water system. These commitments include assisting all of PWSA's customers to conserve water as a vital resource through an education campaign as well as the availability of various tools and information about the benefits of conservation.
- On March 2, 2023, the Pennsylvania Public Utility Commission approved PWSA's Petition, via settlement, for a Pilot Private Service Line Leak Repair and Expanded Conservation Program for Low-Income Customers.

# Requirements

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- A. The Bidder must retain on staff licensed journeymen plumbers who are working for a master plumber.
- B. The Bidder must ensure adequate staffing to perform work in ≈300 eligible customer's homes within 24 hours of a notice of an internal leak on exposed plumbing/one toilet/one showerhead.
- C. The Bidder must provide wi-fi enabled tablets and retain staff who are capable of data entry into PWSA's work order and asset management application.
- D. The Bidder must retain staff capable of educating PWSA residential, low-income customers on conservation in the home.
- E. The Bidder must retain staff capable of instructing PWSA residential, low-income customers on how to create a username and password, navigate, and set usage alerts in the Customer Advantage portal ([myaccount@pgh2o.com](mailto:myaccount@pgh2o.com)).

# Scope of Work

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- The Pilot Private Service Line Leak Repair and Expanded Conservation Program for Low-Income Customers has a not-to-exceed budget of \$324,084.
- The bidder must be able to provide the following services within 24 hours to Pittsburgh Water and Sewer Authority (PWSA) customers in the city of Pittsburgh and borough of Millvale who are low-income, residential customers with program eligibility verified by the PGH2O Cares team and where the owner has signed an agreement for work to be performed in the property.
  - Repair of exposed plumbing with materials purchased by the bidder
  - Replacement of showerhead with low flow showerhead purchased by the bidder
  - Replacement of toilet with low flow toilet purchased by the bidder
  - Installation of two faucet aerators purchased by the bidder
  - Above services may not exceed \$1,356 for any property
  - Education on conservation in the home and the Customer Advantage portal with materials and training provided by PWSA

# Scope of Work (continued)

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The bidder is required to provide:

- Wi-fi enabled tablets for data collection in PWSA's work order and asset management application with training provided by PWSA
- A detailed safety plan for all work to be performed in PWSA customers' homes
- Criminal background check results for all employees who will be working in customers' homes
- An on-site, pre-repair estimate to determine 1) if the service line inside the property is lead, and 2) if the costs to repair the leaking plumbing/device will not exceed \$1,356
- Timely communication with the PGH2O Cares team
- Invoicing to PWSA that is by item, i.e., plumbing repair, low-flow showerhead installation, low-flow toilet installation, faucet aerator installation
- A warranty period of no less than one year for all plumbing repairs, device installations, and devices

# Scope of Work (continued)

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Workflow for this offering will be as follows:

1. PGH2O Cares personnel will perform customer intake to determine income and leak location eligibility.
2. Contractor will perform an on-site, pre-repair estimate to determine if the costs to repair the leaking plumbing/device will not exceed \$1,356.
3. PGH2O Cares personnel obtain a signed agreement from the owner of record of an eligible property.
4. Contractor:
  - a. performs leak repair and device installation(s),
  - b. conservation education of the customer,
  - c. facilitates the customer's enrollment in PWSA's Customer Advantage portal with enabled leak alerts, and
  - d. leaves warranty paperwork at property.

# Questions

# Exhibit JAM-11

THE PITTSBURGH WATER AND SEWER AUTHORITY  
  
RATES, RULES AND REGULATIONS GOVERNING  
  
THE PROVISION OF WATER SERVICE  
  
TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: May 9, 2023

Effective: July 8, 2023

BY: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in rates as supported by the May 9,  
2023 filing at Docket No. R-2023-3039920.



**LIST OF CHANGES**

**TABLE OF CONTENTS (PAGE NO. 3):**

Added page numbers for new Infrastructure Improvement Charge (IIC)  
and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - RATES FOR METERED SERVICE -  
NUMBER 1 MINIMUM OR BASE CHARGE (PAGE NO. 8)**

Term "Base" added in addition to "Minimum" to describe fixed  
charge. Added rates for Minimum or Base Charges which will  
increase for all customer classes effective February 8, 2024,  
January 1, 2025 and January 1, 2026. Text moved from Page No. 8  
to new Page No. 8a

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - RATES FOR METERED SERVICE -  
NUMBER 2 CONSUMPTION CHARGE (NEW PAGE NO. 8A)**

New text describing elimination of minimum allowance effective  
January 1, 2025. Added rates for Consumption Charges which will  
increase for all customer classes effective February 8, 2024,  
January 1, 2025 and January 1, 2026. Removed references to 71  
P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - RATES FOR METERED SERVICE -  
NUMBER 3 INFRASTRUCTURE IMPROVEMENT CHARGE (IIC) (NEW PAGES NO. 8B-8D)**

New text describing Infrastructure Improvement Charge to include  
purpose, effective rate, computation, semi-annual adjustments, and  
annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A RATES FOR METERED SERVICE -  
NUMBER 4 CUSTOMER ASSISTANCE CHARGE (CAC) (NEW PAGE NO. 8E-8F)**

New text describing Customer Assistance Charge to include purpose,  
effective rate, computation, semi-annual adjustments, and annual  
reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 - RATES FOR UNMETERED SERVICE  
(PAGE NO. 9)**

Added rates for Unmetered Service for all rate classes effective  
February 8, 2024, January 1, 2025 and January 1, 2026.

**LIST OF CHANGES (con't)**

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION B - FIRE PROTECTION RATES (PAGE NOS. 10 AND 11)**

Added rates for Private and Public Fire Protection Rates all rate classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Removed references to 71 P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION I - SALES FOR RESALE (WHOLESALE) (PAGE NO. 16)**

Added rates for Sales for Resale classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**RIDER BDP - BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 19)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text describing Fixed Discount Bill Credit to be effective January 1, 2025. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.

**PART V: SURCHARGES DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC) (PAGE NO. 59)**

Increase from 5.0% to 7.5% the DSIC charge.

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PART I: SCHEDULE OF RATES AND CHARGES

Section A - Rates for Metered Service

1. **Minimum (or Base) Charge:** Each customer will be assessed a service charge based upon the size of the customer's meter as follows except that residential customers residing in newly constructed townhomes who are required to install a meter larger than 5/8" for fire protection and due to City ordinance requirements, may request assessment of the 5/8" minimum charge and usage allowance: (C)

<u>Meter Size</u>	<u>Minimum Gallons</u>	<u>Per Month Rate (Effective February 8, 2024)</u>	(C)
5/8"	1,000	\$32.43	(I)
3/4"	2,000	\$54.74	(I)
1"	5,000	\$113.88	(I)
1 1/2"	10,000	\$225.41	(I)
2"	17,000	\$373.78	(I)
3"	40,000	\$832.40	(I)
4"	70,000	\$1,408.27	(I)
6"	175,000	\$3,322.70	(I)
8"	325,000	\$5,968.71	(I)
10" or Larger	548,000	\$9,753.09	(I)

<u>Meter Size</u>	<u>Per Month Rate (Effective January 1, 2025)</u>	<u>Per Month Rate (Effective January 1, 2026)</u>	(C)
5/8"	\$16.82	\$20.13	(D)/(I)
3/4"	\$23.96	\$28.67	(D)/(I)
1"	\$38.25	\$45.77	(D)/(I)
1 1/2"	\$73.97	\$88.51	(D)/(I)
2"	\$116.84	\$139.81	(D)/(I)
3"	\$231.14	\$276.58	(D)/(I)
4"	\$359.74	\$430.46	(D)/(I)
6"	\$716.95	\$857.90	(D)/(I)
8"	\$1,145.60	\$1,370.82	(D)/(I)
10" or Larger	\$1,645.69	\$1,969.22	(D)/(I)

[text previously on page moved to next page]

**(C) = Change (I)= Increase (D)=Decrease**

*[text from previous page carried over here]*

2. **Consumption Charge:** In addition to the Minimum or Base Charge, the following water consumption charges will apply for each 1,000 gallons above the Minimum Gallons for each meter size effective February 8, 2024 and for all metered consumption effective January 1, 2025: (C)

Customer Class Consumption Charge Rate per 1000 Gals.

	Effective February 8, 2023	Effective January 1, 2025	Effective January 1, 2026	(C)
Residential	\$17.12	\$18.67	\$22.34	(I) / (I) / (I)
Commercial	\$18.95	\$21.04	\$25.18	(I) / (I) / (I)
Industrial**	\$17.14	\$18.63	\$22.29	(I) / (I) / (I)
Health or Education	\$22.98	\$24.67	\$29.52	(I) / (I) / (I)

The rate under this schedule applies to all customers, except public fire protection and private fire protection customers, unless otherwise specifically identified in this tariff.

\*\* Rate applies to any new bulk water customers.

(I) = Increase (C) = Change

3. **Infrastructure Improvement Charge (IIC)**: In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of water customers (with the exception of fire protection customers) for each 1,000 gallons consumed.

a. **Purpose.** The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. The currently effective IIC is:

Customer Class	Infrastructure Improvement Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

The above charge per 1000 Gallons is determined as follows:

$$\text{IIC} = \text{PI} / \text{Consumption}$$

IIC = Infrastructure Improvement Charge per 1,000 gallons

PI = Annual Interest Only and/or Principal and Interest  
payments per PENNVEST and WIFIA Loans identified below

Consumption = total projected consumption in 1000s gallons used by  
all customers in forecast year

c. **Computation.** The IIC will be adjusted to conform to the specific interest only and principal and interest ("PI") obligations payable pursuant to the final PENNVEST amortization schedules and WIFIA amortization schedules. Currently, the IIC is recovering the following loans:

<b>Loan Source</b>	<b>Loan Number / Identifier</b>	<b>Start Date of Interest Only Payments</b>	<b>Start of Final Amortization Schedule</b>

d. **Semi-Annual Adjustments.** The IIC is subject to change on a semi-annual basis effective February 1 and August 1 based on the status of applicable PENNVEST and WIFIA loans. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

e. **Annual Reconciliation.** The IIC will be subject to annual reconciliation based on actual consumption for the prior 12- month fiscal year period. The IIC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided.

- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.
- g. The charge will be not reflected as a separate line item on each customer's bill.
- h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.



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4. **Customer Assistance Charge ("CAC").** In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of water customers (with the exception of fire protection customers) for each 1,000 gallons consumed.

a. **Purpose.** The purpose of the CAC is to recover: **1)** the discounts provided to Customers pursuant to the Bill Discount Program (BDP); **2)** the operating costs for the PGH2O Cares Team; **3)** the costs of PWSA's Hardship Funding; and **4)** for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.

b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

c. **Computation.** The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable volumetric consumption in units of 1,000 gallons in the forecast year.

d. **Semi-Annual Adjustments.** The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual consumption and actual costs for the prior 12-month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
- g. The charge will be not reflected as a separate line item on each customer's bill.

Section A.1 - Rates for Unmetered Service

As of September 1, 2018, enrollment for Unmetered Service will be closed and no new Unmetered Service customers will be accepted by the Authority. Customers who are receiving unmetered service will be assessed a monthly customer charge per unmetered connection as follows:

<u>Customer Class</u>	<u>Customer Charge Per Month</u>			(C)
	<b>Effective February 8, 2024</b>	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>	
Residential (per unit)	\$83.79	\$91.50	\$109.49	(I) / (I) / (I)
Commercial*	\$108.23	\$122.02	\$146.03	(I) / (I) / (I)

*\*Rate does not apply to City of Pittsburgh Municipal Accounts pursuant to 71 P.S. §§ 720.211 to 720.213.*

**(I) = Increase (C) = Change**

Section B - Fire Protection Rates

1. Private Fire Protection: A customer charge for non-residential private fire protection service will be assessed as follows:

<u>Meter Size</u>	<u>Line Size</u> (if unmetered)	<u>Customer Charge Per Month (effective February 8, 2024)</u>	<u>Customer Charge Per Month (effective January 1, 2025)</u>	<u>Customer Charge Per Month (effective January 1, 2026)</u>	(C)
1" or Less	2"	\$31.38	\$29.82	\$35.68	(I) / (D) / (I)
1 ½"-3"	3"	\$97.59	\$92.07	\$110.17	(I) / (D) / (I)
4"	4"	\$314.86	\$299.49	\$358.37	(I) / (D) / (I)
6" or Greater	6" or Greater	\$654.53	\$628.51	\$752.07	(I) / (D) / (I)

2. In addition to any customer charge as applicable above, all customers shall be charged for consumption pursuant to the following terms:

- a. In the event of a confirmed fire, no charge shall be made for the use of water to fight the fire using private fire hydrants or fire abatement equipment. Customers whose fire equipment has been activated to fight a fire should notify the Authority to assure that the associated water use will not be billed.
- b. For consumption of water related to testing, training on, and maintenance of private fire hydrants and fire abatement equipment, consumption charges shall be billed in accordance with the following rates for water consumption. Water used from private fire protection for these purposes should be based on meter readings where possible. If a meter cannot be used, the Authority will estimate the usage.

**Consumption Charge**  
Rate per 1,000 Gals.

	<u>Effective February 8, 2024</u>	<u>Effective January 1, 2025</u>	<u>Effective January 1, 2026</u>	(C)
Private Fire Protection	\$31.79	\$50.05	\$59.88	(D) / (I) / (I)

(I)= Increase, (D)= Decrease, (C)= Change

3. Public Fire Protection: For public fire protection, the charges will be assessed as follows:

	<b>Per Hydrant Charge <u>Per Month</u></b>			(C) (I) / (I) / (I)
	<u>Effective February 8, 2024</u>	<u>Effective January 1, 2025</u>	<u>Effective January 1, 2026</u>	
Public Fire Protection	\$21.80	\$25.94	\$31.04	

No charge shall be made for the use of water to fight a confirmed fire or for reasonable testing, training on, and maintenance of public fire hydrants and abatement equipment.

For use other than public fire protection, charges based on metered usage of a hydrant as set forth in Part II, Section H.3.

**(I) = Increase, (C) = Change**

Section I - Sales for Resale (Wholesale)

1. Application: This schedule applies to all new sales of water to other water utilities or public authorities for resale.
2. Rates and Terms of Service: A customer consumption charge per 1,000 gallons of usage will be assessed as follows:

		<u>Consumption Charge</u> Rate per 1000 Gals.			
		<u>effective</u> <u>February 8,</u> <u>2024</u>	<u>effective</u> <u>January 1,</u> <u>2025</u>	<u>effective</u> <u>January 1,</u> <u>2026</u>	(C)
Sales for Resale		\$15.04	\$16.24	\$19.43	(I) / (I) / (I)

3. Contracts stipulating the negotiated rate and negotiated terms of Sale for Resale Service may be renegotiated and/or entered into between the Authority and Customer or Applicant when the Authority, in its sole discretion, deems such offering to be economically advantageous to the Authority. Service under this rate is interruptible, and the Authority reserves the right to interrupt service at Authority's discretion.

Section J - New Automatic Payment Enrollment Credit

(C)

Customers enrolling in paperless billing and establishing automatic bill payments for the first time will receive a one-time credit of \$5.00. For customers receiving water, wastewater, and/or storm water service from PWSA, this credit will only be applied once per PWSA account.

**(C)= Change; (I) Increase**

Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program.
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below 200% of the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
3. Rate (Minimum or Base Charge): The Minimum or Base Charge for residential service pursuant to Rider BDP will be 0% of the prevailing Minimum Service Charge under Part I, Section A. Any other rates, fees and charges will be at the prevailing amounts under this tariff. (C)
4. Rate (Consumption Charge): The Consumption Charge for residential service pursuant to Rider BDP for participants with income at or below 50% of the Federal Poverty Level will pay 50% of the prevailing Consumption Charge under Part I, Section A (which represents a 50% discount off the charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
5. Fixed Discount Bill Credit: Qualifying customers will also receive a fixed bill credit up to the amounts stated as set forth below starting on January 1, 2025: (C)

	Effective January 1, 2025	Effective January 1, 2026
<b>BDP Participants above 50% - 200% of FPL</b>	\$17.00 per bill for water charges	\$20.00 per bill for water charges
<b>CAP Customers at or below 50% of FPL</b>	\$10.00 per bill for water charges	\$12.00 per bill for water charges

6. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

**(D) = Decrease (C) = Change**

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 7.5% will apply.

**(I)**

1. General Description

a. Purpose: To recover the reasonable and prudent costs incurred to repair, improve, or replace eligible property which is completed and placed in service and recorded in the individual accounts, as noted below, between base rate cases and to provide the Utility with the resources to accelerate the replacement of aging infrastructure, to comply with evolving regulatory requirements and to develop and implement solutions to regional supply problems.

The costs of extending facilities to serve new customers are not recoverable through the DSIC.

b. Eligible Property: The DSIC-eligible property will consist of the following:

- Services (account 333000), meters (account 334100) and hydrants (account 335000) installed as in-kind replacements for customers;
- Mains and valves (account 331800) installed as replacements for existing facilities that have worn out, are in deteriorated condition, or are required to be upgraded to meet under 52 Pa Code § 65 (relating to water service);
- Main extensions (account 331800) installed to eliminate dead ends and to implement solutions to regional water supply problems that present a significant health and safety concern for customers currently receiving service from the water utility;
- Main cleaning and relining (account 331800) projects; and
- Unreimbursed costs related to highway relocation projects where a water utility must relocate its facilities; and
- Other related capitalized costs

**(I) = Increase**



# Exhibit JAM-12

Supplement No. 12  
Tariff Water - Pa. P.U.C. No. 1

THE PITTSBURGH WATER AND SEWER AUTHORITY  
  
RATES, RULES AND REGULATIONS GOVERNING  
  
THE PROVISION OF WATER SERVICE  
  
TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: ~~March 3, 2023~~ **May 9, 2023**      Effective: ~~March 6, 2023~~ **July 8, 2023**

BY: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in **rates** ~~rules and regulations~~ regarding private service line leak repair as approved by the Commission in its Final Order entered **as supported by the May 9, 2023 filing at** ~~March 2, 2023 at~~ **Docket No. R-2023-3039920 P-** ~~2022-3030253~~.

**LIST OF CHANGES**

**TABLE OF CONTENTS (PAGE NO. 3) :**

Added page numbers for new Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - RATES FOR METERED SERVICE - NUMBER 1 MINIMUM OR BASE CHARGE (PAGE NO. 8)**

Term "Base" added in addition to "Minimum" to describe fixed charge. Added rates for Minimum or Base Charges which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Text moved from Page No. 8 to new Page No. 8a

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - RATES FOR METERED SERVICE - NUMBER 2 CONSUMPTION CHARGE (NEW PAGE NO. 8A)**

New text describing elimination of minimum allowance effective January 1, 2025. Added rates for Consumption Charges which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Removed references to 71 P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A-RATES FOR METERED SERVICE - NUMBER 3 INFRASTRUCTURE IMPROVEMENT CHARGE (IIC) (NEW PAGES NO. 8B-8D)**

New text describing Infrastructure Improvement Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A RATES FOR METERED SERVICE - NUMBER 4 CUSTOMER ASSISTANCE CHARGE (CAC) (NEW PAGE NO. 8E-8F)**

New text describing Customer Assistance Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 - RATES FOR UNMETERED SERVICE (PAGE NO. 9)**

Added rates for Unmetered Service for all rate classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**LIST OF CHANGES (con't)**

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION B - FIRE PROTECTION RATES (PAGE NOS. 10 AND 11)**

Added rates for Private and Public Fire Protection Rates all rate classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Removed references to 71 P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION I - SALES FOR RESALE (WHOLESALE) (PAGE NO. 16)**

Added rates for Sales for Resale classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**RIDER BDP - BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 19)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text describing Fixed Discount Bill Credit to be effective January 1, 2025. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.

**PART V: SURCHARGES DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC) (PAGE NO. 59)**

Increase from 5.0% to 7.5% the DSIC charge.

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PART I: SCHEDULE OF RATES AND CHARGES

Section A - Rates for Metered Service

1. **Minimum (or Base) Charge\***: Each customer will be assessed a service charge based upon the size of the customer's meter as follows except that residential customers residing in newly constructed townhomes who are required to install a meter larger than 5/8" for fire protection and due to City ordinance requirements, may request assessment of the 5/8" minimum charge and usage allowance: (C)

<u>Meter Size</u>	<u>Minimum Gallons</u>	<u>Per Month Rate</u> <u>(Effective February 8, 2024 January 12, 2022)</u>		<u>Effective</u> <u>January 1, 2023</u>	(C)
5/8"	1,000	\$32.43	\$27.00	\$26.52	(I)
3/4"	2,000	\$54.74	\$45.12	\$46.47	(I)
1"	5,000	\$113.88	\$94.17	\$102.08	(I)
1 1/2"	10,000	\$225.41	\$184.73	\$201.85	(I)
2"	17,000	\$373.78	\$306.23	\$337.28	(I)
3"	40,000	\$832.40	\$685.83	\$766.42	(I)
4"	70,000	\$1,408.27	\$1,165.81	\$1,313.93	(I)
6"	175,000	\$3,322.70	\$2,777.07	\$3,174.80	(I)
8"	325,000	\$5,968.71	\$5,018.53	\$5,784.48	(I)
10" or Larger	548,000	\$9,753.09	\$8,249.44	\$9,582.36	(I)

<u>Meter Size</u>	<u>Per Month Rate</u> <u>(Effective January 1, 2025)</u>	<u>Per Month Rate</u> <u>(Effective January 1, 2026)</u>	(C)
5/8"	\$16.82	\$20.13	(D) / (I)
3/4"	\$23.96	\$28.67	(D) / (I)
1"	\$38.25	\$45.77	(D) / (I)
1 1/2"	\$73.97	\$88.51	(D) / (I)
2"	\$116.84	\$139.81	(D) / (I)
3"	\$231.14	\$276.58	(D) / (I)
4"	\$359.74	\$430.46	(D) / (I)
6"	\$716.95	\$857.90	(D) / (I)
8"	\$1,145.60	\$1,370.82	(D) / (I)
10" or Larger	\$1,645.69	\$1,969.22	(D) / (I)

*[text previously on page moved to next page]*

(C) = Change (I) = Increase (D) = Decrease

Issued: ~~May 9, 2023~~ ~~December 30, 2021~~

Effective:

~~January 12, 2022~~  
**July 8, 2023**

[text from previous page carried over here]

2. **Consumption Charge:** In addition to the Minimum or Base Charge, the following water consumption charges will apply for each 1,000 gallons above the Minimum Gallons for each meter size effective February 8, 2024 and for all metered consumption effective January 1, 2025: (C)

Customer Class	Consumption Charge Rate per 1000 Gals.				
	<del>Effective January 12, 2022</del> Effective February 8, 2023	<del>Effective January 1, 2023</del> Effective January 1, 2025	<del>Effective January 1, 2023</del>	Effective January 1, 2026	(C)
Residential	\$17.12	<del>\$13.10</del>	\$18.67	<del>\$14.64</del>	\$22.34 (I) / (I) / (I)
Commercial*	\$18.95	<del>\$12.61</del>	\$21.04	<del>\$13.80</del>	\$25.18 (I) / (I) / (I)
Industrial**	\$17.14	<del>\$10.96</del>	\$18.63	<del>\$12.13</del>	\$22.29 (I) / (I) / (I)
Health or Education	\$22.98	<del>\$15.65</del>	\$24.67	<del>\$16.29</del>	\$29.52 (I) / (I) / (I)

The rate under this schedule applies to all customers, except public fire protection and private fire protection customers, unless otherwise specifically identified in this tariff.

\* Rate applies to City of Pittsburgh Municipal Accounts but bills will be calculated based on a phase in factor pursuant to 71 P.S. §§ 720.211 to 720.213.

\*\* Rate applies to any new bulk water customers.

(I) = Increase (C) = Change

3. **Infrastructure Improvement Charge (IIC)**: In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of water customers (with the exception of fire protection customers) for each 1,000 gallons consumed.

a. **Purpose.** The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. The currently effective IIC is:

Customer Class	Infrastructure Improvement Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

The above charge per 1000 Gallons is determined as follows:

$$\text{IIC} = \text{PI} / \text{Consumption}$$

IIC = Infrastructure Improvement Charge per 1,000 gallons

PI = Annual Interest Only and/or Principal and Interest payments per PENNVEST and WIFIA Loans identified below

Consumption = total projected consumption in 1000s gallons used by all customers in forecast year





- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.
- g. The charge will be not reflected as a separate line item on each customer's bill.
- h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.

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4. **Customer Assistance Charge ("CAC").** In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of water customers (with the exception of fire protection customers) for each 1,000 gallons consumed.

a. **Purpose.** The purpose of the CAC is to recover: **1)** the discounts provided to Customers pursuant to the Bill Discount Program (BDP); **2)** the operating costs for the PGH2O Cares Team; **3)** the costs of PWSA's Hardship Funding; and **4)** for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.

b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

c. **Computation.** The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable volumetric consumption in units of 1,000 gallons in the forecast year.

d. **Semi-Annual Adjustments.** The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual consumption and actual costs for the prior 12-month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
  
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
  
- g. The charge will be not reflected as a separate line item on each customer's bill.

Section A.1 - Rates for Unmetered Service

As of September 1, 2018, enrollment for Unmetered Service will be closed and no new Unmetered Service customers will be accepted by the Authority. Customers who are receiving unmetered service will be assessed a monthly customer charge per unmetered connection as follows:

<u>Customer Class</u>	<u>Customer Charge Per Month</u>				<b>Effective January 1, 2026</b>	<b>(C)</b>
	<b>Effective <del>January 12, 2022</del> February 8, 2024</b>		<b>Effective January 1, 2025</b>			
Residential (per unit)	<b>\$83.79</b>	<del>\$66.30</del>	<b>\$91.50</b>	<del>\$70.44</del>	<b>\$109.49</b>	<b>(I) / (I) / (I)</b>
Commercial*	<b>\$108.23</b>	<del>\$77.86</del>	<b>\$122.02</b>	<del>\$82.92</del>	<b>\$146.03</b>	<b>(I) / (I) / (I)</b>

\*Rate does not apply to City of Pittsburgh Municipal Accounts pursuant to 71 P.S. §§ 720.211 to 720.213.

**(I) = Increase (C) = Change**

Section B - Fire Protection Rates

1. Private Fire Protection: A customer charge for non-residential private fire protection service will be assessed as follows:

<u>Meter Size</u>	<u>Line Size (if unmetered)</u>	<u>Customer Charge Per Month (effective February 8, 2024</u> <del>January 12, 2022)</del>	<u>Customer Charge Per Month (effective January 1, 2025)</u> <del>3)</del>	<u>Customer Charge Per Month (effective January 1, 2026)</u>	(C)	
1" or Less	2"	\$31.38	<del>\$26.92</del>	\$29.82	<del>\$15.43</del>	\$35.68 (I) / (D) / (I)
1 1/2"-3"	3"	\$97.59	<del>\$82.20</del>	\$92.07	<del>\$46.28</del>	\$110.17 (I) / (D) / (I)
4"	4"	\$314.86	<del>\$256.85</del>	\$299.49	<del>\$152.25</del>	\$358.37 (I) / (D) / (I)
6" or Greater	6" or Greater	\$654.53	<del>\$519.70</del>	\$628.51	<del>\$325.06</del>	\$752.07 (I) / (D) / (I)

2. In addition to any customer charge as applicable above, all customers shall be charged for consumption pursuant to the following terms:

a. In the event of a confirmed fire, no charge shall be made for the use of water to fight the fire using private fire hydrants or fire abatement equipment. Customers whose fire equipment has been activated to fight a fire should notify the Authority to assure that the associated water use will not be billed.

b. For consumption of water related to testing, training on, and maintenance of private fire hydrants and fire abatement equipment, consumption charges shall be billed in accordance with the following rates for water consumption. Water used from private fire protection for these purposes should be based on meter readings where possible. If a meter cannot be used, the Authority will estimate the usage.

**Consumption Charge**  
Rate per 1,000 Gals.

	<u>Effective February 8, 2024</u> <del>January 12, 2022</del>	<u>Effective January 1, 2025</u> <del>3)</del>	<u>Effective January 1, 2026</u>	(C)	
Private Fire Protection	\$31.79	<del>\$22.90</del>	\$50.05	<del>\$39.05</del>	\$59.88 (D) / (I) / (I)

(I)= Increase, (D)= Decrease, (C)= Change

3. Public Fire Protection: For public fire protection, the charges will be assessed as follows:

	<b>Per Hydrant Charge Per Month</b>			(C)  (I) / (I) / (I)
	<u>Effective</u> <del>January 12, 2022</del> <b>February 8, 2024</b>	<u>Effective</u> <del>January 1, 2025</del> <del>3</del>	<u>Effective</u> <del>January 1, 2026</del>	
Public Fire Protection*	\$21.80 <del>\$15.62</del>	\$25.94 <del>\$18.35</del>	\$31.04	

*\*Rate applies to City of Pittsburgh Municipal Accounts but bills will be calculated based on a phase-in factor pursuant to 71 P.S. §§ 720.211 to 720.213.*

No charge shall be made for the use of water to fight a confirmed fire or for reasonable testing, training on, and maintenance of public fire hydrants and abatement equipment.

For use other than public fire protection, charges based on metered usage of a hydrant as set forth in Part II, Section H.3. ~~(C)~~

**(I) = Increase, (C) = Change**

Section I - Sales for Resale (Wholesale)

1. Application: This schedule applies to all new sales of water to other water utilities or public authorities for resale.
2. Rates and Terms of Service: A customer consumption charge per 1,000 gallons of usage will be assessed as follows:

<u>Consumption Charge</u> Rate per 1000 Gals.				(C)
	<u>effective</u> <del>January 12,</del> <del>2022-February</del> <del>8, 2024</del>	<u>effective</u> <del>January 1,</del> <del>2025</del>	<u>effective</u> <del>January 1,</del> <del>2026</del>	
Sales for Resale	\$9.77 <b>\$15.04</b>	\$10.89 <b>\$16.24</b>	<b>\$19.43</b>	

3. Contracts stipulating the negotiated rate and negotiated terms of Sale for Resale Service may be renegotiated and/or entered into between the Authority and Customer or Applicant when the Authority, in its sole discretion, deems such offering to be economically advantageous to the Authority. Service under this rate is interruptible, and the Authority reserves the right to interrupt service at Authority's discretion.

Section J - New Automatic Payment Enrollment Credit

(C)

Customers enrolling in paperless billing and establishing automatic bill payments for the first time will receive a one-time credit of \$5.00. For customers receiving water, wastewater, and/or storm water service from PWSA, this credit will only be applied once per PWSA account.

**(C)= Change; (I) Increase**



Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program.
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below ~~200~~**150**% of the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
3. Rate (Minimum ~~or~~ **Base** Charge): The Minimum ~~or~~ **Base** Charge for residential service pursuant to Rider BDP will be 0% of the prevailing Minimum Service Charge under Part I, Section A. Any other rates, fees and charges will be at the prevailing amounts under this tariff. (C)
4. Rate (Consumption Charge): The Consumption Charge for residential service pursuant to Rider BDP for participants with income at or below 50% of the Federal Poverty Level will pay 50% of the prevailing Consumption Charge under Part I, Section A (which represents a 50% discount off the charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
5. Fixed Discount Bill Credit: Qualifying customers will also receive a fixed bill credit up to the amounts stated as set forth below starting on January 1, 2025: (C)

	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>
<b>BDP Participants above 50% - 200% of FPL</b>	\$17.00 per bill for water charges	\$20.00 per bill for water charges
<b>CAP Customers at or below 50% of FPL</b>	\$10.00 per bill for water charges	\$12.00 per bill for water charges

6. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

**(D) = Decrease (C) = Change**

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of ~~7.5-0%~~ will apply ~~consistent with the Commission Order dated December 3, 2020 at Docket No. P-2020-3019019, approving the DSIC.~~ (I)

1. General Description

a. Purpose: To recover the reasonable and prudent costs incurred to repair, improve, or replace eligible property which is completed and placed in service and recorded in the individual accounts, as noted below, between base rate cases and to provide the Utility with the resources to accelerate the replacement of aging infrastructure, to comply with evolving regulatory requirements and to develop and implement solutions to regional supply problems.

The costs of extending facilities to serve new customers are not recoverable through the DSIC.

b. Eligible Property: The DSIC-eligible property will consist of the following:

- Services (account 333000), meters (account 334100) and hydrants (account 335000) installed as in-kind replacements for customers;
- Mains and valves (account 331800) installed as replacements for existing facilities that have worn out, are in deteriorated condition, or are required to be upgraded to meet under 52 Pa Code § 65 (relating to water service);
- Main extensions (account 331800) installed to eliminate dead ends and to implement solutions to regional water supply problems that present a significant health and safety concern for customers currently receiving service from the water utility;
- Main cleaning and relining (account 331800) projects; and
- Unreimbursed costs related to highway relocation projects where a water utility must relocate its facilities; and
- Other related capitalized costs

**(I) = Increase**

# Exhibit JAM-13

THE PITTSBURGH WATER AND SEWER AUTHORITY

RATES, RULES AND REGULATIONS GOVERNING

THE PROVISION OF WASTEWATER CONVEYANCE SERVICE

TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: May 9, 2023

Effective: July 8, 2023

BY: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in rates supported by the May 9, 2023  
filing at Docket No. R-2023-3039912

**LIST OF CHANGES**

**TABLE OF CONTENTS (PAGE No. 3) :**

Added page numbers for new Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - WASTEWATER CONVEYANCE - NUMBER 1 MINIMUM OR BASE CHARGE (PAGE No. 9)**

Term "Base" added in addition to "Minimum" to describe fixed charge. Added rates for Minimum or Base Charges which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Text moved from Page No. 9 to new Page No. 9A

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - WASTEWATER CONVEYANCE - NUMBER 2 CONVEYANCE CHARGE (NEW PAGE No. 9A)**

New text describing elimination of minimum allowance effective January 1, 2025. Added rates for Conveyance Charges for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Removed references to 71 P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 3 INFRASTRUCTURE IMPROVEMENT CHARGE (IIC) (NEW PAGES No. 9B-9D)**

New text describing Infrastructure Improvement Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 4 CUSTOMER ASSISTANCE CHARGE (CAC) (NEW PAGE No. 9E-9F)**

New text describing Customer Assistance Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 5 TREATMENT RATE (PAGE No. 10)**

Updated numbering and text to include reference to IIC and CAC.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 - RATES FOR UNMETERED SERVICE (PAGE No. 11)**

Added rates for Unmetered Service for all rate classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**LIST OF CHANGES (con't)**

**RIDER BDP - BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 17)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text describing Fixed Discount Bill Credit to be effective January 1, 2025. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.

**PART V: SURCHARGES DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC) (PAGE NO. 64)**

Increase from 5.0% to 7.5% the DSIC charge.



PART I: SCHEDULE OF RATES AND CHARGES

Section A - Wastewater Conveyance

1. Minimum (or Base) Charge: Each customer will be assessed a service charge based upon the size of the customer's water meter as follows except that residential customers residing in newly constructed townhomes who are required to install a meter larger than 5/8" for fire protection and due to City ordinance requirements, may request assessment of the 5/8" minimum charge and usage allowance: (C)

<u>Meter Size</u>	<u>Minimum Gallons</u>	<u>Per Month Rate</u> <u>(Effective February 8, 2024)</u>	(C)
5/8"	1,000	\$7.42	(I)
3/4"	2,000	\$11.43	(D)
1"	5,000	\$22.50	(D)
1 1/2"	10,000	\$42.56	(D)
2"	17,000	\$69.68	(D)
3"	40,000	\$155.24	(D)
4"	70,000	\$264.10	(D)
6"	175,000	\$632.71	(D)
8"	325,000	\$1,148.40	(D)
10" or Larger	548,000	\$1,896.72	(D)

<u>Meter Size</u>	Base Charge Per Month		(C)
	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>	(C)
5/8"	\$3.98	\$4.63	(D) / (I)
3/4"	\$4.69	\$5.45	(D) / (I)
1"	\$6.12	\$7.11	(D) / (I)
1 1/2"	\$9.69	\$11.26	(D) / (I)
2"	\$13.98	\$16.25	(D) / (I)
3"	\$25.41	\$29.53	(D) / (I)
4"	\$38.26	\$44.47	(D) / (I)
6"	\$73.97	\$85.97	(D) / (I)
8"	\$116.83	\$135.78	(D) / (I)
10" or Larger	\$166.82	\$193.88	(D) / (I)

*[text previously on page moved to next page]*

**(C) = Change (I) = Increase (D) = Decrease**



*[text from previous page carried over here]*

2. Conveyance Charge: In addition to the Minimum or Base Charge, the following wastewater conveyance charges (based on water consumption/usage or wastewater flows, at the Authority's discretion) will apply for each 1,000 gallons above the Minimum Gallons for each meter size effective February 8, 2024 and for all metered consumption effective January 1, 2025: (C)

Customer Class	Conveyance Charge Rate Per 1000 Gals.			(C)
	Effective February 8, 2024	Effective January 1, 2025	Effective January 1, 2026	
Residential	\$6.28	\$5.73	\$6.66	(I) / (D) / (I)
Commercial	\$5.76	\$5.75	\$6.68	(I) / (D) / (I)
Industrial	\$5.49	\$5.69	\$6.61	(I) / (I) / (I)
Health or Education	\$6.33	\$6.29	\$7.31	(D) / (D) / (I)

(C)

3. **Infrastructure Improvement Charge (IIC):** In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of wastewater conveyance customers (for each 1,000 gallons conveyed).
- a. **Purpose.** The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. **The Currently Effective IIC Is:**

Customer Class	Infrastructure Improvement Charge Rate per 1000 Gals. Effective February 8, 2024
All Customers	\$0.00

The above charge per 1000 Gallons is determined as follows:

$$\text{IIC} = \text{PI} / \text{Conveyance}$$

IIC = Infrastructure Improvement Charge per 1,000 gallons

PI = Annual Interest Only and/or Principal and Interest payments per PENNVEST and WIFIA Loans identified below

Conveyance = total projected conveyance in 1000s gallons conveyed by all customers in forecast year



- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.
- g. The charge will be not reflected as a separate line item on each customer's bill.
- h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.

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4. **Customer Assistance Charge ("CAC")**. In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of wastewater conveyance customers for each 1,000 gallons consumed.

a. **Purpose**. The purpose of the CAC is to recover: **1)** the discounts provided to Customers pursuant to the Bill Discount Program (BDP); **2)** the operating costs for the PGH2O Cares Team; **3)** the costs of PWSA's Hardship Funding; and **4)** for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.

b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

c. **Computation**. The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable volumetric conveyance in units of 1,000 gallons in the forecast.

d. **Semi-Annual Adjustments**. The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual consumption and actual costs for the prior 12-month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
- g. The charge will be not reflected as a separate line item on each customer's bill.

5. **Treatment Rate:**

(C)

- a. In addition to the Minimum or Base Charge, the Conveyance Charge, and the IIC and CAC, customers will be required to pay rates for Wastewater/Sewage treatment to Premises. (C)
- b. The rates for Wastewater/Sewage treatment to Premises within the Authority's service area are established by ALCOSAN, and are paid by the Authority to ALCOSAN. Information on ALCOSAN's rates is available on its website.
- c. Wastewater/Sewage treatment charges may be reflected on Authority bills/invoices as ALCOSAN charges, basic service and sewage treatment.

Section A.1 - Wastewater Conveyance (Unmetered Service)

1. Customer Charge. As of September 1, 2018 enrollment for Unmetered Service will be closed and no new Unmetered Service customers will be accepted by the Authority. Customers who are receiving unmetered service will be assessed a monthly customer charge per unmetered connection as follows:

<u>Customer Class</u>	<u>Customer Charge</u>			<u>(C)</u>
	<b>Effective February 8, 2024</b>	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>	
Residential (per unit)	\$26.26	\$26.90	\$31.27	<b>(I) / (I) / (I)</b>
Commercial*	\$30.46	\$32.73	\$38.03	<b>(I) / (I) / (I)</b>

*\*Rate does not apply to City of Pittsburgh Municipal Accounts pursuant to 71 P.S. §§ 720.211 to 720.213.*

2. Treatment Rate: In addition to the Customer Charge, Customers who are receiving unmetered service will be required to pay rates for Wastewater/Sewage treatment to Premises, as set forth in Section A.3.

Section B - Bulk Wastewater Conveyance

1. Application: This schedule applies to all bulk wastewater conveyance for other wastewater utilities or public authorities.
2. Rates and Terms of Service: Contracts stipulating the negotiated rate and negotiated terms of Bulk Wastewater Conveyance may be entered into between the Authority and Customer or Applicant when the Authority, in its sole discretion, deems such offering to be economically advantageous to the Authority.

**(D)= Decrease (I) = Increase (C)=Change**



Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below 200% based on the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
3. Rate (Minimum or Base Charge): The Minimum or Base Charge for residential service pursuant to Rider BDP will be 0% of the prevailing Minimum Service Charge under Part I, Section A. Any other rates, fees and charges will be at the prevailing amounts under this tariff.
4. Rate (Conveyance Charge): The Consumption Charge for residential service pursuant to Rider BDP for participants with income at or below 50% of the Federal Poverty Level will pay 50% of the prevailing Consumption Charge under Part I, Section A (which represents a 50% discount off the charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
5. Fixed Discount Bill Credit: Qualifying customers will also receive a fixed bill credit up to the amounts stated as set forth below starting on January 1, 2025: (C)

	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>
<b>BDP Participants above 50% - 200% of FPL</b>	\$5.00 per bill for wastewater conveyance charges	\$6.00 per bill for wastewater conveyance charges (C)
<b>CAP Customers at or below 50% of FPL</b>	\$3.00 per bill for wastewater conveyance charges	\$4.00 per bill for wastewater charges

6. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

**(D) = Decrease; (C) = Change**

5. PART V: SURCHARGES

(C)

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 7.5% will apply.

(I)

1. General Description

- a. Purpose: To recover the reasonable and prudent costs incurred to repair, improve, or replace eligible property which is completed and placed in service and recorded in the individual accounts, as noted below, between base rate cases and to provide the Utility with the resources to accelerate the replacement of aging infrastructure, to comply with evolving regulatory requirements and to develop and implement solutions to regional supply problems.

The costs of extending facilities to serve new customers are not recoverable through the DSIC.

- b. Eligible Property: The DSIC-eligible property will consist of the following:
- Collection sewers, collecting mains and service laterals, including sewer taps, curb stops and lateral cleanouts installed as in-kind replacements for customers; Accounts (360, 361 and 363)
  - Collection mains and valves for gravity and pressure systems and related facilities such as manholes, grinder pumps, air and vacuum release chambers, cleanouts, main line flow meters, valve vaults and lift stations installed as replacements or upgrades for existing facilities that have worn out, are in deteriorated condition or are required to be upgraded by law, regulation or order; Accounts (360, 361, 364 and 365)

**(I)= Increase**

# Exhibit JAM-14

PWSA Exh JAM-14

Supplement No. ~~1110~~  
Tariff Wastewater - Pa. P.U.C. No. 1

THE PITTSBURGH WATER AND SEWER AUTHORITY  
  
RATES, RULES AND REGULATIONS GOVERNING  
  
THE PROVISION OF WASTEWATER CONVEYANCE SERVICE  
  
TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: ~~November 15, 2022~~  
May 9, 2023

Effective: ~~January 14, 2023~~  
July 8, 2023

BY: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in ~~rules and regulations~~ rates supported by the May 9, 2023 filing approved by the Commission in its Final Order dated July 14, 2022 at Docket No. R-2023-3039912M-2018-2640802 and M-2018-2640803

**LIST OF CHANGES**

**TABLE OF CONTENTS (PAGE No. 3) :**

Added page numbers for new Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - WASTEWATER CONVEYANCE - NUMBER 1 MINIMUM OR BASE CHARGE (PAGE No. 9)**

Term "Base" added in addition to "Minimum" to describe fixed charge. Added rates for Minimum or Base Charges which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Text moved from Page No. 9 to new Page No. 9A

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - WASTEWATER CONVEYANCE - NUMBER 2 CONVEYANCE CHARGE (NEW PAGE No. 9A)**

New text describing elimination of minimum allowance effective January 1, 2025. Added rates for Conveyance Charges for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026. Removed references to 71 P.S. §§ 720.211 to 720.213 as no longer applicable.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 3 INFRASTRUCTURE IMPROVEMENT CHARGE (IIC) (NEW PAGES No. 9B-9D)**

New text describing Infrastructure Improvement Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 4 CUSTOMER ASSISTANCE CHARGE (CAC) (NEW PAGE No. 9E-9F)**

New text describing Customer Assistance Charge to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A - NUMBER 5 TREATMENT RATE (PAGE No. 10)**

Updated numbering and text to include reference to IIC and CAC.

**PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 - RATES FOR UNMETERED SERVICE (PAGE No. 11)**

Added rates for Unmetered Service for all rate classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**LIST OF CHANGES (con't)**

**RIDER BDP - BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 17)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text describing Fixed Discount Bill Credit to be effective January 1, 2025. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.

**PART V: SURCHARGES DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC) (PAGE NO. 64)**

Increase from 5.0% to 7.5% the DSIC charge.

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(C)

PART I: SCHEDULE OF RATES AND CHARGES

Section A - Wastewater Conveyance

1. Minimum (or Base) Charge\*: Each customer will be assessed a service charge based upon the size of the customer's water meter as follows except that residential customers residing in newly constructed townhomes who are required to install a meter larger than 5/8" for fire protection and due to City ordinance requirements, may request assessment of the 5/8" minimum charge and usage allowance: (C)

<u>Meter Size</u>	<u>Minimum Gallons</u>	<u>Per Month Rate</u> <u>(Effective February 8,</u> <u>2024</u> <del>January 12, 2022</del> )	<u>Effective</u> <u>January 1,</u> <u>2023</u>	(C)
5/8"	1,000	\$7.42 <del>\$8.09</del>	\$7.32	(I)
3/4"	2,000	\$11.43 <del>\$15.27</del>	\$11.70	(D)
1"	5,000	\$22.50 <del>\$35.01</del>	\$24.27	(D)
1 1/2"	10,000	\$42.56 <del>\$70.91</del>	\$46.19	(D)
2"	17,000	\$69.68 <del>\$119.36</del>	\$76.29	(D)
3"	40,000	\$155.24 <del>\$271.91</del>	\$173.03	(D)
4"	70,000	\$264.10 <del>\$465.73</del>	\$297.52	(D)
6"	175,000	\$632.71 <del>\$1,120.70</del>	\$725.62	(D)
8"	325,000	\$1,148.40 <del>\$2,035.83</del>	\$1,330.48	(D)
10" or Larger	548,000	\$1,896.72 <del>\$3,361.79</del>	\$2,218.44	(D)

<u>Meter Size</u>	<u>Base Charge</u> <u>Per Month</u>		(C)
	<u>Effective</u> <u>January 1, 2025</u>	<u>Effective</u> <u>January 1, 2026</u>	(C)
5/8"	\$3.98	\$4.63	(D) / (I)
3/4"	\$4.69	\$5.45	(D) / (I)
1"	\$6.12	\$7.11	(D) / (I)
1 1/2"	\$9.69	\$11.26	(D) / (I)
2"	\$13.98	\$16.25	(D) / (I)
3"	\$25.41	\$29.53	(D) / (I)
4"	\$38.26	\$44.47	(D) / (I)
6"	\$73.97	\$85.97	(D) / (I)
8"	\$116.83	\$135.78	(D) / (I)
10" or Larger	\$166.82	\$193.88	(D) / (I)

[text previously on page moved to next page]

(C) = Change (I) = Increase (D) = Decrease

Issued: May 9, 2023      Effective: July 8, 2023-~~January~~  
 December 30, 2021      December 31, 2022



[text from previous page carried over here]

2. Conveyance Charge: In addition to the Minimum or Base Charge, the following wastewater conveyance charges (based on water consumption/usage or wastewater flows, at the Authority's discretion) will apply for each 1,000 gallons above the Minimum Gallons for each meter size effective February 8, 2024 and for all metered consumption effective January 1, 2025: (C)

Customer Class	Conveyance Charge Rate Per 1000 Gals.			(C)
	<b>Effective February 8, 2024</b>	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>	
Residential	\$6.28 <del>\$6.99</del>	\$5.73 <del>\$5.81</del>	\$6.66	(I) / (D) / (I)
Commercial*	\$5.76 <del>\$6.22</del>	\$5.75 <del>\$5.28</del>	\$6.68	(I) / (D) / (I)
Industrial	\$5.49 <del>\$5.76</del>	\$5.69 <del>\$5.05</del>	\$6.61	(I) / (I) / (I)
Health or Education	\$6.33 <del>\$7.71</del>	\$6.29 <del>\$6.38</del>	\$7.31	(D) / (D) / (I)

\* Rate applies to City of Pittsburgh Municipal Accounts but bills will be calculated based on a phase-in factor pursuant to 71 P.S. §§ 720.211 to 720.213. (C)

(D)= Decrease (I)=Increase (c) = Change

3. **Infrastructure Improvement Charge (IIC):** In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of wastewater conveyance customers (for each 1,000 gallons conveyed).
- a. **Purpose.** The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. The currently effective IIC is:

Customer Class	Infrastructure Improvement Charge Rate per 1000 Gals.
	<b>Effective February 8, 2024</b>
All Customers	\$0.00

The above charge per 1000 Gallons is determined as follows:

$$\text{IIC} = \text{PI} / \text{Conveyance}$$

IIC = Infrastructure Improvement Charge per 1,000 gallons

PI = Annual Interest Only and/or Principal and Interest payments per PENNVEST and WIFIA Loans identified below

Conveyance = total projected conveyance in 1000s gallons conveyed by all customers in forecast year



- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.
- g. The charge will be not reflected as a separate line item on each customer's bill.
- h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.

---

4. **Customer Assistance Charge ("CAC")**. In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of wastewater conveyance customers for each 1,000 gallons consumed.

a. **Purpose**. The purpose of the CAC is to recover: **1)** the discounts provided to Customers pursuant to the Bill Discount Program (BDP); **2)** the operating costs for the PGH2O Cares Team; **3)** the costs of PWSA's Hardship Funding; and **4)** for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.

b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals. <b>Effective February 8, 2024</b>
All Customers	\$0.00

c. **Computation**. The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable volumetric conveyance in units of 1,000 gallons in the forecast.

d. **Semi-Annual Adjustments**. The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual consumption and actual costs for the prior 12-month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
- g. The charge will be not reflected as a separate line item on each customer's bill

35. Treatment Rate:

(C)

- a. In addition to the Minimum ~~or Base~~ Charge, ~~and~~ the Conveyance Charge, ~~and the IIC and CAC~~, customers will be required to pay rates for Wastewater/Sewage treatment to Premises. (C)
- b. The rates for Wastewater/Sewage treatment to Premises within the Authority's service area are established by ALCOSAN, and are paid by the Authority to ALCOSAN. Information on ALCOSAN's rates is available on its website.
- c. Wastewater/Sewage treatment charges may be reflected on Authority bills/invoices as ALCOSAN charges, basic service and sewage treatment.

Section A.1 - Wastewater Conveyance (Unmetered Service)

1. Customer Charge. As of September 1, 2018 enrollment for Unmetered Service will be closed and no new Unmetered Service customers will be accepted by the Authority. Customers who are receiving unmetered service will be assessed a monthly customer charge per unmetered connection as follows:

<u>Customer Class</u>	<u>Customer Charge</u>			(C)
	<del>Effective January 12, 2022</del> <b>Effective February 8, 2024</b>	<del>Effective January 1, 2025</del>	<b>Effective January 1, 2026</b>	
Residential (per unit)	<del>\$26.26</del> <del>\$29.06</del>	<del>\$26.90</del> <del>\$24.75</del>	<b>\$31.27</b>	(I) / (I) / (I)
Commercial*	<del>\$30.46</del> <del>\$32.97</del>	<del>\$32.73</del> <del>\$28.44</del>	<b>\$38.03</b>	(I) / (I) / (I)

\*Rate does not apply to City of Pittsburgh Municipal Accounts pursuant to 71 P.S. §§ 720.211 to 720.213.

2. Treatment Rate: In addition to the Customer Charge, Customers who are receiving unmetered service will be required to pay rates for Wastewater/Sewage treatment to Premises, as set forth in Section A.3.

Section B - Bulk Wastewater Conveyance

1. Application: This schedule applies to all bulk wastewater conveyance for other wastewater utilities or public authorities.
2. Rates and Terms of Service: Contracts stipulating the negotiated rate and negotiated terms of Bulk Wastewater Conveyance may be entered into between the Authority and Customer or Applicant when the Authority, in its sole discretion, deems such offering to be economically advantageous to the Authority.

**(D)= Decrease (I) = Increase (C)=Change**



Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below ~~200~~150% based on the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
3. Rate (Minimum or Base Charge): The Minimum or Base Charge for residential service pursuant to Rider BDP will be 0% of the prevailing Minimum Service Charge under Part I, Section A. Any other rates, fees and charges will be at the prevailing amounts under this tariff.
4. Rate (Conveyance Charge): The Consumption Charge for residential service pursuant to Rider BDP for participants with income at or below 50% of the Federal Poverty Level will pay 50% of the prevailing Consumption Charge under Part I, Section A (which represents a 50% discount off the charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
5. Fixed Discount Bill Credit: Qualifying customers will also receive a fixed bill credit up to the amounts stated as set forth below starting on January 1, 2025: (C)

	<b>Effective January 1, 2025</b>	<b>Effective January 1, 2026</b>
<b>BDP Participants above 50% - 200% of FPL</b>	\$5.00 per bill for wastewater conveyance charges	\$6.00 per bill for wastewater conveyance charges (C)
<b>CAP Customers at or below 50% of FPL</b>	\$3.00 per bill for wastewater conveyance charges	\$4.00 per bill for wastewater charges

6. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

(D) = Decrease; (C) = Change

5. PART V: SURCHARGES

(C)

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of ~~7.5-0%~~ **7.5-0%** will apply ~~consistent with the Commission Order dated December 3, 2020 at Docket No. P-2020-3019019, approving the DSIC.~~

(I)

1. General Description

- a. Purpose: To recover the reasonable and prudent costs incurred to repair, improve, or replace eligible property which is completed and placed in service and recorded in the individual accounts, as noted below, between base rate cases and to provide the Utility with the resources to accelerate the replacement of aging infrastructure, to comply with evolving regulatory requirements and to develop and implement solutions to regional supply problems.

The costs of extending facilities to serve new customers are not recoverable through the DSIC.

- b. Eligible Property: The DSIC-eligible property will consist of the following:
- Collection sewers, collecting mains and service laterals, including sewer taps, curb stops and lateral cleanouts installed as in-kind replacements for customers; Accounts (360, 361 and 363)
  - Collection mains and valves for gravity and pressure systems and related facilities such as manholes, grinder pumps, air and vacuum release chambers, cleanouts, main line flow meters, valve vaults and lift stations installed as replacements or upgrades for existing facilities that have worn out, are in deteriorated condition or are required to be upgraded by law, regulation or order; Accounts (360, 361, 364 and 365)

**(I)= Increase**

# Exhibit JAM-15

The Pittsburgh Water  
and Sewer Authority

Supplement No. 3  
Tariff Storm Water - Pa. P.U.C. No. 1

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THE PITTSBURGH WATER AND SEWER AUTHORITY

RATES, RULES AND REGULATIONS GOVERNING

THE PROVISION OF STORM WATER COLLECTION, CONVEYANCE,

TREATMENT AND/OR DISPOSAL SERVICE

TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: May 9, 2023

Effective: July 8, 2023

By: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in rates supported by the May 9, 2023  
filing at Docket Nos. R-2023-3039919

LIST OF CHANGES

**TABLE OF CONTENTS (PAGE No. 3)**

Added page number for new Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.1 RESIDENTIAL SERVICE, No. 3 SERVICE CHARGE (PAGE No. 7)**

Added rates which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.2 NON-RESIDENTIAL SERVICE, No. 3 SERVICE CHARGE (PAGE No. 8)**

Added rates which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.3 INFRASTRUCTURE IMPROVEMENT AND CUSTOMER ASSISTANCE CHARGES (NEW PAGE NOS. 8A-8E)**

New text describing Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC) to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION B STORM WATER MANAGEMENT CHARGE CREDITS, No. B.1 RESIDENTIAL AND NON-RESIDENTIAL CREDIT (PAGE No. 9, NEW PAGE NOS. 9A-9C AND PAGE No. 10)**

Revised and updated text and deletions to reflect terms and conditions related to availability of credits to customers who take steps to reduce stormwater runoff.

**RIDER BDP - BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE No. 17)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.



PART I: SCHEDULE OF RATES AND CHARGES

Section A - Storm Water Management Service Charge

Section A.1 - Residential Service

1. Applicability:

The rates under this schedule apply throughout the Authority's service territory for service rendered on and after the effective date shown at the bottom of this page.

2. Availability:

The rates under this schedule are available to residential customers.

3. Rate:

Each residential customer receiving service under this schedule will be assessed a monthly service charge at the following rate. Rates shall be calculated based upon the Equivalent Residential Unit (ERU) as determined by the Authority.

Service Charge

	<u>Effective February 8, 2024</u>	<u>Effective January 1, 2025</u>	<u>Effective January 1, 2026</u>	<u>(C)</u>
<b>Tier 1</b> (Impervious area of 400 square feet to less than 1,015 square feet, 0.5 ERUs)	\$5.13	\$6.07	\$7.10	<b>(I) / (I) / (I)</b>
<b>Tier 2</b> (Impervious area of 1,015 square feet to less than 2,710 square feet, 1 ERU)	\$10.26	\$12.14	\$14.20	<b>(I) / (I) / (I)</b>
<b>Tier 3</b> (Impervious area greater than or equal to 2,710 square feet, 2 ERUs)	\$20.52	\$24.28	\$28.40	<b>(I) / (I) / (I)</b>

**(C) = Change (I) = Increase**

Section A.2 - Non-Residential Service

1. Applicability:

The rates under this schedule apply throughout the Authority's service territory for service rendered on and after the effective date shown at the bottom of this page.

2. Availability:

The rates under this schedule are available to non-residential customers.

3. Service Charge:

Rates for developed properties are determined on an Equivalent Residential Unit basis. Each Customer receiving service under this schedule will be assessed the following monthly service charge(s) based upon the total amount of measured impervious area contained on the property. Measured impervious area shall be divided by 1,650 square feet and rounded up to the nearest whole number to determine the number of ERUs represented on the property. The service charge applicable to each developed property shall be calculated as follows:

Calculation of Service Charge

$$\text{Service Charge} = (\text{Total IA} / 1,650 \text{ square feet per ERU (quotient rounded up to nearest whole number)}) * \text{ERUR}$$

Where:

IA = The Customer's property impervious area (sq. ft.) as measured by the Authority.

ERUR = The equivalent rate in dollars and cents for one (1) ERU.

	<u>Effective February 8, 2024</u>	<u>Effective January 1, 2025</u>	<u>Effective January 1, 2026</u>	(C)
<b>Rate per (1) ERU</b>	\$10.26	\$12.14	\$14.20	<b>(I) / (I) / (I)</b>

The minimum service charge for any developed property is equal to that charged for Tier 2 residential properties.

**(C) = Change (I) = Increase**



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**Section A.3 - Infrastructure Improvement and Customer Assistance Charges**

1. Infrastructure Improvement Charge (IIC): In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of **stormwater** customers **for each Equivalent Residential Unit (ERU) assessed.**

a. Purpose. The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. The currently effective IIC is:

Customer Class	Infrastructure Improvement Charge Rate per ERU
	Effective February 8, 2024
All Customers	\$0.00

The above charge per ERU is determined as follows:

$$IIC = (PI/TOTERU)/12$$

IIC = Monthly Infrastructure Improvement Charge per ERU

PI = Annual Principal and Interest per PENNVEST and WIFIA  
Loans identified below

TOTERU = Total Equivalent Residential Units of all  
customers in forecast year



f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.

g. The charge will be not reflected as a separate line item on each customer's bill.

h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.

[rest of page intentionally blank]

**2. Customer Assistance Charge ("CAC").** In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of stormwater customers for each Equivalent Residential Unit (ERU) assessed.

- a. **Purpose.** The purpose of the CAC is to recover: 1) the discounts provided to Customers pursuant to the Bill Discount Program (BDP); 2) the operating costs for the PGH20 Cares Team; 3) the costs of PWSA's Hardship Funding; and 4) for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.
- b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals.
	Effective February 8, 2024
All Customers	\$0.00

- c. **Computation.** The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable ERUs for all customers in the forecast year.
- d. **Semi-Annual Adjustments.** The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual ERUs assessed and actual costs for the prior 12- month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
- g. The charge will be not reflected as a separate line item on each customer's bill.

Section B - Storm Water Management Service Charge Credits

B.1 - Residential and Non-Residential Credit

1. Applicability:

The credits under this schedule are available to customers who take steps to reduce stormwater runoff leaving their property and entering PWSA's stormwater management system and natural receiving waters. Residential and non-residential customers are eligible for different credits as detailed in the sections below. (C)

[rest of page intentionally blank]

**(C) = Change**

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## 2. Residential Customers:

Residential customers can receive a stormwater credit, reducing the stormwater charge by at least 50%, by controlling at least  $\frac{3}{4}$  of an inch of runoff from their property's impervious surfaces. A residential customer may receive a stormwater credit by installing (or documenting the performance of previously installed) stormwater control measures. The control measure must capture for 24 to 72 hours and slowly release at least  $\frac{3}{4}$  of an inch of runoff from the impervious surfaces on their property. The more impervious surface on a residential property, the more runoff a measure must control to qualify for the fee credit. To calculate the runoff volume that needs to be controlled on a residential property -

$$\begin{aligned} * \text{Runoff Volume to be Controlled on a Residential Property in Gallons} = \\ \text{Impervious Area sf} \times 0.0625 \times 7.48 \end{aligned}$$

\*To find your property's Impervious Area, consult your stormwater bill, or visit the PWSA Stormwater Fee Finder website -

(<https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc>)

$$* 0.0625 \text{ ft} = \frac{3}{4} \text{ inches} \times \frac{1 \text{ ft}}{12 \text{ inches}}$$

\*To convert the value from cubic feet to gallons, multiply by 7.48.

Residential customers are also eligible for a one-time credit of \$40 if they can demonstrate the use of a rain barrel to capture and detain roof runoff. Customers must submit a photo of the rain barrel installed and in good working order.

### 3. Non-Residential Customers

Non-residential customers can receive stormwater fee credit by capturing and detaining runoff on-site through the use of structural BMPs that meet or exceed recent development standards in place in the City of Pittsburgh.

Non-residential customers who bring parts of their property up to the most stringent Stormwater Management standards, (the "2019 standards" <https://pittsburghpa.gov/dcp/stormwater> ) will receive a 60% credit on the part of the property that meets the standards. Those standards are:

- Keep 1" or more of water from running off the impervious surfaces on their property and from getting into rivers or streams.

Non-residential customers who bring parts of their property up to the second-most stringent Stormwater Management standards (the "2016 standards"), will receive a 45% credit on the part of the property that meets those standards. While the 2016 Stormwater Management Standards have been replaced by the 2019 Stormwater Management Standards, the 2016 standards are:

- Keep  $\frac{3}{4}$ " of an inch or more of water from running off the impervious surfaces on their property and from getting to rivers or streams.

In both of the above situations, only the portion of the property's impervious area that meets the requirement will be used to compute the credit. The rest of the property will have the same charge as before.



Non-Residential Customers will be eligible for a credit provided that an approved stormwater BMP has been installed and the owner can demonstrate that the BMP is functioning as intended. Customers who have completed a Stormwater Plan and have received a letter from the City attesting that their plan is adequate to have met these requirements. The letter from the City must be submitted with a credit application and other required supporting documentation for a Non-Residential property. Customers who have implemented stormwater treatment outside of City requirements may not receive this letter; however, Customers may submit their plans and calculations to PWSA review.

To calculate the runoff volume that needs to be controlled on a property to obtain a 60% credit, multiply the impervious area in square feet by 0.083 feet (the same as one inch).

To calculate the runoff volume that needs to be controlled on a property to obtain a 45% credit, multiply the impervious area in square feet by 0.0625 feet (the same as 3/4 inch).

Non-residential customers can also earn a credit of between 75% and 100% of their stormwater fees, for "regional efforts - or "Enhanced Volume Control" for controlling at least 25% more runoff than what is required by the City of Pittsburgh 2019 stormwater standards.

Non-residential customers can also receive credit through passive management of stormwater via a property's green spaces. Non-residential customers who provide an engineer-stamped drainage analysis which demonstrates that green spaces are receiving and infiltrating runoff from adjacent impervious surfaces for which  $\frac{3}{4}$  inch of runoff is infiltrated by green spaces will be eligible for 45% credit, and impervious surfaces for which 1 inch of runoff is infiltrated by green spaces will be eligible for 60% credit.

4. Terms:

Application

Customers must submit a completed BMP credit application. The current application will be available on the Authority's website.

Site Inspection

The Authority has the right to inspect the parcel and BMP(s) to verify the information provided in the application and to verify ongoing compliance with the Tariff. If a credit recipient fails an inspection, a notice will be sent to the Customer stating that corrections need to be made. If adequate corrections are not completed or addressed within the time frame specified in the notice, the credit shall be rescinded. To reinstate the credit, the Customer must reapply.

Maintenance

Customers receiving credits must notify the Authority if a BMP becomes impaired, inoperable or is removed from the property within 10 business days of the event causing this condition. If a Customer fails to maintain a BMP such that, in the Authority's sole determination, it ceases to function in the same manner as which the credit was approved, the Authority may terminate the Customer's credit and require a new credit application to be submitted and approved.

**(C) = Change**

Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program.
  
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below 200% based on the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
  
3. Rate (Storm Water Service Charge): The Storm Water Service Charge for residential customers pursuant to Rider BDP for participants with income at or below 150% of the Federal Poverty Level will pay 15% of the applicable Storm Water Service Charge under Part I, Section A.1 (which represents an 85% discount off the service charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
  
4. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

**(C) = Change**

# Exhibit JAM-16

The Pittsburgh Water  
and Sewer Authority

Supplement No. 3  
Tariff Storm Water - Pa. P.U.C. No. 1

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THE PITTSBURGH WATER AND SEWER AUTHORITY

RATES, RULES AND REGULATIONS GOVERNING

THE PROVISION OF STORM WATER COLLECTION, CONVEYANCE,

TREATMENT AND/OR DISPOSAL SERVICE

TO THE PUBLIC IN THE TERRITORY DESCRIBED HEREIN

Issued: ~~November 15, 2022~~ **May 9, 2023**

Effective: ~~January 14, 2023~~ **July 8, 2023**

By: William J. Pickering, Chief Executive Officer  
1200 Penn Avenue, Pittsburgh, PA 15222  
Tel: 412-255-8800

NOTICE

This tariff makes changes in **rates** ~~rules and regulations~~ as **supported by the May 9, 2023 filing** ~~approved by the Commission in its Final Order dated July 14, 2022~~ at Docket Nos. **R-2023-3039919** ~~M-2018-2640802 and M-2018-2640803~~

LIST OF CHANGES

**TABLE OF CONTENTS (PAGE NO. 3)**

Added page number for new Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC)

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.1 RESIDENTIAL SERVICE, NO. 3 SERVICE CHARGE (PAGE NO. 7)**

Added rates which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.2 NON-RESIDENTIAL SERVICE, NO. 3 SERVICE CHARGE (PAGE NO. 8)**

Added rates which will increase for all customer classes effective February 8, 2024, January 1, 2025 and January 1, 2026.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION A.3 INFRASTRUCTURE IMPROVEMENT AND CUSTOMER ASSISTANCE CHARGES (NEW PAGE NOS. 8A-8E)**

New text describing Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC) to include purpose, effective rate, computation, semi-annual adjustments, and annual reconciliation.

**PART I: SCHEDULE OF RATES AND CHARGES SECTION B STORM WATER MANAGEMENT CHARGE CREDITS, NO. B.1 RESIDENTIAL AND NON-RESIDENTIAL CREDIT (PAGE NO. 9, NEW PAGE NOS. 9A-9C AND PAGE NO. 10)**

Revised and updated text and deletions to reflect terms and conditions related to availability of credits to customers who take steps to reduce stormwater runoff.

**RIDER BDP – BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 17)**

Increase eligibility from 150% of FPL to 200% of FPL. Added text that effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC.

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(C)

**(C) = Change**

PART I: SCHEDULE OF RATES AND CHARGES

Section A - Storm Water Management Service Charge

Section A.1 - Residential Service

1. Applicability:

The rates under this schedule apply throughout the Authority's service territory for service rendered on and after the effective date shown at the bottom of this page.

2. Availability:

The rates under this schedule are available to residential customers.

3. Rate:

Each residential customer receiving service under this schedule will be assessed a monthly service charge at the following rate. Rates shall be calculated based upon the Equivalent Residential Unit (ERU) as determined by the Authority.

Service Charge

	<u>Effective</u> <u>January 12,</u> <u>2022</u> <u>February 8,</u> <u>2024</u>	<u>Effective</u> <u>January 1, 2025</u>	<u>Effective</u> <u>January 1,</u> <u>2026</u>	<u>(C)</u>
<b>Tier 1</b> (Impervious area of 400 square feet to less than 1,015 square feet, 0.5 ERUs)	\$5.13 <del>\$2.98</del>	\$6.07 <del>\$3.98</del>	\$7.10	(I) / (I) / (I)
<b>Tier 2</b> (Impervious area of 1,015 square feet to less than 2,710 square feet, 1 ERU)	\$10.26 <del>\$5.96</del>	\$12.14 <del>\$7.95</del>	\$14.20	(I) / (I) / (I)
<b>Tier 3</b> (Impervious area greater than or equal to 2,710 square feet, 2 ERUs)	\$20.52 <del>\$11.92</del>	\$24.28 <del>\$15.90</del>	\$28.40	(I) / (I) / (I)

(c) = Change (I) = Increase



Section A.2 - Non-Residential Service

1. Applicability:

The rates under this schedule apply throughout the Authority's service territory for service rendered on and after the effective date shown at the bottom of this page.

2. Availability:

The rates under this schedule are available to non-residential customers.

3. Service Charge:

Rates for developed properties are determined on an Equivalent Residential Unit basis. Each Customer receiving service under this schedule will be assessed the following monthly service charge(s) based upon the total amount of measured impervious area contained on the property. Measured impervious area shall be divided by 1,650 square feet and rounded up to the nearest whole number to determine the number of ERUs represented on the property. The service charge applicable to each developed property shall be calculated as follows:

Calculation of Service Charge

Service Charge = (Total IA / 1,650 square feet per ERU  
(quotient rounded up to nearest whole number)) \* ERUR

Where:

IA = The Customer's property impervious area (sq. ft.) as measured by the Authority.

ERUR = The equivalent rate in dollars and cents for one (1) ERU.

	<u>Effective</u> <u>January 12,</u> <u><del>2022-February</del></u> <u>8, 2024</u>	<u>Effective</u> <u>January 1,</u> <u><del>2023</del></u>	<u>Effective January 1,</u> <u>2026</u>	<u>(C)</u>
<b>Rate per (1) ERU</b>	\$10.26 <del>\$5.96</del>	\$12.14 <del>\$7.95</del>	\$14.20	<b>(I) / (I) / (I)</b>

The minimum service charge for any developed property is equal to that charged for Tier 2 residential properties.

(c) = Change (I) = Increase

**Section A.3 - Infrastructure Improvement and Customer Assistance Charges**

**1. Infrastructure Improvement Charge (IIC):** In addition to the charges provided in this tariff, and pursuant to the Commission's Statement of Policy at 52 Pa. Code §§ 69.361 et seq., and Section 1307(a) of the Public Utility Code, an Infrastructure Improvement Charge will apply uniformly to all classes of **stormwater** customers for each **Equivalent Residential Unit (ERU)** assessed.

a. Purpose. The purpose of the IIC is to begin timely recovery of specific interest only and principal and interest ("PI") obligations due by PWSA for loans received from the Pennsylvania Infrastructure Investment Authority ("PENNVEST") and the federal government loan program known as the Water Infrastructure Finance and Innovation Act ("WIFIA") when they first become due and until fully repaid and will remain in effect until costs are fully recovered.

b. The currently effective IIC is:

Customer Class	Infrastructure Improvement Charge Rate per ERU Effective February 8, 2024
All Customers	\$0.00

The above charge per ERU is determined as follows:

$$IIC = (PI/TOTERU)/12$$

IIC = Monthly Infrastructure Improvement Charge per ERU

PI = Annual Principal and Interest per PENNVEST and WIFIA  
Loans identified below

TOTERU = Total Equivalent Residential Units of all  
customers in forecast year



f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement. The IIC shall remain in effect if and until included in the general base rates of the Authority; provided, however, that the charge may be continued or adjusted by the Authority as additional PENNVEST and WIFIA loans, which have been approved for other PWSA Infrastructure Improvement projects, become due and payable.

g. The charge will be not reflected as a separate line item on each customer's bill.

h. The Authority will segregate all revenues dedicated for PENNVEST and WIFIA repayment so long as the charge remains in effect.

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**2. Customer Assistance Charge ("CAC").** In addition to the charges provided in this tariff, and pursuant to Section 1307(a) of the Public Utility Code, a Customer Assistance Charge will apply uniformly to all classes of stormwater customers for each Equivalent Residential Unit (ERU) assessed.

a. **Purpose.** The purpose of the CAC is to recover: 1) the discounts provided to Customers pursuant to the Bill Discount Program (BDP); 2) the operating costs for the PGH20 Cares Team; 3) the costs of PWSA's Hardship Funding; and 4) for customers entering the BDP on or after February 8, 2024, past due arrearages forgiven pursuant to the PWSA's Arrearage Forgiveness Program.

b. The currently effective CAC is:

Customer Class	Customer Assistance Charge Rate per 1000 Gals.
	Effective February 8, 2024
All Customers	\$0.00

c. **Computation.** The basic component of the CAC will be determined by dividing the total costs as identified applicable costs for recovery by the applicable ERUs for all customers in the forecast year.

d. **Semi-Annual Adjustments.** The CAC is subject to change on a semi-annual basis effective February 1 and August 1 based on projected changes in actual costs to be incurred in the next six-month period. Semi-annual updates to be filed by PWSA at least ten (10) days prior to the effective date of the update. Supporting data for each semi-annual update will be provided.

- e. **Annual Reconciliation.** The CAC will be subject to annual reconciliation and refund based on based on actual ERUs assessed and actual costs for the prior 12- month fiscal year period. The CAC will be adjusted to reflect either a credit or an increase in the charge as determined by the reconciliation process to be effective February 1. Supporting data for each annual reconciliation will be provided at least ten (10) days prior to the February 1 effective date of the reconciliation.
  
- f. The charge will be effective the first billing cycle immediately following the effective date of the tariff supplement.
  
- g. The charge will be not reflected as a separate line item on each customer's bill.

Section B - Storm Water Management Service Charge Credits

B.1 - Residential and Non-Residential Credit

1. Applicability:

The credits under this schedule are available to customers who take steps to reduce stormwater runoff leaving their property and entering PWSA's stormwater management system and natural receiving waters. Residential and non-residential customers are eligible for different credits as detailed in the sections below. apply throughout the Authority's service territory for service rendered on and after the effective date shown at the bottom of this page. (C)

[rest of page intentionally blank]

2. Availability

This credit is available to non-residential Customers that meet Pittsburgh 2019 stormwater standards in Title Thirteen of the Pittsburgh Zoning Code, or more recent or restrictive standards, by controlling at least 1" of runoff from impervious surfaces on the property for which a credit is sought, if (i) Best Management Practices (BMPs) located on the property have been constructed in compliance with approved plans, (ii) the Customer is current with payments owed on all billed charges and fees on the Customer's account and are otherwise in compliance with the Rules and Regulations of this Tariff; (iii) the Customer remains responsible for all cost of operation and maintenance of the BMP; (iv) the Authority is granted access to the BMP for purpose of inspecting adherence to design, maintenance and operating standards; and (v) there is no significant change in land use draining to the BMP or alterations made to the approved BMP without prior approval of the Authority. This credit is also available to residential customers who disconnect downspouts and redirect property drainage to street planters, or who control at least ¾" of runoff from impervious surfaces on the property for which a credit is sought. A similar credit is available for properties meeting the 2016 storm water standards that were replaced by the Pittsburgh 2019 storm water standards in Title Thirteen of the Pittsburgh Zoning Code. (C)

**(C) = Change**

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## 2. Residential Customers:

Residential customers can receive a stormwater credit, reducing the stormwater charge by at least 50%, by controlling at least  $\frac{3}{4}$  of an inch of runoff from their property's impervious surfaces. A residential customer may receive a stormwater credit by installing (or documenting the performance of previously installed) stormwater control measures. The control measure must capture for 24 to 72 hours and slowly release at least  $\frac{3}{4}$  of an inch of runoff from the impervious surfaces on their property. The more impervious surface on a residential property, the more runoff a measure must control to qualify for the fee credit. To calculate the runoff volume that needs to be controlled on a residential property –

$$\text{* Runoff Volume to be Controlled on a Residential Property in Gallons =} \\ \text{Impervious Area sf} \times 0.0625 \times 7.48$$

\*To find your property's Impervious Area, consult your stormwater bill, or visit the PWSA Stormwater Fee Finder website –

<https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc>

$$\text{* } 0.0625 \text{ ft} = \frac{3}{4} \text{ inches} \times \frac{1 \text{ ft}}{12 \text{ inches}}$$

\*To convert the value from cubic feet to gallons, multiply by 7.48.

Residential customers are also eligible for a one-time credit of \$40 if they can demonstrate the use of a rain barrel to capture and detain roof runoff. Customers must submit a photo of the rain barrel installed and in good working order.



### 3. Non-Residential Customers

Non-residential customers can receive stormwater fee credit by capturing and detaining runoff on-site through the use of structural BMPs that meet or exceed recent development standards in place in the City of Pittsburgh.

Non-residential customers who bring parts of their property up to the most stringent Stormwater Management standards, (the “2019 standards” <https://pittsburghpa.gov/dcp/stormwater> ) will receive a 60% credit on the part of the property that meets the standards. Those standards are:

- Keep 1” or more of water from running off the impervious surfaces on their property and from getting into rivers or streams.

Non-residential customers who bring parts of their property up to the second-most stringent Stormwater Management standards (the “2016 standards”), will receive a 45% credit on the part of the property that meets those standards. While the 2016 Stormwater Management Standards have been replaced by the 2019 Stormwater Management Standards, the 2016 standards are:

- Keep  $\frac{3}{4}$ ” of an inch or more of water from running off the impervious surfaces on their property and from getting to rivers or streams.

In both of the above situations, only the portion of the property’s impervious area that meets the requirement will be used to compute the credit. The rest of the property will have the same charge as before.

Non-Residential Customers will be eligible for a credit provided that an approved stormwater BMP has been installed and the owner can demonstrate that the BMP is functioning as intended. Customers who have completed a Stormwater Plan and have received a letter from the City attesting that their plan is adequate to have met these requirements. The letter from the City must be submitted with a credit application and other required supporting documentation for a Non-Residential property. Customers who have implemented stormwater treatment outside of City requirements may not receive this letter; however, Customers may submit their plans and calculations to PWSA review.

To calculate the runoff volume that needs to be controlled on a property to obtain a 60% credit, multiply the impervious area in square feet by 0.083 feet (the same as one inch).

To calculate the runoff volume that needs to be controlled on a property to obtain a 45% credit, multiply the impervious area in square feet by 0.0625 feet (the same as 3/4 inch).

Non-residential customers can also earn a credit of between 75% and 100% of their stormwater fees, for "regional efforts - or "Enhanced Volume Control" for controlling at least 25% more runoff than what is required by the City of Pittsburgh 2019 stormwater standards.

Non-residential customers can also receive credit through passive management of stormwater via a property's green spaces. Non-residential customers who provide an engineer-stamped drainage analysis which demonstrates that green spaces are receiving and infiltrating runoff from adjacent impervious surfaces for which  $\frac{3}{4}$  inch of runoff is infiltrated by green spaces will be eligible for 45% credit, and impervious surfaces for which 1 inch of runoff is infiltrated by green spaces will be eligible for 60% credit.

~~3. Determination of Credit:~~

~~For non-residential customers the amount of credit shall be 60% for that proportion of impervious surface for which the 2019 standard is met, and 45% for that proportion of impervious surface for which the 2016 standard is met. For residential tier 2 or tier 3 Customers the amount of the credit will be that associated with reducing the property's storm water service charge to that of the next lower residential tier rate. For tier 1 Customers the credit amount will be 50%.~~

(C)

~~For non-residential customers who undertake regional efforts or exceed Pittsburgh 2019 stormwater standards by controlling at least 25% more runoff than required, a higher level of credit may be granted upon review. The maximum credit under this approach will be 100%.~~

(C)

4. Terms:

Application

Customers must submit a completed BMP credit application. The current application will be available on the Authority's website.

Site Inspection

The Authority has the right to inspect the parcel and BMP(s) to verify the information provided in the application and to verify ongoing compliance with the Tariff. If a credit recipient fails an inspection, a notice will be sent to the Customer stating that corrections need to be made. If adequate corrections are not completed or addressed within the time frame specified in the notice, the credit shall be rescinded. To reinstate the credit, the Customer must reapply.

Maintenance

Customers receiving credits must notify the Authority if a BMP becomes impaired, inoperable or is removed from the property within 10 business days of the event causing this condition. If a Customer fails to maintain a BMP such that, in the Authority's sole determination, it ceases to function in the same manner as which the credit was approved, the Authority may terminate the Customer's credit and require a new credit application to be submitted and approved.

**(C) = Change**

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Rider BDP - Bill Discount Program (Residential)

1. Bill Discount Program: This rider is a program designed to enroll residential ratepayers who satisfy the criteria set forth below in a monthly discounted rate program.
  
2. Availability: This rider is available for a Residential customer that meets the low-income criteria of annual household gross income at or below ~~200~~150% based on the Federal Poverty Level. (C)
  - a. A residential ratepayer who meets the eligibility criteria should complete an application for the Bill Discount Program.
  - b. Eligible customers may be asked to verify income every two years.
  
3. Rate (Storm Water Service Charge): The Storm Water Service Charge for residential customers pursuant to Rider BDP for participants with income at or below 150% of the Federal Poverty Level will pay 15% of the applicable Storm Water Service Charge under Part I, Section A.1 (which represents an 85% discount off the service charge). Any other rates, fees and charges will be at the prevailing amounts under this tariff.
  
4. Infrastructure Improvement Charge ("IIC") and Customer Assistance Charge ("CAC"): Effective January 1, 2025, BDP participants will pay 50% of the IIC charge and 0% of the CAC. (C)

**(C) = Change**

**VERIFICATION**

I, Julie A. Mechling, hereby state that I am the Director of Customer Service for The Pittsburgh Water and Sewer Authority (“PWSA”), I hereby verify that the facts set forth in in the attached Petition for Authorization to Implement Customer Assistance Charge are true and correct (or are true and correct to the best of my knowledge, information and belief). I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: 05/08/2023 | 9:17 AM EDT

DocuSigned by:  
*Julie A. Mechling*  
00802B35EA54E3...  
\_\_\_\_\_  
Julie A. Mechling  
Director of Customer Service  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**HAROLD J. SMITH**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Allocation of Total System Revenue Requirements

Cost Allocation

Rate Design

Gradualism

Rates for Years Two and Three

May 9, 2023

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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. My business address is 383 Corona Street, #204, Denver,  
4 Colorado 80218.

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, wastewater, and stormwater  
11 rates.

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

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

20 **Q. DO YOU BELONG TO ANY PROFESSIONAL ORGANIZATIONS OR**  
21 **COMMITTEES?**

22 A. Yes. I am a member of the American Water Works Association where I served as  
23 chairman of the Competitive Practices Committee.

1 **Q. HAVE YOU PREVIOUSLY TESTIFIED IN PROCEEDINGS BEFORE THE**  
2 **PENNSYLVANIA PUBLIC UTILITY COMMISSION (PAPUC) ON BEHALF OF**  
3 **PWSA?**

4 A. Yes, I provided testimony for the Pittsburgh Water and Sewer Authority's (PWSA) first  
5 three water (Docket Nos. R-2018-3002645, R-2020-3017951, and R-2021-3024772) and  
6 wastewater conveyance (Docket Nos. R-2018-3002647, R-2020-3017970 and R-2021-  
7 3024774), and first stormwater (Docket No.R-2021-3024779) rate filings before the  
8 PAPUC.

9 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE ANY OTHER REGULATORY**  
10 **AGENCIES ON UTILITY RATE RELATED MATTERS?**

11 A. Yes. I have provided testimony before the Rhode Island Public Utilities Commission  
12 (RIPUC) in Providence Water Supply Board's nine most recent filings before the RIPUC  
13 (Docket Nos. 3832, 4061, 4070, 4080, 4287, 4406, 4571, 4618 and 4994) and in Newport  
14 Water's nine most recent filings (RIPUC Docket Nos. 3578, 3675, 3818, 4025, 4128,  
15 4243, 4355, 4595 and 4933). I have also provided testimony on water, sewer and  
16 stormwater rate-related matters before the Tennessee Regulatory Authority as well as in  
17 court proceedings in Arizona, Connecticut, Indiana, Maryland, and Maine.

18 **II. PURPOSE OF TESTIMONY**

19 **Q. PLEASE DESCRIBE YOUR ROLE IN THIS PROCEEDING.**

20 A. I have worked with the staff of PWSA to prepare a class cost of service study (CCOSS)  
21 and develop cost-based rates and charges for water, wastewater conveyance, and

1 stormwater service. The results of my analyses are included in the schedules  
2 incorporated herein with my testimony.

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

4 A. Raftelis performed a water and wastewater conveyance rate study for PWSA in 2016 and  
5 again in 2017. Raftelis also prepared the CCOSS that supported PWSA’s first three rate  
6 filings before the PAPUC.

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

8 A. I am sponsoring PWSA’s CCOSS and rate designs for the water, wastewater conveyance,  
9 and stormwater tariffs. The purpose of the CCOSS is to allocate PWSA’s costs of  
10 providing service to each utility and rate class. The rate design analysis results in water,  
11 wastewater conveyance, and stormwater rates that help ensure that PWSA’s costs are  
12 recovered from each class in a fair and equitable manner and in a way that reflects the  
13 demands that each class places on the systems. This testimony provides a description of  
14 the cost allocation and rate setting process and provides an explanation for each schedule  
15 attached to my testimony. The schedules use revenue requirements developed by Mr. Ed  
16 Barca for the Fiscal Years Ending (FY) December 30, 2024, 2025, and 2026. The FY  
17 2024 revenue requirement forms the basis for the cost-of-service analysis and FY 2024  
18 rates. The schedules also include revenue requirements and rates for FY 2025 and FY  
19 2026. The proposed rates for FY 2025 include implementing two new charges, one for  
20 the recovery of costs associated with PWSA’s low-income customer assistance program  
21 (Customer Assistance Charge) and the other for the recovery of debt service on future  
22 PENNVEST and WIFIA loans (Infrastructure Improvement Charge). The proposed rates  
23 for FY 2025 also accommodate the elimination of the monthly water and sewer usage

1 allowances. FY 2026 rates represent an across the board increase of the FY 2025 rates to  
 2 generate revenue to meet the utility’s FY 2026 revenue requirements.

3 **Q. WHAT ARE YOUR GENERAL CONCLUSIONS?**

4 A. PWSA needs additional rate revenue to properly fund O&M and capital costs related to  
 5 providing safe and reliable service to its customers. PWSA is seeking to address this  
 6 need through a multi-year rate increase. The proposed increases in overall rate revenue,  
 7 inclusive of the DSIC, are as follows:

- 8 • FY 2024 – \$46.8 million (22.5%)
- 9 • FY 2025 – \$45.4 million (17.8%)
- 10 • FY 2026 – \$53.9 million (17.9%)

11 **Q. WILL ALL RATES INCREASE BY THE PERCENTAGE INDICATED FOR**  
 12 **EACH FISCAL YEAR?**

13 A. No, the percent increase represents the increase in total overall rate revenue needed in  
 14 each fiscal year. The breakdown of current rates, proposed rates, and the associated  
 15 percentage changes will be discussed in more detail below and detailed in my water,  
 16 wastewater conveyance, and stormwater schedules. Rate adjustments will vary and are  
 17 based on the cost-of-service analysis and rate design described below.

18 **Q. HOW WILL THE INCREASES IN FY 2025 AND FY 2026 BE APPLIED?**

19 A. The rate development process for each year will be described in detail in my testimony.  
 20 In general, the adjustments for FY 2025 will be applied based on the COSS performed for  
 21 the FY 2024 rates; however, rate design adjustments will be needed to accommodate the  
 22 elimination of the usage allowance and the implementation of the Customer Assistance  
 23 Charges (CAC) and the Infrastructure Improvement Charge (IIC).  
 24 Adjustments for FY 2026 will be on an across-the-board basis such that all rates will  
 25 increase by the percent increase in revenue requirements.

1 **Q. HAVE YOU EVER PREPARED A MULTI-YEAR FILING FOR A REGULATED**  
 2 **UTILITY?**

3 A. Yes, I have prepared multi-year filings for two municipal regulated utilities in Rhode  
 4 Island in accordance with R.I. Gen. Laws § 39-15.1-4, which allows utilities to file a rate  
 5 plan for a period not to exceed six years. The City of Newport Water Department has  
 6 filed two multi-year rate plans. The first of these was a four-year plan filed in April of  
 7 2011 (RIPUC Docket No. 4243). The second was a two-year rate plan filed in February  
 8 of 2019 (RIPUC Docket No. 4933).

9 In Docket 4243, the rates for years two through four of the plan were designed to recover  
 10 additional debt service costs associated with a series of three borrowings used to fund the  
 11 replacement of and upgrades to Newport’s water treatment facilities. The rates approved  
 12 for Steps 2 through Step 4 of the plan were based on assumptions regarding the  
 13 anticipated borrowing schedule and the interest rates associated with future borrowings  
 14 and did not recover additional operating and maintenance costs.

15 In December of 2019, Providence Water filed a three-year rate plan (RIPUC Docket No.  
 16 4994). Rates for the first year of the plan were based on a cost-of-service study. Proposed  
 17 rate increases for years two and three of the plan were applied on an across-the-board  
 18 basis to recover additional revenue needed to offset increases in O&M and capital costs.

19 **Q. HOW DOES THE MULTI-YEAR FILING PROCESS WORK IN RHODE**  
 20 **ISLAND?**

21 A. As is the case with a standard rate filing, utilities in Rhode Island are required to submit  
 22 an application for a rate increase, and the Commission has the option of approving the  
 23 proposed rates or suspending the filing for up to eight months from the proposed effective  
 24 date to conduct a full investigation and hearing on the proposal. After the investigation,

1 the Commission approves the rates for the first year and grants tentative approval for the  
2 rates in each subsequent year of the multi-year plan. Before implementing each step of  
3 the multi-year plan, utilities must submit a compliance filing at least 90 days prior to the  
4 proposed effective date of the new rates. The compliance filing includes information  
5 regarding the actual cost increases and proposed rates designed to recover the actual  
6 costs. Upon review of the compliance filing, the Commission can either approve the  
7 proposed rates or disallow certain costs and adjust the proposed rates. It is important to  
8 note that only cost increases addressed in the original filing can be recovered in the new  
9 rates. This restriction limits the scope of the investigation required to verify the need for  
10 the proposed increases.

11 In the case of Newport, changes in construction schedules allowed Newport to delay  
12 borrowing for a year and Newport filed a compliance filing requesting that the second  
13 step of its multi-year plan be delayed by a year. The Commission approved Newport's  
14 request and Newport filed a compliance filing the following year. The compliance filing  
15 requested rate increases to recover the actual additional debt service associated with state  
16 revolving fund loans.

17 In the case of Providence, the Commission made a downward adjustment to O&M costs  
18 in the second year of the plan and set rates at a level sufficient to cover the reduced O&M  
19 costs. Providence sought approval for a delay in the implementation of its third increase  
20 in order to assess whether increases in its capital costs could be offset with funds  
21 anticipated to be available as a result of the Bipartisan Infrastructure Law. The RIPUC  
22 allowed a one-year delay in the implementation of the increase.

1 **Q. WHAT ARE THE BENEFITS OF HAVING A MULTI-YEAR RATE PLAN?**

2 A. The primary benefit is that multi-year filings allow for scrutiny of the utility's rate  
3 request, but the amount of time and effort on the part of the utility and regulators is  
4 significantly less than would be required if the utility was required to prepare, submit,  
5 and defend a full rate filing for each year of the multi-year plan.

6 An approved multi-year plan also provides lenders and rating agencies with a greater  
7 level of certainty that the utility will be able to implement the rates necessary to ensure  
8 that its debt service obligations will be met. This greater level of certainty should result in  
9 more favorable borrowing terms, thereby reducing the utility's cost of providing service.

10 **Q. DID PWSA AGREE TO ADDRESS CERTAIN ISSUES WITH THE CCOSS AS**  
11 **PART OF THE MOST RECENT RATE CASE SETTLEMENT ENTERED IN**  
12 **DOCKET NOS. R-2021-3024772 (WATER), R-2021-3024774(WASTEWATER)**  
13 **AND R-2021-3024779 (STORMWATER)?**

14 A. Yes, in the Settlement Agreement, PWSA agreed to address the following issues related  
15 to cost allocation and rate design:

- 16 1) Identify and properly allocate the costs associated with water service lines  
17 2) Consider the removal of the minimum usage allowances  
18

19 **Q. HAVE ALL OF THESE ISSUES BEEN ADDRESSED IN THIS DOCKET?**

20 A. Yes. All items have been addressed in this rate case.

21 **Q. HOW DOES YOUR TESTIMONY RELATE TO THAT OF OTHER PWSA**  
22 **WITNESSES?**

23 A. Mr. Barca's testimony supports PWSA's revenue requirements for the total system  
24 revenue requirements. My testimony uses PWSA's revenue requirements for the Fully  
25 Projected Future Test Year ("FPFTY") as a starting point. Mr. Keith Readling has also  
26 provided testimony relating to PWSA's proposed stormwater tariff.

1 **Q. PLEASE DESCRIBE HOW YOUR TESTIMONY IS ORGANIZED.**

2 A. I will first describe the process used to allocate PWSA’s FY 2024 revenue requirements  
 3 to each utility service. I will then describe the process used to develop rates that will  
 4 recover revenue requirements for water and wastewater conveyance services. Mr. Keith  
 5 Readling will provide testimony that describes the process used to develop rates for  
 6 stormwater service. Next, I will address the use of gradualism to help ensure that no  
 7 single rate class experiences rate shock once the approved rates are implemented. Next, I  
 8 will describe the development of proposed water and sewer rates for FY 2025. As noted  
 9 previously, the proposed rates for FY 2025 accommodate the elimination of the monthly  
 10 volume allowance and introduce the CAC and the IIC. Lastly, I will describe the  
 11 development of the proposed rates for FY 2026.

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

14 A. My testimony includes four separate sets of exhibits, one set for total system revenue  
 15 requirements, a second set for water rates, a third set for wastewater conveyance rates,  
 16 and a fourth set for stormwater conveyance rates. They are as follows:

17 **Allocation of Total System Revenue Requirements Exhibits:**

- 18 a. **HJS-1 FPFTY 2024 Revenue Requirements:** This schedule shows the total  
 19 system revenue requirements for the FPFTY. It also provides the allocation of the  
 20 total system revenue requirements to the water, wastewater conveyance, and  
 21 stormwater utility services.
- 22 b. **HJS-2 Utility Allocation Factor Summary:** This schedule provides a summary of  
 23 the factors used to assign costs to the water, wastewater conveyance, and  
 24 stormwater utility services.

25  
 26



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

- 2           a. **HJS-1W FPFTY Water Revenue Requirements:** This schedule shows the water  
3           revenue requirements that must be recovered from the various water rates and  
4           charges assessed by PWSA.
- 5           b. **HJS-2W Assignment to Functional Categories:** This schedule shows how the  
6           FPFTY revenue requirements are allocated to different functional categories.
- 7           c. **HJS-3W Allocation to Base/Extra Capacity Categories:** This schedule shows  
8           the way in which the FPFTY revenue requirements are allocated to different cost-  
9           of-service categories.
- 10          d. **HJS-4W Allocation Factor Summary:** This schedule provides a summary of the  
11          factors used to assign costs to functional categories and cost of service categories.
- 12          e. **HJS-5W Allocation Factor Detail:** This schedule shows the derivation of the  
13          allocation factors presented in Schedules HJS-2 and HJS-4W.
- 14          f. **HJS-6W Water Units of Service:** This schedule demonstrates projected water  
15          consumption and peaking factors for each customer class.
- 16          g. **HJS-7W Fire Protection Cost Allocation and Units of Service:** This schedule  
17          shows the derivation of allocation factors for allocating costs to public and private  
18          fire protection services as well as the equivalent units of service for fire charge  
19          calculations.
- 20          h. **HJS-8W Water Unit Cost of Service:** This schedule shows the calculation for  
21          the unit costs of providing service to meet the base and extra capacity demands  
22          placed on the water system. It also shows the unit cost of the various fixed cost  
23          components.
- 24          i. **HJS-9W Cost Distribution to Customer Classes:** This schedule shows the  
25          allocation of categorized costs to customer classes based on their demand  
26          characteristics.
- 27          j. **HJS-10W Adjustments to Allocated Cost of Service:** This schedule shows the  
28          adjustments PWSA is required to make to the allocated cost of service by customer  
29          class.

- 1 k. **HJS-11W Forgone Revenue Cost of the Bill Discount Program:** This schedule  
2 calculates the forgone revenue cost of the Bill Discount Program for assignment to  
3 customer classes.
- 4 l. **HJS-12W Rate Design:** This schedule demonstrates the calculation of the  
5 Minimum Charges and Volumetric Charges necessary to meet both the Cost of  
6 Service and Adjusted Cost of Service revenue requirements.
- 7 m. **HJS-13W Proposed Rates:** This schedule shows the proposed water Minimum  
8 Charges and Volume Charges for each customer class, the proposed Fire System  
9 Charges, and how the proposed charges compare to existing rates.
- 10 n. **HJS-14W Comparison of Base Rate Revenues by Customer Class:** This  
11 schedule provides a comparison of revenue generated from each customer class  
12 under both the existing and proposed rates. This schedule also demonstrates the  
13 percent difference between revenues under existing and proposed rates and  
14 provides a comparison of revenue by class at both cost of service and adjusted cost  
15 of service rates.
- 16 o. **HJS-15W FPFTY CCOS Comparison – Water:** This schedule summarizes the  
17 differences in total revenue generated at existing rates, revenue at proposed rates,  
18 and the unadjusted cost of service for each customer class, including DSIC and  
19 miscellaneous revenues.
- 20 p. **HJS-16W Typical Water Bill Comparison – 2024:** This schedule provides a  
21 comparison of typical monthly water bills under the existing and proposed rates for  
22 typical customers from each customer class.
- 23 q. **HJS-17W Water Revenue Proof:** This schedule provides a summary of the  
24 revenue requirements and revenue to be recovered under both the unadjusted Cost  
25 of Service rates and the proposed rates.
- 26 r. **HJS-18W Projected Units of Service:** This schedule summarizes consumption  
27 data for each of PWSA’s customer classes for the HTY, FTY, FPFTY, and the  
28 previous two fiscal years.
- 29 s. **HJS-19W 2025 and 2026 Water Revenue Requirements:** This schedule presents  
30 the water system revenue requirements for FY 2025 and FY 2026.

- 1 t. **HJS-20W Revenue Increase Needed for 2025 and 2026:** This schedule  
2 summarizes the rate revenue increases required to meet revenue requirements in  
3 FY 2025 and FY 2026.
- 4 u. **HJS-21W 2025 Base Charge Calculation:** This schedule shows the calculations  
5 used to determine a base charge in FY 2025 for different customers based on meter  
6 size without usage allowances.
- 7 v. **HJS-22W 2025 Volume Charge Calculation:** This schedule shows the  
8 calculations used to determine a volume charge in FY 2025 for different customers  
9 based on class and the calculation of the CAC and the IIC.
- 10 w. **HJS-23W Proposed Rates:** This schedule shows the proposed water Minimum  
11 Charges and Volume Charges for each customer class, the proposed Fire System  
12 Charges, and the proposed CAC and IIC. The schedule also shows how the  
13 proposed charges compare to charges for the prior year.
- 14 x. **HJS-24W Water Revenue Proof – 2025 and 2026:** This schedule provides a  
15 summary of the revenue to be recovered under proposed rates for each year of the  
16 multi-year plan.
- 17 y. **HJS-25W Typical Water Bill Comparison – 2025 and 2026:** This schedule  
18 provides a comparison of typical monthly water bills under the existing and FY  
19 2025-2026 proposed rates for typical customers from each customer class.

20  
21 **Wastewater Conveyance Cost of Service Allocation and Rate Design Methodology**  
22 **Exhibits:**

- 23 a. **HJS-1WW FPFTY Wastewater Conveyance Revenue Requirements:** This  
24 schedule shows the wastewater conveyance revenue requirements that must be  
25 recovered from the various rates and charges assessed by PWSA.
- 26 b. **HJS-2WW Assignment to Functional Categories:** This schedule shows how the  
27 FPFTY revenue requirements are assigned to different functional categories.
- 28 c. **HJS-3WW Allocation to Cost Categories:** This schedule shows how the FPFTY  
29 revenue requirements are allocated to different cost of service categories.
- 30 d. **HJS-4WW Allocation Factor Summary:** This schedule provides a summary of  
31 the factors used to assign costs to functional categories and to allocate costs to the  
32 cost-of-service categories.

- 1 e. **HJS-5WW Allocation Factor Detail:** This shows the derivation of the allocation  
2 factors presented in Schedules HJS-2 and HJS-4WW.
- 3 f. **HJS-6WW Wastewater Conveyance Units of Service:** This schedule  
4 demonstrates projected wastewater discharge volumes for each customer class.
- 5 g. **HJS-7WW Wastewater Conveyance Unit Cost of Service:** This schedule shows  
6 the calculation for the unit costs of providing service to meet the demands placed  
7 on the wastewater conveyance system as well as the unit costs of the various  
8 components of the Minimum Charge.
- 9 h. **HJS-8WW Cost Distribution to Customer Classes:** This schedule shows the  
10 allocation of categorized costs to customer classes based on their demand.
- 11 i. **HJS-9WW Adjustments to Allocated Cost of Service:** This schedule shows the  
12 adjustments PWSA is required to make to the allocated cost of service by customer  
13 class.
- 14 j. **HJS-10WW Forgone Revenue Cost of the Bill Discount Program:** This  
15 schedule calculates the forgone revenue cost of the Bill Discount Program for  
16 assignment to customer classes.
- 17 k. **HJS-11WW Rate Design:** This schedule demonstrates the calculation of the  
18 Minimum Charges and Volumetric Charges necessary to meet both the Cost of  
19 Service and Adjusted Cost of Service revenue requirements.
- 20 l. **HJS-12WW Proposed Rates:** This schedule shows the proposed wastewater  
21 conveyance Minimum Charges and Volume Charges for each customer class and  
22 the percent change that the proposed charges represent compared to existing rates.
- 23 m. **HJS-13WW Comparison of Base Rate Revenues by Customer Class:** This  
24 schedule provides a comparison of revenue generated from each customer class  
25 under both the existing and proposed rates. This schedule also shows the percent  
26 difference between revenues under existing and proposed rates and provides a  
27 comparison of revenue by class at both the cost of service and adjusted cost of  
28 service rates.
- 29 n. **HJS-14WW FPFTY CCOS Comparison – Wastewater Conveyance:** This  
30 schedule summarizes the differences in revenue at existing rates, revenue at  
31 proposed rates, and the unadjusted cost of service.

- 1           o. **HJS-15WW Typical Wastewater Bill Comparison – 2024:** This schedule  
2           provides a comparison of typical monthly wastewater bills under the existing and  
3           proposed rates for typical customers from each customer class.
- 4           p. **HJS-16WW Wastewater Revenue Proof:** This schedule provides a summary of  
5           the revenue to be recovered under both the cost-of-service rates and proposed rates.
- 6           q. **HJS-17WW Projected Units of Service:** This schedule summarizes wastewater  
7           discharge data for each of PWSA’s customer classes for the HTY, FTY, FPFTY,  
8           and the previous two fiscal years.
- 9           r. **HJS-18WW 2025 and 2026 Wastewater Conveyance Revenue Requirements:**  
10          This schedule presents the revenue requirements for FY 2025 and FY 2026.
- 11          s. **HJS-19WW Revenue Increase Needed for 2025 and 2026:** This schedule  
12          summarizes the rate revenue increases required to meet revenue requirements in  
13          FY 2025 and FY 2026.
- 14          t. **HJS-20WW 2025 Base Charge Calculation:** This schedule shows the  
15          calculations used to determine the base charge in FY 2025 for different customers  
16          based on meter size without usage allowances.
- 17          u. **HJS-21WW 2025 Volume Charge Calculation:** This schedule shows the  
18          calculations used to determine a volume charge and the CAC and IIC in FY 2025  
19          for different customers based on class.
- 20          v. **HJS-22WW Proposed Rates:** This schedule shows the proposed sewer Minimum  
21          Charges, Volume Charges, CAC and IIC, and compares the proposed charges to  
22          charges for the prior year.
- 23          w. **HJS-23WW Wastewater Revenue Proof – 2025 and 2026:** This schedule  
24          provides a summary of the revenue to be recovered under the proposed rates for FY  
25          2025 and FY 2026.
- 26          x. **HJS-24WW Typical Wastewater Bill Comparison – 2025 and 2026:** This  
27          schedule provides a comparison of typical monthly wastewater bills under the FTY,  
28          FPFTY, and FY 2025-2026 proposed rates for typical customers from each  
29          customer class.

1           **Stormwater Cost of Service Allocation and Rate Design Methodology Exhibits:**

- 2           a. **HJS-1SW FPPTY Stormwater Revenue Requirements:** This schedule shows  
3           the stormwater revenue requirements that must be recovered from the stormwater  
4           rates assessed by PWSA.
- 5           b. **HJS-2SW Net Revenue Requirements:** This schedule shows the stormwater  
6           revenue requirements under a “full cost of service” cost distribution and a net  
7           revenue requirement proposed for ratemaking.
- 8           c. **HJS-3SW Stormwater Units of Service:** This schedule shows projected  
9           stormwater parcels and equivalent residential units (ERUs) for each customer class.
- 10          d. **HJS-4SW Stormwater COS by Customer Class:** This schedule shows the  
11          calculation of the unit cost per ERU of providing service to meet the demands  
12          placed on the stormwater conveyance system and the assignment to customer  
13          classes.
- 14          e. **HJS-5SW Adjustments to Cost of Service - Stormwater:** This schedule shows  
15          the adjustments PWSA made to the allocated cost of service by customer class.
- 16          f. **HJS-6SW Stormwater Rate Design:** This schedule demonstrates the calculation  
17          of the monthly stormwater rate under the Adjusted Cost of Service scenario.
- 18          g. **HJS-7SW FPPTY CCOS Comparison – Stormwater:** This schedule summarizes  
19          the differences in revenue at existing rates, proposed rates, and unadjusted cost of  
20          service rates.
- 21          h. **HJS-8SW Revenue Proof:** This schedule provides a summary of the revenue  
22          requirements and revenue to be recovered under both the Cost of Service rates and  
23          the proposed rates.
- 24          i. **HJS-9WW 2025 and 2026 Stormwater Revenue Requirements:** This schedule  
25          presents the differences in revenue requirements between FY 2025 and FY 2026  
26          for operating expenses, debt service, and capital expenditures.
- 27          j. **HJS-10SW Revenue Increase Needed for 2025 and 2026:** This schedule  
28          summarizes the rate revenue increases required to meet revenue requirements in  
29          FY 2025 and FY 2026.
- 30          k. **HJS-11SW Rate Design:** This schedule demonstrates the calculation of the ERU  
31          rates necessary to meet FY 2025-2026 revenue requirements.

- 1           1. **HJS-12SW Stormwater Revenue Proof – 2025 and 2026:** This schedule provides  
2           a summary of the revenue requirements and revenue to be recovered under both the  
3           unadjusted Cost of Service rates and the proposed rates for FY 2025 and FY 2026.  
4           m. **HJS-13SW Typical Stormwater Bill Comparison – 2024-2026:** This schedule  
5           provides a comparison of typical monthly bills under the FTY, FPFTY, and FY  
6           2025-2026 proposed rates for typical customers from each customer class.

7  
8 **III.           ALLOCATION OF TOTAL SYSTEM REVENUE REQUIREMENTS**

9 **Q.           WHAT IS THE LEVEL OF TOTAL SYSTEM REVENUE REQUIREMENTS?**

10 A.          Mr. Barca’s testimony supports PWSA’s revenue requirements for the total system. The  
11          total system revenue requirements for the FPFTY is \$255.3 million, as shown on  
12          Schedule HJS-1. This requirement produces an overall rate increase of \$46.8 million.

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

17 A.          The revenue requirements are designated as water only, wastewater only, stormwater  
18          only, or allocated between water, wastewater, and stormwater based on a set of allocation  
19          factors. The allocation of total system revenue requirements to water, wastewater, and  
20          stormwater for the FPFTY are shown on Schedule HJS-1.

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

22 A.          Operating budgets for the water quality lab, water treatment plant, and water distribution  
23          system are designated as water only costs, as shown on Schedule HJS-1W.

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

26 A.          The majority of the operating budget for sewer operations is designated as wastewater  
27          only with the exception of the costs associated with catch basin cleaning, which are  
28          designated as stormwater only costs.

1 **Q. ARE ANY OTHER COSTS DESIGNATED AS STORMWATER ONLY?**

2 A. No, the only cost line item in the PWSA operating budget that is allocated directly to  
3 stormwater is Catch Basin Cleaning.

4 **Q. HOW ARE THE REMAINING COSTS ALLOCATED BETWEEN WATER AND  
5 WASTEWATER CONVEYANCE?**

6 The remaining costs are allocated using a set of allocation factors. The allocation factors  
7 used in the establishment of utility service revenue requirements are summarized and  
8 described in Schedule HJS-2. The majority of the Administrative Division expenses were  
9 allocated between water, wastewater, and stormwater based on each utility's  
10 proportionate share of operations costs. The only exception is Customer Service.

11 **Q. HOW ARE CUSTOMER SERVICE COSTS ALLOCATED BETWEEN WATER,  
12 WASTEWATER, AND STORMWATER?**

13 A. The majority of Customer Service costs are allocated based on the number of bills  
14 generated, or expected to be generated, for each utility. The only exception is the Meter  
15 Service line item which is allocated based on the number of meters. Since stormwater is  
16 not a metered service, no meter costs are allocated to stormwater, as shown on Schedule  
17 HJS-2.

18 **Q. HOW ARE THE REMAINING COSTS ALLOCATED BETWEEN WATER,  
19 WASTEWATER, AND STORMWATER?**

20 A. Under the Operations Division, most costs are allocated as 100% water or wastewater  
21 conveyance. The exceptions are:

- 22 • Environmental Compliance, which is allocated based on PWSA staff's
- 23 determination of time spent on activities;
- 24 • Warehouse, which is allocated based on operations factors;
- 25 • Engineering and Construction is allocated based on the CIP.



1 Existing debt is allocated by fixed assets. Proposed debt and PAYGO are allocated by the  
2 capital plan and known sources and uses. Costs of transfers to reserves are allocated  
3 based on rate revenue between water, wastewater, and stormwater.

4 **Q. HAVE YOU IDENTIFIED THE LEVEL OF PROJECTED STORMWATER**  
5 **COSTS FOR THE FPFTY?**

6 A. Yes. As previously mentioned, the breakdown is presented on Schedule HJS-1, which  
7 shows PWSA's total revenue requirements allocated between water, wastewater  
8 conveyance, and stormwater. These costs were derived using the allocation factors  
9 provided in HJS-2. The allocation factors were applied to the total system revenue  
10 requirements in some cases and to only the wastewater conveyance costs in other cases,  
11 as shown in the allocation tables. The stormwater costs identified through the allocation  
12 process serve as the revenue requirements for the stormwater fees that that PWSA will be  
13 proposing. The process used to develop the proposed stormwater rates will be described  
14 later in this testimony and in the testimony of PWSA witness Mr. Keith Readling.

15 **IV. WATER COST ALLOCATION**

16 **Q. WHAT IS THE LEVEL OF REVENUE REQUIREMENTS TO BE RECOVERED**  
17 **BY WATER RATES AND CHARGES?**

18 A. Mr. Barca's testimony supports PWSA's total revenue requirements, and HJS-1 and HJS-  
19 2 support the allocation of total revenue requirements for water service. As shown on  
20 HJS-1W, the total water system revenue requirements for the FPFTY are \$170.1 million.  
21 A portion is projected to be recovered by a proposed Distribution System Improvement  
22 Charge (DSIC) at 7.5% of water revenues, which will be used to fund capital projects as  
23 outlined in Mr. King's and Mr. Barca's testimony. The water system revenue  
24 requirements net of DSIC are \$158.8 million.

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

3 A. Costs are allocated in a manner consistent with the Base/Extra Capacity cost allocation  
 4 methodology described in the American Water Works Association (AWWA) Manual M-  
 5 1 “Principle of Water Rates, Fees and Charges.” The methodology is a three-step process  
 6 that involves first assigning costs to functional categories, then assigning the costs from  
 7 each functional category to Base/Extra Capacity cost categories based on system demand  
 8 characteristics, and then allocating the Base/Extra Capacity cost categories to customer  
 9 classes based on customer class demand patterns.

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

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

- 16 • Supply
- 17 • Treatment
- 18 • Storage
- 19 • Transmission
- 20 • Distribution
- 21 • Meters/Services
- 22 • Billing
- 23 • Fire Protection
- 24 • Administrative Support

25 As shown on HJS-2W, the FPFTY water operating and maintenance (O&M) expenses  
 26 are accounted for in a manner consistent with PWSA’s O&M budget. With the exception  
 27 of Customer Service, Water Distribution, and Engineering & Construction, all of the  
 28 budget divisions relate directly to one functional category. Costs that are incurred in

1 support of only one function are assigned directly to that function, while costs that are  
 2 incurred in support of two or more functions are assigned to functions using allocation  
 3 factors that reflect the way a particular budget division supports each function. The  
 4 allocation factors used to assign costs to functional categories are listed and described in  
 5 Schedules HJS 4W and 5W. Schedules HJS 4W and 5W also show allocation factors  
 6 used to allocate costs to Base/Extra Capacity cost categories as described later.

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

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

13 **Q. HOW ARE WATER DISTRIBUTION COSTS ASSIGNED TO FUNCTIONAL**  
 14 **CATEGORIES?**

15 A. Since the Water Distribution division supports the Transmission and Distribution  
 16 functions, Water Distribution costs are assigned to functional categories using factor W-  
 17 K. This factor was developed based on an analysis of the water pipe inventory as shown  
 18 in Schedule HJS-5W and allocates a portion of the Water Distribution costs to the  
 19 Meters/Services function to recognize costs associated with repairing, replacing, and  
 20 maintaining service lines that extend from the water main to customer meters.

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

23 A. The Engineering & Construction division is responsible for planning and executing  
 24 PWSA’s capital projects; therefore, the division’s costs are allocated using factor W-J  
 25 which is based on the composition of the utility’s CIP as shown in HJS-5W.

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

2 A. PWSA's capital costs consist of three components: (1) Internally Generated  
3 Fund/PAYGO funded capital projects; (2) debt service; and (3) contributions to  
4 reserves. To properly assign these costs to Base/Extra Capacity cost categories, the costs  
5 must first be assigned to functional categories. All water capital costs are assigned to  
6 functions based on the make-up of the fixed assets that currently comprise PWSA's water  
7 system. This process involved assigning each of PWSA's fixed assets to the appropriate  
8 functional category and determining the percentage of the total value of the assets that is  
9 assigned to each function. These percentages are then applied to the capital costs to  
10 determine the appropriate distribution of capital costs across the functional categories.  
11 Schedule HJS-2W shows the breakdown of water fixed assets by functional categories  
12 and the resulting allocation of water capital costs to functional categories.

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 five 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. The six cost categories  
22 consist of:

- 23 • Base – Base costs are those costs that are incurred to meet the average or “base”  
24 demands of the system.
- 25 • Max Day – Max Day costs are those costs that are incurred to meet peak daily  
26 demands of the system.

- 1 • Max Hour – Max Hour costs are those costs that are incurred to meet peak
- 2 hourly demands of the system.
- 3 • Meters/Services – Meter/Services costs are the costs associated with installing,
- 4 maintaining, repairing, and replacing water meters and service lines.
- 5 • Billing – Billing costs are those costs associated with determining each
- 6 customer’s consumption and then billing them for that consumption.
- 7 • Fire Protection – Fire protection costs are the costs associated with providing
- 8 and maintaining the hydrants and associated infrastructure throughout the
- 9 system and ensuring that the system is capable of meeting fire flow demands
- 10 when needed.

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

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

16 A. Each of the allocation factors was developed as follows:

- 17 • The Base allocation factor (W-AA) simply assigns all of the costs to the Base cost
- 18 category in recognition that these costs are incurred solely to meet the average
- 19 demands placed on the system.
- 20 • The Maximum Day allocation factor (W-BB) recognizes the way in which costs
- 21 are incurred to meet the peak day demands placed on the system by the different
- 22 customer classes. This factor also allocates a portion of costs to Fire protection in
- 23 recognition of the potential peak day demand that fire protection service could place
- 24 on the system. This allocation factor is based on plant production data and is
- 25 developed by dividing average day plant production by peak day plant production.

- 1           • The Peak Hour allocation factor (W-CC) was developed in the same way as the  
2           Maximum Day allocation factor except that average day plant production is divided  
3           by the peak hour plant production. Similar to factor W-BB, this factor also allocates  
4           a portion of costs to Fire Protection in recognition of the potential peak demands  
5           that fire protection service places on the system.
- 6           • The Customer-Meters allocation factor (W-DD) simply allocates all meter related  
7           costs to the meter component of the Minimum Charge.
- 8           • The Transmission and Distribution allocation factor (W-D) considers costs  
9           associated with linear infrastructure and was developed based on an analysis of the  
10          water pipe inventory.
- 11          • The Transmission, Distribution, and Services allocation factor (W-K) considers  
12          costs associated with linear infrastructure, including costs associated with the  
13          operation, repair, and replacement of service lines, and was developed based on an  
14          analysis of the water pipe inventory plus service lines.
- 15          • The Customer-Billing allocation factor (W-EE) allocates all billing-related costs to  
16          the billing component of the Minimum Charge.
- 17          • The Fire Protection allocation factor (W-FF) assigns costs to the Fire Protection  
18          category in recognition that these costs are incurred to meet the potential demands  
19          placed on the system by the public fire protection system and private fire  
20          connections.
- 21          • The Administrative Support allocation factor (W-GG) is used to allocate costs that  
22          do not readily fall into a specific functional category. This allocation factor is based

1 on the percentages of overall costs that are allocated to each Base/Extra Capacity  
 2 cost categories once all other allocations have been performed.

3 **Q. PLEASE DESCRIBE HOW THE COSTS ARE ALLOCATED TO THE**  
 4 **BASE/EXTRA CAPACITY COST CATEGORIES.**

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

13 **Q. PLEASE DESCRIBE SOME OF THE OTHER PRIMARY ALLOCATION**  
 14 **FACTORS THAT ARE USED TO ALLOCATE COSTS TO BASE/EXTRA**  
 15 **CAPACITY CATEGORIES.**

16 A. In addition to Allocation Factor W-BB, which is used to allocate approximately 45% of  
 17 the water revenue requirements, the two factors used to allocate the majority of the  
 18 revenue requirements are Allocation Factors W-CC and W-GG.

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

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

2 A. The next step in the allocation of water costs is the distribution of costs to each customer  
3 class in a manner that reflects the way each class demands service.

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

6 A. As demonstrated in Schedule HJS-8W, the revenue requirements from each cost category  
7 are used to determine the unit cost of providing service to meet both average day and  
8 peak demands. For example, approximately \$80 million in water revenue requirements  
9 were allocated to the Base cost category. This amount is reduced by approximately \$1.1  
10 million to reflect revenue from miscellaneous revenue, resulting in approximately \$78.9  
11 million in Base revenue requirements to be recovered through retail and wholesale rates.  
12 This amount is used to determine the unit cost to meet average day demand for retail  
13 classes and the wholesale class. For example, the unit cost for average day demand for  
14 retail classes is determined by first taking the net revenue requirement of \$78.9 million,  
15 less \$18.75 million for Distribution related costs (which wholesale isn't responsible for),  
16 and dividing by the FPFTY projected water sales volume to arrive at a unit cost for  
17 average day demand for all costs except Distribution related costs. The Distribution  
18 related costs of \$18.75 million are divided by the FPFTY projected water sales volume  
19 for retail classes only and the two sub-unit costs are combined to arrive at the retail  
20 classes' unit cost to meet average day demand of \$10.50 per kgal. This unit cost is then  
21 multiplied by each class's projected annual water sales volume required to meet average  
22 day demand to arrive at the amount of Base costs to be recovered from each retail class,  
23 as shown in HJS-9W. For example, the Residential class is projected to purchase  
24 approximately 2.6 million kgal to meet its average day demands. This amount is



1 multiplied by the unit cost of \$10.50 to arrive at the total Base costs to be recovered from  
2 the Residential class. The same process is applied to the wholesale class but with a  
3 reduced unit cost of average day demand of \$7.77, reflecting the removal of the  
4 Distribution-related costs.

5 This process is repeated for each of the Base/Extra Capacity cost categories and  
6 customer classes to arrive at the total costs to be recovered from each class.

7 **Q. ARE COSTS ALLOCATED TO THE WHOLESALE CUSTOMERS?**

8 A. Yes, costs have been allocated to the Wholesale customer class as shown on HJS-9W.

9 As shown, the Wholesale class is allocated an appropriate share of Base, Max Day, and  
10 Max Hour costs based on their demand characteristics.

11 **Q. ARE ANY ADJUSTMENTS MADE TO THE CLASS COST OF SERVICE?**

12 A. Yes. Adjustments to class cost of service were based on several factors, including rate  
13 case settlement items, bad debt, and customer assistance program forgone revenue.

14 **Q. WHAT ADJUSTMENTS WERE MADE TO THE ALLOCATED WATER COST  
15 OF SERVICE BY CUSTOMER CLASS?**

16 A. PWSA is required to make four adjustments to the cost of service allocated to each  
17 customer class. These adjustments are shown in Schedule HJS-10W. The adjustments are  
18 described below:

- 19 1. **Public Fire Protection** – PWSA is required to reduce the costs allocated to public  
20 fire protection because it is limited by section 1328 of the Public Utility Code to  
21 recovering no more than 25% of public fire costs. Public fire costs that cannot be  
22 recovered through hydrant charges are reallocated among customer classes by  
23 equivalent meters.
- 24 2. **Wholesale Contracts** – While rates that reflect the full cost of service for  
25 Wholesale customers are developed in this rate filing, PWSA currently maintains  
26 separate contracts for wholesale water service with each of their existing wholesale

1 customers. Rates are set per each agreement and are unable to be changed until the  
 2 contracts expire or are due for renewal. At this time, PWSA is unable to modify  
 3 any rates with existing customers beyond what is legally allowed in the individual  
 4 agreements. As such, costs that were allocated to wholesale service that PWSA is  
 5 unable to recover through wholesale rates are allocated among retail customers by  
 6 unadjusted cost of service.

7 3. **Bad Debt Expense** – The CCOSS introduces Bad Debt Expense with the other  
 8 adjustments on Schedule HJS-10W since it must be allocated directly to customer  
 9 classes. Bad Debt Expense is allocated among the customer classes based on each  
 10 class’s historical contribution for such costs over a three-year period (2019-2021).

11 4. **Customer Assistance Program** –The forgone revenue resulting from discounts  
 12 given to participants in the Customer Assistance Program is allocated among  
 13 customer classes based on the unadjusted cost of service, as shown in Schedule  
 14 HJS-10W.

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

17 A. Demand projections were developed using customer class demand data from the three  
 18 most recent complete years available (FY 2020 – FY 2022).

19 **Q. PLEASE EXPLAIN HOW THE CUSTOMER CLASS DEMAND DATA WAS**  
 20 **USED TO DEVELOP THE DEMAND PROJECTIONS.**

21 A. FPFTY demand by class was set equal to the average annual demand exhibited by each  
 22 class based on averaging annual demand by class in 2020, 2021, and 2022. Therefore, as  
 23 stated, forecasted FPFTY annual demand represents a three-year average (FY 2020 – FY  
 24 2022).

25 Modifications were made to the Residential and CAP classes to reflect an  
 26 anticipated increase to 5,500 CAP customers based on expanded eligibility in the bill  
 27 discount program in 2024. Residential bills and demand are reduced by the

1 corresponding bills and demand associated with the incremental increase in CAP  
2 participation. No other modifications were made.

3 The average day demand for each class was then determined by dividing each  
4 class's projected annual demand by 365 days. In order to determine the units of service  
5 for allocating base/extra capacity costs between customer classes, peaking factors were  
6 developed that recognize the level of peak demands placed on the system by each  
7 customer class. PWSA customer class data from 2020 through 2022 was used to establish  
8 peaking factors by customer class for all classes except the Industrial class. During 2020,  
9 PWSA investigated and recategorized many Industrial customers as Commercial  
10 customers. The peaking factor for Industrial customers is based only on the usage and  
11 bills (during FY 2021 – FY 2022) for the 30 Industrial customers remaining after re-  
12 categorization.

13 We calculated Maximum Month to Average Day factors for each class as shown  
14 in HJS-6W. These factors were then adjusted by a system Maximum Day to Maximum  
15 Month factor (1.28) which was derived using a three-year average of PWSA water  
16 treatment plant production data for 2020-2022. Multiplying those two factors together  
17 provided Maximum Day peaking factors for each class. In order to estimate peak hour  
18 factors, we utilized an estimated Maximum Hour to Maximum Day factor which was  
19 1.33 for industrial and 1.66 for all other customer classes. This factor was utilized to  
20 recognize that industrial customers typically have stable usage patterns and thus exhibit  
21 lower peak hour usage. Multiplying the estimated Maximum Hour to Maximum Day  
22 factor by the Maximum Day factor provided the Maximum Hour peaking factor, as

1 shown in Schedule HJS-6W. FPFTY demands and historical demand data are shown in  
 2 HJS-18W.

3 **V. WATER RATE DESIGN**

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

5 A. PWSA's current rate structure for retail customers consists of a monthly Minimum  
 6 Charge that varies by meter size and a Volume Charge that varies by customer class, as  
 7 shown in Schedule HJS-13W. The Minimum Charge is used to recover PWSA's  
 8 customer costs as well as some of PWSA's costs associated with providing capacity to  
 9 meet customer demand. Additionally, the Minimum Charge recovers the cost of a water  
 10 usage allowance that also varies by meter size. As mentioned previously, PWSA is  
 11 proposing to eliminate the usage allowance in FY 2025.

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

- 17 • Residential (which includes Residential CAP),
- 18 • Commercial (which includes Municipal),
- 19 • Industrial,
- 20 • Health or Education,
- 21 • Fire, and
- 22 • Wholesale

23 PWSA assesses a monthly Fire System Charge to non-residential customers with fire  
 24 suppression systems connected to PWSA's water system and a public fire protection  
 25 charge, in the form of a per hydrant charge, to the City of Pittsburgh.

1 **Q. ARE YOU PROPOSING TO MAKE CHANGES TO THE EXISTING RATE**  
 2 **STRUCTURE?**

3 A. No changes to the existing rate structure are proposed for FY 2024; however, PWSA is  
 4 proposing to eliminate the Minimum Allowance and introduce two new reconcilable  
 5 charges for the rates proposed for FY 2025.

6 **Q. HOW ARE THE MINIMUM CHARGES CALCULATED?**

7 A. As shown in Schedule HJS-12W, the Minimum Charges are comprised of three  
 8 components: the Meter/Services component; the Billing component; the Usage  
 9 component. The Minimum Charge is calculated by adding these three components  
 10 together and then making a fire protection adjustment and a readiness to serve adjustment  
 11 as described below.

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

13 A. The Meter/Services component is calculated by dividing all costs allocated to the  
 14 Meter/Services category by the number of 5/8” equivalent meters in the system to  
 15 determine a cost per 5/8” equivalent meter. The meter size specific service charges are  
 16 determined by then multiplying the cost per 5/8” equivalent meter by the appropriate  
 17 AWWA meter equivalency ratio (shown in HJS-5W) to determine the appropriate charge  
 18 for each meter size.

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

21 The Usage component is used to recover the costs of providing the volume  
 22 allowance included in the Minimum Charge. It is calculated, as shown in Schedule HJS-  
 23 12W, by multiplying the allowance for each meter size by the retail volumetric unit cost.  
 24 However, in an effort to mitigate potential adverse bill impacts resulting from the

1 elimination of the usage allowance in FY 2025, only 75% of the cost of providing the  
 2 allowance is included in the Usage component in FY 2024.

3 The final component is the adjustments. Two adjustments are made for the  
 4 standard customer classes:

5 1) Public fire protection. The amount of public fire protection costs that are not  
 6 recovered from the public hydrant charge are recovered on an equivalent meter basis in  
 7 rate design.

8 2) Readiness-to-serve. 10.0% of PWSA’s debt service cost allocated to water is  
 9 recovered on an equivalent meter basis in rate design.

10 Once each of the components of the Minimum Charge are calculated, they are  
 11 added together to arrive at the Minimum Charge for each meter size. For example, the  
 12 proposed Minimum Charge for an account with a 5/8” meter is \$32.43/month. This  
 13 charge is comprised of a Meters/Services component of \$6.75, plus a Billing component  
 14 of \$2.34, plus a usage component of \$14.53 (1 kgal), plus \$8.81 of adjustments. The  
 15 resulting amount is then rounded up to the nearest cent. This process is demonstrated in  
 16 HJS-12W and the proposed Minimum Charges are shown in HJS-13W. HJS-13W also  
 17 provides a comparison of the proposed Minimum Charges to the existing Minimum  
 18 Charges.

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

20 A. Volumetric charges are calculated by subtracting the revenues provided by the minimum  
 21 charges from the sum of the adjusted (based on the prior paragraph’s adjustment factors)  
 22 base and extra capacity costs allocated to each customer class, and then dividing that  
 23 figure by the projected FPFTY consumption of that customer class as demonstrated in  
 24 HJS-12W. For example, the rate for the Health or Education class is determined by

1 dividing the total adjusted base and extra capacity costs allocated to the Health or  
 2 Education class, net of the revenues provided by the minimum charge, by projected  
 3 Health or Education class consumption in the FPFTY to arrive at the consumption rate.  
 4 The resulting value, rounded to the nearest cent, is the proposed rate for the Health or  
 5 Education class. HJS-12W shows the calculation of volumetric rates and HJS-13W  
 6 shows the proposed Volume Charges as well as a comparison of the proposed charges to  
 7 the existing charges.

8 As a reminder, the wholesale rate will only be applicable to new wholesale customers  
 9 while existing contracts remain in effect for current wholesale customers.

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

11 A. Monthly fixed Fire System charges are assessed to non-residential customers that have  
 12 private fire suppression systems connected to PWSA’s system. PWSA also assesses a  
 13 Volumetric Charge for all water used by all fire system customers for purposes other than  
 14 firefighting. PWSA assesses a public fire protection charge, in the form of a per hydrant  
 15 charge, to the City of Pittsburgh.

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

17 A. Fire System Charges are comprised of three components: the Meter/Services component;  
 18 the Billing component, and the Fire component as shown in Schedule HJS-12W. The  
 19 Billing and Meter/Services components are calculated in the same manner as the  
 20 Minimum Charge, but the Meter and Readiness-to-Serve components are derived for  
 21 meters larger than 5/8”. The Fire component is calculated by dividing the costs allocated  
 22 to the Fire Protection cost category by the projected number of 5/8” meter equivalents  
 23 based on fire suppression connections and hydrant connections during the FPFTY. Fire  
 24 System Charges are also adjusted such that they recover a share of Readiness To Serve

1 costs. The Fire System Charge for each group of meter sizes is the sum of the three  
2 components and the Readiness-To-Serve adjustment for each group of meter sizes.

3 **Q. PLEASE EXPLAIN WHY METERS ARE GROUPEd FOR FIRE SYSTEM**  
4 **CHARGES?**

5 A. The fire system charge is based on four groupings of meter sizes, which were used when  
6 Raftelis first developed water rates for PWSA in 2016. The exact origin of these  
7 groupings is not known, but we propose to continue to use these groupings in the interest  
8 of rate stability.

9 **Q. HOW ARE THE PROPOSED VOLUMETRIC FIRE SYSTEM CHARGES**  
10 **CALCULATED?**

11 A. The volumetric Fire System Charges are calculated in the same manner as the other  
12 Volumetric Charges: by dividing the adjusted base and extra capacity costs allocated to  
13 fire protection by the projected demand for water from fire systems that is not used for  
14 fighting fires. The volume charge calculation is shown in Schedule HJS-12W.

15 **Q. HOW ARE PUBLIC FIRE PROTECTION CHARGES CALCULATED?**

16 A. Public Fire Protection Charges are assessed on a per hydrant basis, with each hydrant set  
17 at the equivalent of a six-inch meter, which is standard in the water industry. The Public  
18 Fire Protection Charges are first calculated based on the allocated fire costs for a six-inch  
19 meter. In accordance with Public Utility Code Section 1328, they are then adjusted so  
20 that only 25% of public fire protection costs are assessed in the form of a Public Fire  
21 Protection Charge.

22 **Q. AT WHAT LEVEL IS THE DSIC BEING INCORPORATED INTO THE RATE**  
23 **PACKAGE?**

24 A. PWSA is proposing a 7.5% DSIC for FY 2024, FY 2025, and FY 2026 as detailed in Mr.  
25 Barca's testimony. This is included in Schedule HJS-13W.



1 **Q. DO THE PROPOSED CHARGES GENERATE REVENUE BY CLASS THAT IS**  
 2 **CONSISTENT WITH EACH CLASS' COST OF SERVICE AS INDICATED BY**  
 3 **THE CCOSS?**

4 A. No. Revenue recovery from the proposed charges for the aforementioned Wholesale  
 5 class, CAP customer classes, and Public Fire Protection class are lower than each class's  
 6 unadjusted cost of service. This is the result of intentionally under-recovering because of  
 7 a discount or agreements in place. However, after the adjustments are made as described  
 8 above, the proposed charges generate revenue consistent with the adjusted class cost of  
 9 service.

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

12 A. Yes, Schedule HJS-16W 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 \$58.59 to \$71.67, which represents a 22.3% 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-17W 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 along with the anticipated revenue from the DSIC. As  
 22 shown in this schedule, revenue generated by the proposed rates and charges recovers the  
 23 full water system revenue requirements.

24

1 **VI. WASTEWATER COST ALLOCATION**

2 **Q. WHAT IS THE LEVEL OF REVENUE REQUIREMENTS TO BE RECOVERED**  
 3 **BY WASTEWATER CONVEYANCE RATES AND CHARGES?**

4 A. Mr. Barca’s testimony supports PWSA’s total revenue requirements and HJS-1 and HJS-  
 5 2 support the allocation of total revenue requirements for wastewater conveyance service.

6 As shown in HJS-1WW, the total wastewater conveyance system revenue requirements  
 7 for the FPFTY are \$54.6 million. A portion is projected to be recovered by a Distribution  
 8 System Improvement Charge (DSIC) at 7.5% of wastewater conveyance revenues, which  
 9 will be used to fund capital projects as outlined in Mr. King’s and Mr. Barca’s testimony.

10 The wastewater conveyance system revenue requirements net of DSIC are \$50.9 million.

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

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

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

22 A. The process of assigning costs to functional categories allows costs to be recovered from  
 23 customer classes based on the way that PWSA utilizes the resources within each function

24

1 to meet the demands of each customer class. The functions to which costs are assigned  
2 include:

- 3 • Conveyance & Collection
- 4 • Meters
- 5 • Billing
- 6 • Administrative Support

7           Similar to the water expenses, the FPPTY operating and maintenance (O&M)  
8 expenses are accounted for in a manner consistent with PWSA's O&M budget. The  
9 wastewater conveyance revenue requirements are shown in HJS-2WW. With the  
10 exception of Customer Service, all of the budget divisions relate directly to one  
11 functional category. Costs that are incurred in support of only one function are assigned  
12 directly to that function, while costs that are incurred in support of two or more functions  
13 are assigned to functions using allocation factors that reflect the way a particular budget  
14 division supports each function. The allocation factors used to assign costs to functional  
15 categories are listed and described in Schedules HJS 4WW and 5WW.

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

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

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

24 A. The Engineering & Construction division is responsible for planning and executing  
25 PWSA's capital projects; therefore, as was the case with the water expenses, the  
26 division's costs are allocated based on the composition of the utility's CIP. Unlike the

1 water CIP, all of the wastewater conveyance projects are related to the improvement,  
2 repair, replacement, and expansion of the wastewater conveyance and collection system;  
3 therefore, all of the Engineering & Construction expenses are allocated to Conveyance &  
4 Collection as shown in Schedule HJS-2WW.

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

6 A. PWSA's capital costs consist of three components: (1) Internally Generated  
7 Funds/PAYGO funded capital projects; (2) debt service; and (3) contributions to  
8 reserves. To properly assign these costs to cost categories, these costs must first be  
9 assigned to functional categories. All capital costs are assigned to functions based on the  
10 make-up of the fixed assets that currently comprise PWSA's wastewater conveyance  
11 system. This process involved assigning each of PWSA's fixed assets to the appropriate  
12 functional category and determining the percentage of the total value of the assets that is  
13 assigned to each function. These percentages are then applied to the capital costs to  
14 determine the appropriate distribution of capital costs across the functional categories.  
15 Schedule HJS-2WW shows the break-down of wastewater conveyance fixed assets by  
16 functional categories.

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

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

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

22 A. O&M and capital costs are assigned to one or more of three cost categories based on how  
23 costs are incurred to meet the demands of the entire wastewater conveyance system. The  
24 assignment of costs to the cost categories is shown in Schedule HJS-3WW, Allocation to

1 Cost Categories. Since all of the wastewater collected and conveyed by PWSA's  
 2 wastewater conveyance system is treated at ALCOSAN wastewater treatment facilities,  
 3 the process of assigning costs to cost categories is greatly simplified because no costs  
 4 need to be allocated to any of the treatment related categories addressed in WEF Manual  
 5 No. 27.

6 The three cost categories consist of:

- 7 • **Volume** – Volume costs are those costs that are a function of the amount of  
 8 wastewater that is collected and conveyed by the system.
- 9 • **Meters** – Meter costs are those costs associated with installing, maintaining,  
 10 repairing, and replacing water meters. While the water meters are not used to  
 11 measure wastewater flow, the water flow measured by the meters serves as a  
 12 proxy for the volume of wastewater discharged by each customer and therefore  
 13 the meters serve a vital role in the process of assessing wastewater conveyance  
 14 charges to PWSA's customers.
- 15 • **Billing** – Billing costs are those costs associated with billing PWSA wastewater  
 16 conveyance customers for wastewater collection and conveyance.

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

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

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

26 The Customer-Meters allocation factor (WW-BB) allocates all meter-related costs

1 to the meter component of the Minimum Charge.

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

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

8 The Inflow and Infiltration costs are allocated between volume and billing to  
9 reflect that infiltration is linked both to customers' level of flow and number of  
10 connections in the system. In this analysis, aligning with the example in WEF Manual  
11 No. 27, I&I costs were allocated 1/3<sup>rd</sup> to volume and 2/3<sup>rd</sup> to billing.

12 **Q. PLEASE DESCRIBE HOW THE COSTS ARE ALLOCATED TO THE COST**  
13 **CATEGORIES.**

14 A. In the cost allocation model, allocation factors are applied to costs in each functional  
15 category such that costs are allocated in a way that reflects the type of demand being met  
16 by the function to which the costs have been assigned, as shown in Schedule HJS-7WW.  
17 For instance, the costs in the Collection & Conveyance function are allocated using  
18 Allocation Factor WW-AA, which allocates costs to recognize that all of the costs in this  
19 function are dependent upon the volume of wastewater collected and conveyed by the  
20 wastewater conveyance system. Approximately seventy percent (78%) of PWSA's  
21 wastewater conveyance costs are allocated using the WW-AA allocation factor.

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

24 A. As demonstrated in Schedule HJS-7WW, the revenue requirements from each cost  
25 category are used to determine the unit cost of providing wastewater collection and

1 conveyance service. For example, approximately \$35.8 million in wastewater  
 2 conveyance revenue requirements were allocated to the Volume cost category. This  
 3 amount is reduced by approximately \$0.6 million to reflect revenue from miscellaneous  
 4 revenue, resulting in approximately \$35.2 million in Volume revenue requirements to be  
 5 recovered through retail rates. This amount is divided by the FPFTY projected flows  
 6 (approximately 8.1 million kgal) to arrive at the unit cost of \$4.35 per kgal. This unit  
 7 cost is then multiplied by each class's projected wastewater flows to arrive at the amount  
 8 of Volume costs to be recovered from each class, as shown in Schedule HJS-8WW. For  
 9 example, the Residential class is projected to discharge approximately 3.4 million kgal.  
 10 This amount is multiplied by the unit cost of \$4.35 to arrive at the total Volume costs to  
 11 be recovered from the Residential class. This process is repeated for each of the  
 12 customer classes.

13 **Q. ARE ANY ADJUSTMENTS MADE TO THE CLASS COST OF SERVICE?**

14 A. Yes. Adjustments to class cost of service were based on several factors, including rate  
 15 case settlement items, negotiated agreements with other entities, bad debt, and customer  
 16 assistance program forgone revenue.

17 **Q. WHAT ADJUSTMENTS WERE MADE TO THE ALLOCATED WASTEWATER**  
 18 **CONVEYANCE COST OF SERVICE BY CUSTOMER CLASS?**

19 A. PWSA is required to make three adjustments to the cost of service allocated to each  
 20 customer class. All three adjustments are shown in Schedule HJS-9WW and the forgone  
 21 revenue for the CAP customers is derived in HJS-10WW. The adjustments are described  
 22 below:

- 23 1. **Bad Debt Expense** – The CCROSS introduces Bad Debt Expense with the other  
 24 adjustments in Schedule HJS-9WW since it must be allocated directly to customer

1 classes. Bad Debt Expense is allocated among the customers based on their historical  
 2 responsibility for such costs.

3 2. **Customer Assistance Program** – The cost of the Customer Assistance Program,  
 4 derived in Schedule HJS-10WW, is allocated among customer classes in Schedule  
 5 HJS-9WW. These costs are allocated to classes based on the unadjusted cost of service.

6 3. **Wholesale Contracts** – While rates that reflect the full cost of service for Wholesale  
 7 customers are developed in this rate filing, PWSA currently maintains separate  
 8 contracts for wholesale sewer service with each of their existing wholesale customers.  
 9 Rates are set per each agreement and are unable to be changed until the contracts expire  
 10 or are due for renewal. At this time, PWSA is unable to modify any rates with existing  
 11 customers beyond what is legally allowed in the individual agreements. As such, costs  
 12 that were allocated to wholesale service that PWSA is unable to recover through  
 13 wholesale rates are allocated among retail customers by unadjusted cost of service.

14 **Q. PLEASE EXPLAIN HOW THE FY2020 - FY2022 DATA WAS USED TO**  
 15 **DEVELOP THE DEMAND PROJECTIONS.**

16 A. FPPTY demand by class was set equal to the average annual demand exhibited by each  
 17 class over the three-year period from 2020-2022, as shown in HJS-17WW.  
 18 Modifications were made to the Residential and CAP classes to reflect an estimated  
 19 increase of CAP customers to 7,950 based on expanded eligibility in the bill discount  
 20 program in 2024. The estimated CAP customers for wastewater conveyance service is  
 21 higher than water service because there are more wastewater conveyance customers than  
 22 water customers. This difference occurs because PWSA services approximately 30,000  
 23 customers that are wastewater conveyance only. Consequently, residential bills and



1 demand are reduced by the corresponding bills and demand associated with the  
 2 incremental increase in CAP participation. No other modifications were made.

**3VII. WASTEWATER CONVEYANCE RATE DESIGN**

4 **Q. PLEASE DESCRIBE PWSA’S EXISTING WASTEWATER CONVEYANCE**  
 5 **RATE STRUCTURE.**

6 A. PWSA’s current wastewater conveyance rate structure for retail customers consists of a  
 7 monthly Minimum Charge that varies by meter size and a Volume Charge that varies by  
 8 customer class. The Minimum Charge is used to recover PWSA’s customer costs and the  
 9 cost of a wastewater usage allowance that also varies by meter size.

10 The Volume Charge is designed to recover PWSA’s costs that vary based on customer  
 11 demand as well as the portion of PWSA’s fixed costs that are not recovered through the  
 12 Minimum Charge. The volumetric rate per thousand gallons (kgal) of wastewater  
 13 demand varies by customer class based on the way each class demands service. The  
 14 wastewater customer classes are:

- 15 • Residential (which includes Residential CAP),
- 16 • Commercial (which includes Municipal),
- 17 • Industrial, and
- 18 • Health or Education.

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

22 A. No, PWSA is not proposing to make any changes to the wastewater conveyance rate  
 23 structure for rates proposed for FY 2024; however, as discussed previously, PWSA is  
 24 proposing to eliminate the Minimum Allowance and to implement two new reconcilable  
 25 charges in FY 2025.

1 **Q. HOW ARE THE MINIMUM CHARGES CALCULATED?**

2 A. As shown in Schedule HJS-11WW, the Minimum Charges are comprised of three  
3 components: the Meter component; the Billing component; and the Usage component.  
4 Additionally, a readiness-to-serve rate design adjustment is made such that 10% of  
5 PWSA's wastewater conveyance debt service is recovered through the Minimum Charge.

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

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

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

14 The Usage component is used to recover the costs of providing the volume allowance  
15 included in the Minimum Charge. It is calculated, as shown in Schedule HJS-11WW, by  
16 multiplying the allowance for each meter size by the retail volumetric unit cost. For  
17 example, accounts with a 3/4" meter receive a 2 kgal/month allowance. Therefore, the  
18 Usage component for a 3/4" meter is equal to 2 kgal times the volumetric unit cost of  
19 \$3.055, or \$6.110.

20 Once each of the three components of the Wastewater Conveyance Minimum Charge are  
21 calculated, they are added together and the readiness to serve adjustment is applied to  
22 arrive at the Wastewater Conveyance Minimum Charge for each meter size. For  
23 example, the proposed Wastewater Conveyance Minimum Charge for an account with a  
24 3/4" meter is \$11.43/month. This charge is comprised of a metering component of \$1.32,

1 plus a billing component of \$2.45, plus a usage component of \$6.11. Finally, a  
 2 Readiness-to-Serve adjustment of \$1.54 is applied to arrive at the total proposed  
 3 Minimum Charge of \$11.43 (rounded).

4 **Q. HOW ARE WASTEWATER CONVEYANCE VOLUME CHARGES**  
 5 **CALCULATED?**

6 A. As shown in HJS-11WW, wastewater conveyance Volume Charges are calculated by  
 7 dividing the net volumetric revenue requirements for each class by the projected volume  
 8 of wastewater discharged by each class. Net volumetric revenue requirements are  
 9 determined by first subtracting the revenue generated from Wastewater Conveyance  
 10 Minimum Charges by each class from the total adjusted revenue requirements allocated  
 11 to each class. The resulting amounts represent the costs that must be recovered from each  
 12 class through the volume charge. For example, the rate for the Commercial class is  
 13 determined by dividing the net volumetric revenue requirements allocated to the  
 14 Commercial class (\$14.5M) by the projected wastewater volume discharged by the  
 15 Commercial class (2.5M kgal) to arrive at the volumetric rate of \$5.76 per kgal. The  
 16 resulting rates and charges are shown in HJS-12WW.

17 **Q. AT WHAT LEVEL IS THE DSIC BEING INCORPORATED INTO THE RATE**  
 18 **PACKAGE?**

19 A. As was the case with the water rates, PWSA is proposing a 7.5% DSIC for FY 2024  
 20 through FY 2026. This is included in Schedule HJS-12WW.

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

23 A. Yes, HJS-15WW shows bills under existing and proposed rates and the percentage  
 24 impacts that are likely to occur for typical residential, commercial, and industrial  
 25 customers. For a typical residential customer using 3 kgal per month, their monthly

1 wastewater conveyance bill increases from \$19.89 to \$21.48, which represents a 8.0%  
 2 increase.

3 **Q. WHAT CONSIDERATION HAS BEEN GIVEN AS TO WHETHER THE**  
 4 **REVENUES FROM THE WASTEWATER CONVEYANCE RATES AND**  
 5 **CHARGES ARE SUFFICIENT TO COVER WASTEWATER CONVEYANCE**  
 6 **REVENUE REQUIREMENTS FOR PWSA?**

7 A. HJS-16WW serves as a revenue proof to determine revenue sufficiency of the proposed  
 8 rates and charges. The revenues that would be generated under the proposed rate  
 9 structure are shown along with the anticipated revenue from the DSIC.

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

12 A. Yes. As shown in HJS-16WW, the revenues generated by the proposed rates and charges  
 13 recover the full adjusted wastewater conveyance system revenue requirements.

**IVIII. STORMWATER COST ALLOCATION**

15 **Q. WHAT IS THE LEVEL OF REVENUE REQUIREMENTS TO BE RECOVERED**  
 16 **BY STORMWATER RATES AND CHARGES?**

17 A. Mr. Barca’s testimony supports PWSA’s total revenue requirements and HJS-1 and HJS-  
 18 2 support the allocation of total revenue requirements for stormwater service. As shown  
 19 in HJS-1SW, the total stormwater system revenue requirements for the FPPTY is \$40.0  
 20 million.

21 **Q. WHAT ADJUSTMENTS WERE MADE TO THE ALLOCATED STORMWATER**  
 22 **COST OF SERVICE BY CUSTOMER CLASS?**

23 A. PWSA has made three adjustments to the cost of service allocated to stormwater, which  
 24 are shown in Schedule HJS-5SW. The adjustments are described below:

- 25 1. **Bad Debt Expense** – The CCROSS introduces Bad Debt Expense with the other adjustments  
 26 in Schedule HJS-5SW. Bad Debt Expense is allocated among the customers based the  
 27 unadjusted cost of service. Please see testimony by Mr. Readling for more information on  
 28 how the bad debt expense for stormwater was calculated.

- 1        2. **Customer Assistance Program** – The forgone revenue as a result of the Customer  
 2        Assistance program, estimated at approximately \$800,000, is allocated among customer  
 3        classes in Schedule HJS-5SW, based on the unadjusted cost of service.
- 4        3. **Credit Program** – The cost of the Stormwater credit program is estimated to be  
 5        approximately \$180,500. This cost is allocated among customer classes in Schedule HJS-  
 6        5SW. These costs are allocated to classes based on the unadjusted cost of service. Please  
 7        see testimony by Mr. Readling for more information about the credits and incentives  
 8        program.

9 IX.        **STORMWATER RATE DESIGN**

10 **Q.        PLEASE DESCRIBE PWSA’S PROPOSED STORMWATER RATE**  
 11 **STRUCTURE.**

12 A.        The proposed stormwater rate structure and the process used to develop stormwater rates  
 13 is addressed in the testimony of PWSA witness Mr. Keith Readling. As discussed in  
 14 PWSA’s last rate case, the stormwater rate that would be required to recover all of the  
 15 revenue requirements allocated to stormwater would be inordinately high and would most  
 16 likely result in a high level of nonpayment of the stormwater bill. As such, PWSA is  
 17 proposing to continue to apply gradualism to the stormwater charge such that it does not  
 18 pose a financial challenge to customers. The implementation of gradualism for the  
 19 stormwater charge requires that the difference in revenue that will be recovered through  
 20 the proposed stormwater charge and the revenue that would be recovered through the  
 21 fully loaded stormwater charge be recovered through the wastewater conveyance charge.  
 22 This adjustment is included in Schedule HJS-5SW. This is accomplished by making a  
 23 \$9.5 million downward adjustment to the allocated stormwater cost of service and a  
 24 commensurate upward adjustment to the allocated wastewater conveyance cost of  
 25 service, as shown in HJS-9WW. The mechanism for affecting gradualism with respect to  
 26 the stormwater charge is described below.

1 **X. GRADUALISM ADJUSTMENT IN ADDITION TO STORMWATER**

2 **Q. OTHER THAN THE STORMWATER CHARGE, DO PWSA’S PROPOSED**  
 3 **RATES INCORPORATE ANY OTHER INSTANCES OF THE**  
 4 **IMPLEMENTATION OF GRADUALISM?**

5 A. Yes, we have made gradualism adjustments to both the wastewater conveyance rate for  
 6 the Health or Education class and to the water rate for the Industrial class.

7 **Q. PLEASE DESCRIBE ALL INSTANCES OF THE IMPLEMENTATION OF**  
 8 **GRADUALISM.**

9 A. The mechanism for affecting each instance of gradualism is described below.

- 10 • **Stormwater Gradualism Adjustment** – The cost of gradualism between stormwater  
 11 and wastewater conveyance (\$9.5 million) is allocated for recovery from all classes of  
 12 wastewater conveyance customers as shown in Schedule HJS-9WW. These costs are  
 13 allocated to classes based on the unadjusted cost of service for each customer class.  
 14
- 15 • **Health or Education Wastewater Conveyance Gradualism Adjustment** – Based on  
 16 a long-standing policy decision, wastewater rates for Health or Education have been  
 17 set higher than the estimated cost of service for the Health or Education class. Since  
 18 PWSA has increased wastewater conveyance rates “across-the-board” in the previous  
 19 two filings, the subsidy has not been corrected. For this rate case, PWSA is proposing  
 20 to reduce, but not fully remove, this subsidy. The cost of the subsidy is allocated from  
 21 Health or Education to Residential as shown in Schedule HJS-9WW.  
 22
- 23 • **Industrial Water and Wastewater Conveyance Gradualism Adjustment** – In  
 24 PWSA’s 2020 Rate Case, PWSA and the parties agreed to impose gradualism  
 25 adjustments for any customer classes experiencing a 1.5x increase above the system  
 26 average increase. PWSA has continued this convention here and has made such an  
 27 adjustment for Industrial customers. As shown in HJS-10W and HJS-9WW, The  
 28 gradualism “costs” are assigned proportionally for recovery to other customer classes  
 29 based on unadjusted cost of service for each class.  
 30

1 **XI. YEAR TWO RATES**

2 **Q. HOW ARE RATES FOR YEAR TWO OF THE MULTI-YEAR PLAN**  
3 **DETERMINED?**

4 A. Water and sewer rates for Year 2 of the rate plan (FY 2025) are based on the cost of  
5 service analysis performed for the Year 1 rates. As shown in Schedules HJS-21W and  
6 HJS-20WW, the Base Charge (previously Minimum Charge) is calculated as described  
7 previously, except that there is no usage component. Therefore, starting in FY 2025, the  
8 Base charge is comprised of the Billing component, the Meters/Services component, and  
9 adjustments. Costs previously recovered through the Usage component are now  
10 recovered through Volume Charges. Each component of the FY 2025 Base Charge is  
11 determined by increasing the FY 2024 charge for each component by the percent  
12 difference between the Base Charge revenue requirements for FY 2024 and FY 2025  
13 (7.94% for water and 4.12% for wastewater).

14 As shown in Schedules HJS-22W and HJS-21WW, Volume Charges are determined by  
15 first increasing the total revenue requirements allocated to each customer class in 2024 by  
16 the same percent such that the sum of the total revenue requirements allocated to the  
17 customer classes is equal to the total revenue requirements for FY 2025. The total  
18 revenue requirements are then reduced by the base charge revenue by class and the  
19 revenue from the two new reconcilable charges to determine the volumetric revenue  
20 requirements by class. The volumetric revenue requirements for each class are then  
21 divided by that class's projected FY 2025 demand to arrive at the rate per thousand  
22 gallons for the class.

1 **Q. HOW IS THE IIC CALCULATED?**

2 A. The Water, Sewer, and Stormwater IICs are intended to recover the debt service for all  
3 PENNVEST and WIFIA loans either awarded (although currently only in the  
4 construction drawdown phase) or commencing in or after FY 2025. There is no  
5 component in base rates for FY 2025 for these costs as they will be recovered through the  
6 IICs as identified in filings to the PaPUC and subsequently approved tariff supplements.  
7 The Water IIC and Sewer IIC are calculated by first identifying the annual PENNVEST  
8 and WIFIA debt service requirements for each utility and then dividing that amount by  
9 the projected demand to arrive at the IIC per thousand gallons. The Stormwater IIC is  
10 calculated by dividing the debt service for PENNVEST and WIFIA borrowings used to  
11 fund stormwater projects by the total number of stormwater ERUs to arrive at a rate per  
12 ERU.

13 **Q. HOW IS THE CAC CALCULATED?**

14 A. The Water, Sewer, and Stormwater CAC are intended to recover the costs incurred to  
15 administer the CAP and to recover forgone revenue resulting from discounts provided to  
16 customers participating in PWSA's CAP. Like the IICs, the CACs will not go into effect  
17 until FY 2025. Therefore, there is no component in base rates for FY 2025 for these  
18 costs as they will be recovered through the CACs as identified in filings to the PaPUC  
19 and subsequently approved tariff supplements. The Water CAC and Sewer CAC are  
20 calculated by first identifying the annual forgone revenue, allocated operations costs,  
21 hardship grant funding, and cost of arrearage forgiveness for each utility and then  
22 dividing that amount by the projected demand to arrive at the CAC per thousand gallons.  
23 The Stormwater CAC is calculated by dividing the annual forgone revenue and allocated  
24 operations costs by the total number of stormwater ERUs to arrive at a rate per ERU.



**IXII. YEAR THREE RATES****2 Q. HOW ARE RATES FOR FY 2026 DETERMINED?**

3 A. In general, Water, Wastewater Conveyance, and Stormwater rates for FY 2026 are  
4 determined by applying an across the board percent increase to the FY 2025 rates such  
5 that rate revenue will equal rate revenue requirements. As shown in Schedule HJS-20W,  
6 an additional \$33,075,904 in water base rate revenue is required for FY 2026. This  
7 requirement represents a 19.66% increase over projected rate revenue in FY 2025;  
8 therefore, FY 2026 water rates are determined by multiplying the FY 2025 water rates by  
9 1.1966.

10 Similarly, Schedule HJS-19WW shows that an additional \$8,430,029 in wastewater  
11 conveyance base rate revenue is required for FY 2026. This requirement represents a  
12 16.22% increase over projected rate revenue for FY 2025; therefore, FY 2026 wastewater  
13 conveyance rates are determined by multiplying the FY 2025 wastewater conveyance  
14 rates by 1.1622.

15 Schedule HJS-10SW shows that an additional \$5,976,273 in stormwater rate revenue is  
16 required for FY 2026. This requirement represents a 16.93% increase over projected rate  
17 revenue in FY 2025; therefore, FY 2026 stormwater rates are determined by multiplying  
18 the FY 2025 stormwater rates by 1.1693.

**19 Q. HOW ARE THE IIC AND CAC DETERMINED FOR FY2026?**

20 A. The Water, Wastewater Conveyance, and Stormwater IICs and CACs for FY 2026 are  
21 determined in the same manner as they were determined for FY 2025. The projected  
22 associated costs, as described above, are divided by projected annual demand to arrive at  
23 a rate per thousand gallons for the water and wastewater conveyance IIC and CAC and a

1 rate per ERU for the Stormwater IIC and CAC as shown in Schedules HJS-22W, HJS-  
2 21WW, and HJS-11SW.

**XIII. CONCLUSION**

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

5 **A.** Yes; however, I do reserve the right to supplement this testimony as may be appropriate.

Exhibit HJS-1 to HJS-2  
(Combined Utility Schedules)

**Pittsburgh Water and Sewer Authority**  
**Revenue Requirements by Utility**

	FPFTY 2024			
	Water	Wastewater Conveyance	Stormwater	Total
<b>Base Rate Revenue Requirements</b>				
<u>Operating Expenses</u>				
<u>Direct Operating Expenses</u>				
Administrative Division				
Executive Director	\$ 2,389,920	\$ 460,536	\$ 486,323	\$ 3,336,779
Customer Service	2,726,806	3,452,782	3,398,059	9,577,647
Management Information Systems	5,452,164	1,050,629	1,109,457	7,612,251
Finance	5,355,560	1,032,014	1,089,799	7,477,373
Human Resources	1,744,656	336,194	355,019	2,435,869
Legal	3,019,489	581,854	614,434	4,215,777
Safety & Security	1,676,729	323,105	341,197	2,341,031
Public Affairs	1,362,774	262,606	277,310	1,902,689
Operations Division				
Environmental Compliance	1,623,521	1,507,555	1,507,555	4,638,632
Ops Capital Assets	-	-	-	-
Warehouse	402,980	77,654	82,002	562,637
Water Treatment Plant	27,206,247	-	-	27,206,247
Water Quality (Lab)	2,676,383	-	-	2,676,383
Water Distribution	17,698,299	-	-	17,698,299
Sewer Operations	-	5,387,047	5,970,047	11,357,094
Engineering & Construction Division				
Engineering & Construction	15,757,737	5,623,537	5,741,630	27,122,905
<u>Subtotal: Direct Operating Expenses</u>	\$ 89,093,265	\$ 20,095,515	\$ 20,972,832	\$ 130,161,613
<u>Other Operating Expenses</u>				
Loss / (Gain) on ALCOSAN Billings	\$ -	\$ 2,066,814	\$ -	\$ 2,066,814
City Services	2,449,260	471,972	498,399	3,419,630
Non-City Water Payments	-	-	-	-
Covid Expenses	188,524	74,691	-	263,215
<u>Subtotal: Other Operating Expenses</u>	\$ 2,449,260	\$ 2,538,786	\$ 498,399	\$ 5,486,444
<u>Subtotal: Operating Expenses</u>	\$ 91,731,049	\$ 22,708,992	\$ 21,471,231	\$ 135,911,272
<u>Debt Service</u>				
<u>Existing Debt</u>				
Senior Debt Service	\$ 35,801,303	\$ 11,256,278	\$ 11,256,278	\$ 58,313,859
Subordinate Debt Service	10,748,411	3,379,405	3,379,405	17,507,221
<u>Subtotal: Existing Debt</u>	\$ 46,549,714	\$ 14,635,683	\$ 14,635,683	\$ 75,821,080
<u>Proposed Debt</u>				
Revolving Line of Credit Interest	\$ 2,404,266	\$ 282,652	\$ 313,081	\$ 3,000,000
Revenue Bonds	9,692,885	1,427,885	1,283,462	12,404,232
SRF Loans	4,351,223	853,431	502,660	5,707,313
<u>Subtotal: Proposed Debt</u>	\$ 16,448,374	\$ 2,563,968	\$ 2,099,203	\$ 21,111,546
<u>Subtotal: Debt Service</u>	\$ 62,998,088	\$ 17,199,651	\$ 16,734,886	\$ 96,932,626
<u>Capital Expenditures &amp; Transfers</u>				
Internally Generated Funds / PAYGO	\$ -	\$ -	\$ -	\$ -
Other Transfers to Reserves	640,000	250,000	110,000	1,000,000
Reimbursements from Municipalities	-	-	-	-
Remarketing & Liquidity Charges	-	-	-	-
Bad Debt Expense	3,360,716	1,077,678	1,533,142	5,971,537
DWSL	-	-	-	-
Hardship	-	-	-	-
Arrearage	97,988	142,012	-	240,000
Stormwater Credit Program Cost	-	-	180,489	180,489
<u>Subtotal: Capital Expenditures &amp; Transfers</u>	\$ 4,098,704	\$ 1,469,690	\$ 1,823,631	\$ 7,392,025
<b>Total: Base Rate Revenue Requirements</b>	<b>\$ 158,827,841</b>	<b>\$ 41,378,334</b>	<b>\$ 40,029,748</b>	<b>\$ 240,235,923</b>
DSIC Costs	\$ 11,279,120	\$ 3,759,342	\$ -	\$ 15,038,462
<b>Total System Revenue Requirements</b>	<b>\$ 170,106,961</b>	<b>\$ 45,137,675</b>	<b>\$ 40,029,748</b>	<b>\$ 255,274,385</b>

**Pittsburgh Water and Sewer Authority  
Allocation Factors - Between Utilities**

<b>Allocations to Utilities (Revenue Requirements &amp; Assets)</b>				
<i>Code</i>	<i>Description</i>	<i>Water</i>	<i>Sewer</i>	<i>Stormwater</i>
A	Water Only	100.0%	0.0%	0.0%
B	Wastewater Only	0.0%	100.0%	0.0%
C	Stormwater Only	0.0%	0.0%	100.0%
D	Customer Service - Meters	51.3%	48.7%	0.0%
E	Customer Bills	26.4%	34.9%	38.7%
F	Operations Cost	71.6%	13.8%	14.6%
G	Engineering and Construction	80.1%	9.4%	10.4%
H	Environmental Compliance	35.0%	32.5%	32.5%
I	Customer Service - Composite	28.5%	36.1%	35.5%
J	Wastewater - Conveyance	0.0%	50.0%	50.0%
K	Existing Debt Service - Assets	61.4%	19.3%	19.3%

**Sewer / Stormwater Allocation Factor Detail**

	<b>Sewer</b>	<b>Stormwater</b>
Conveyance	50.0%	50.0%
Debt Service	50.0%	50.0%

Exhibits  
HJS-1W – HJS-25W  
(Water Schedules)

**Pittsburgh Water and Sewer Authority**

HJS-1W

FPFTY 2024 COS &amp; Rate Design Model

FPFTY Water Revenue Requirements

	<b>2024 FPFTY Revenue Requirements</b>
<b>Water System Revenue Requirements</b>	
<u>Operating Expenses</u>	
<i>Direct Operating Expenses</i>	
Administrative Division	
Executive Director	\$ 2,389,920
Customer Service	2,726,806
Management Information Systems	5,452,164
Finance	7,804,820
Human Resources	1,744,656
Legal	3,019,489
Safety & Security	1,676,729
Public Affairs	1,362,774
Operations Division	
Environmental Compliance	1,623,521
Ops Capital Assets	-
Warehouse	402,980
Water Treatment Plant	27,206,247
Water Quality (Lab)	2,676,383
Water Distribution	17,698,299
Sewer Operations	-
Engineering & Construction	
Engineering & Construction	15,757,737
<i>Other Operating Expenses</i>	
Loss / (Gain) on ALCOSAN Billings	-
Covid-Related Expenses	188,524
<i>Total Operating Expenses</i>	<u>\$ 91,731,049</u>
<u>Debt Service</u>	
Existing Debt	\$ 46,549,714
Future Debt	16,448,374
<i>Subtotal: Debt Service</i>	<u>\$ 62,998,088</u>
<u>Capital Expenditures &amp; Transfers</u>	
Internally Generated Funds / PAYGO	\$ -
Internally Generated Funds / PAYGO (DSIC)	11,279,120
Other Transfers to Reserves	640,000
Bad Debt Expense	3,360,716
Arrearage	97,988
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	<u>\$ 15,377,824</u>
<b>Total: Water System Revenue Requirements</b>	<b>\$ 170,106,961</b>
<i>Capital Costs to be Recovered through DSIC</i>	<b>\$ (11,279,120)</b>
<b>Total: Water System Revenue Requirement (Excl DSIC)</b>	<b>\$ 158,827,841</b>





Water Operating Expenses	FY 2024	Allocation	Water Functional Categories											
			Supply	Treatment	Storage	Transmission	Distribution	Meters/Services	Billing	Fire Protection	Admin Support			
<i>Direct Operating Expenses</i>	<i>FPFTY</i>													
Administrative Division														
Executive Director	\$ 2,389,920	W-H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 2,389,920
Customer Service	2,726,806	W-I	-	-	-	-	-	-	932,617	1,794,189	-	-	-	-
Management Information Systems	5,452,164	W-H	-	-	-	-	-	-	-	-	-	-	-	5,452,164
Finance	7,804,820	W-H	-	-	-	-	-	-	-	-	-	-	-	7,804,820
Human Resources	1,744,656	W-H	-	-	-	-	-	-	-	-	-	-	-	1,744,656
Legal	3,019,489	W-H	-	-	-	-	-	-	-	-	-	-	-	3,019,489
Safety & Security	1,676,729	W-H	-	-	-	-	-	-	-	-	-	-	-	1,676,729
Public Affairs	1,362,774	W-H	-	-	-	-	-	-	-	-	-	-	-	1,362,774
Operations Division														
Environmental Compliance	1,623,521	W-H	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	1,623,521
Ops Capital Assets	-	W-H	-	-	-	-	-	-	-	-	-	-	-	-
Warehouse	402,980	W-H	-	-	-	-	-	-	-	-	-	-	-	402,980
Water Treatment Plant	27,206,247	W-B	-	27,206,247	-	-	-	-	-	-	-	-	-	-
Water Quality (Lab)	2,676,383	W-B	-	2,676,383	-	-	-	-	-	-	-	-	-	-
Water Distribution	17,698,299	W-K	-	-	-	6,103,833	10,412,419	1,182,047	-	-	-	-	-	-
Sewer Operations	-	n/a	-	-	-	-	-	-	-	-	-	-	-	-
Engineering & Construction Division														
Engineering & Construction	15,757,737	W-J	-	1,520,915	6,512,730	7,096,075	-	-	-	-	-	-	-	628,017
<i>Subtotal: Direct Operating Expenses</i>	<i>\$ 91,542,525</i>		<i>\$ -</i>	<i>\$ 31,403,544</i>	<i>\$ 6,512,730</i>	<i>\$ 13,199,908</i>	<i>\$ 10,412,419</i>	<i>\$ 2,114,664</i>	<i>\$ 1,794,189</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ 26,105,071</i>
<i>Other Operating Expenses</i>														
Loss / (Gain) on ALCOSAN Billings	-	n/a	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	-
Covid-Related Expenses	188,524		-	-	-	-	-	-	-	-	-	-	-	188,524
<i>Subtotal: Other Operating Expenses</i>	<i>\$ 188,524</i>		<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ -</i>	<i>\$ 188,524</i>
<b>Allocated Water Operating Costs</b>	<b>\$ 91,731,049</b>		<b>\$ -</b>	<b>\$ 31,403,544</b>	<b>\$ 6,512,730</b>	<b>\$ 13,199,908</b>	<b>\$ 10,412,419</b>	<b>\$ 2,114,664</b>	<b>\$ 1,794,189</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 26,293,595</b>

Pittsburgh Water and Sewer Authority

HJS-2W

FPPTY 2024 COS & Rate Design Model  
Assignment to Functional Categories

Allocated Water Assets			Water Functional Categories									
Row Labels	Allocated Costs	Allocation	Supply	Treatment	Storage	Transmission	Distribution	Meters/Services	Billing	Fire Protection	Admin Support	Total
Struc. and Improvements - Source of Supply and Pumping	1,923,948	W-A	100.00%									100.00%
Structures and Improvements - WTP	19,375,200	W-B		100.00%								100.00%
Structures and Improvements - Transmission and Distribution	-	W-D				36.96%	63.04%					100.00%
Pumping Equipment	12,831,813	W-D				36.96%	63.04%					100.00%
Water Treatment Equipment	83,226,122	W-B		100.00%								100.00%
Distribution Reservoirs and Standpipes	53,802,852	W-C			100.00%							100.00%
Transmission and Distribution Mains	373,645,124	W-K				34.49%	58.83%	6.68%				100.00%
Meters and Meter Installations	28,397,821	W-E						100.00%				100.00%
Fire Hydrants	14,090,379	W-G								100.00%		100.00%
Office Furniture and Equipment	75,643	W-H									100.00%	100.00%
Office Furniture and Equipment - Computer Hardware	3,058,783	W-H									100.00%	100.00%
Transportation Equipment	7,286,014	W-H									100.00%	100.00%
Tools, Shop and Garage Equipment	222,622	W-H									100.00%	100.00%
Laboratory Equipment	142,164	W-B		100.00%								100.00%
Collection Sewers - Gravity	-	n/a										0.00%
Manholes	-	n/a										0.00%
Wastewater Plant	-	n/a										0.00%
Power Operated Equipment	-	n/a										0.00%
<b>Total</b>	<b>598,078,484</b>		\$ 1,923,948	\$ 102,743,485	\$ 53,802,852	\$ 133,605,850	\$ 227,915,802	\$ 53,353,106	\$ -	\$ 14,090,379	\$ 10,643,061	<b>\$ 598,078,484</b>

Allocation Factors for Capital Costs	0.32%	17.18%	9.00%	22.34%	38.11%	8.92%	0.00%	2.36%	1.78%	100.00%
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Allocation of Capital Costs		Supply	Treatment	Storage	Transmission	Distribution	Meters/Services	Billing	Fire Protection	Admin Support	Readiness-to-Serve
Debt Service	\$ 62,998,088	\$ 202,657	\$ 10,822,398	\$ 5,667,278	\$ 14,073,258	\$ 24,007,317	\$ 5,619,904	\$ -	\$ 1,484,198	\$ 1,121,078	\$ -
Internally Generated Funds / PAYGO	-	-	-	-	-	-	-	-	-	-	-
Other Transfers to Reserves	640,000	2,059	109,945	57,574	142,971	243,891	57,093	-	15,078	11,389	-
Bad Debt Expense (1)	-	-	-	-	-	-	-	-	-	-	-
Arrearage	97,988	315	16,833	8,815	21,890	37,341	8,741	-	2,309	1,744	-
<b>Total: Allocated Capital Costs</b>	<b>\$ 63,736,076</b>	<b>\$ 205,031</b>	<b>\$ 10,949,176</b>	<b>\$ 5,733,667</b>	<b>\$ 14,238,119</b>	<b>\$ 24,288,550</b>	<b>\$ 5,685,738</b>	<b>\$ -</b>	<b>\$ 1,501,585</b>	<b>\$ 1,134,211</b>	<b>\$ -</b>

(1) Bad Debt Expense allocated directly to customer classes based on each classes responsibility for historical bad debt and included in the 'adjustments' in Rate Design.

Water Cost Drivers					
Base	Max Day	Peak Hour	Meters / Services	Bills	Fire Protection

**Water Revenue Requirement**

Functional Categories

**FY 2024**      **Allocation**  
 FPFTY

Supply	\$ 205,031	W-AA
Treatment	42,352,721	W-BB
Storage	12,246,397	W-CC
Transmission	27,438,027	W-BB
Distribution	34,700,968	W-CC
Meters/Services	7,800,402	W-DD
Billing	1,794,189	W-EE
Fire Protection	1,501,585	W-FF
Admin Support	27,427,805	W-GG
Readiness-to-Serve (Debt Service)	-	W-HH
<b>Total: Water Revenue Requirements</b>	<b>\$ 155,467,125</b>	

100.00%					
57.74%	40.66%				1.60%
54.05%	25.41%	12.09%			8.45%
57.74%	40.66%				1.60%
54.05%	25.41%	12.09%			8.45%
			100.00%		
				100.00%	
					100.00%
51.45%	31.48%	4.43%	6.09%	1.40%	5.15%

Water Cost Drivers					
Base	Max Day	Peak Hour	Meters / Services	Bills	Fire Protection

**Water Revenue Requirement**

Functional Categories

**FY 2024**      **Allocation**  
 FPFTY

Supply	\$ 205,031	W-AA
Treatment	42,352,721	W-BB
Storage	12,246,397	W-CC
Transmission	27,438,027	W-BB
Distribution	34,700,968	W-CC
Meters/Services	7,800,402	W-DD
Billing	1,794,189	W-EE
Fire Protection	1,501,585	W-FF
Admin Support	27,427,805	W-GG
Readiness-to-Serve (Debt Service)	-	W-HH
<b>Total: Water Revenue Requirements</b>	<b>\$ 155,467,125</b>	

\$ 205,031	\$ -	\$ -	\$ -	\$ -	\$ -
24,455,142	17,218,840	-	-	-	678,739
6,618,811	3,111,795	1,480,604	-	-	1,035,186
15,843,158	11,155,151	-	-	-	439,718
18,754,836	8,817,474	4,195,389	-	-	2,933,269
-	-	-	7,800,402	-	-
-	-	-	-	1,794,189	-
-	-	-	-	-	1,501,585
14,111,766	8,633,519	1,215,877	1,670,955	384,340	1,411,348
-	-	-	-	-	-
<b>\$ 79,988,746</b>	<b>\$ 48,936,779</b>	<b>\$ 6,891,870</b>	<b>\$ 9,471,356</b>	<b>\$ 2,178,529</b>	<b>\$ 7,999,844</b>

**Costs to Recover from Water Charges**

**\$155,467,125**

<b>\$ 79,988,746</b>	<b>\$ 48,936,779</b>	<b>\$ 6,891,870</b>	<b>\$ 9,471,356</b>	<b>\$ 2,178,529</b>	<b>\$ 7,999,844</b>
51.5%	31.5%	4.4%	6.1%	1.4%	5.1%

Cost Functionalization: Water										
Code	Description	Supply	Treatment	Storage	Transmission	Distribution	Meters/Services	Billing	Fire Protection	Admin Support
W-A	Supply Only	100.00%								
W-B	Treatment Only		100.00%							
W-C	Storage Only			100.00%						
W-D	Transmission & Distribution Only				36.96%	63.04%				
W-E	Meters Only						100.00%			
W-F	Billing Only							100.00%		
W-G	Fire Protection Only								100.00%	
W-H	Admin Support Only									100.00%
W-I	Customer Service						34.20%	65.80%		
W-J	Engineering & Construction		9.65%	41.33%	45.03%					3.99%
W-K	Transmission, Distribution and Services				34.49%	58.83%	6.68%			

Allocation to Cost Drivers: Water								
Code	Description	Base	Max Day	Peak Hour	Meters/Services	Bills	Readiness-to-Serve	Fire Protection
W-AA	Base	100.00%						
W-BB	Maximum Day	57.74%	40.66%					1.60%
W-CC	Peak Hour	54.05%	25.41%	12.09%				8.45%
W-DD	Customer - Meters				100.00%			
W-EE	Customer - Billing					100.00%		
W-FF	Fire Protection							100.00%
W-GG	Admin Support (Composite)	51.45%	31.48%	4.43%	6.09%	1.40%	0.00%	5.15%
W-HH	Readiness-to-Serve						100.00%	

<b>Factor Derivations - Allocation to Functional Categories &amp; Cost Components</b>						
<i>Code(s)</i>	<i>Description</i>	<i>Calculations</i>				
W-I	Customer Service	2024 Customer Service Budget				
WW-E	- This factor allocates the 2024 customer service budget between meter- and billing-related costs.	Salaries	\$	5,157,435	28.60%	71.40%
		Benefits		1,815,642	28.60%	71.40%
		Computer & Peripherals		-	100.00%	0.00%
		Annual Software Support		251,722	50.00%	50.00%
		Customer CC Fees		36,200	0.00%	100.00%
		Postage		471,117	0.00%	100.00%
		Equip Rental		1,746	100.00%	0.00%
		Billing Contract		228,960	0.00%	100.00%
		Consultants		47,700	20.00%	80.00%
		Meter Services		799,148	100.00%	0.00%
		Prof Service Other		478,967	20.00%	80.00%
		Water Liens		-	50.00%	50.00%
		Computer Software Supplies		84,800	100.00%	0.00%
		GIS Plotter Xerox		636	100.00%	0.00%
		Office Supplies		2,544	50.00%	50.00%
		TE Items		7,685	50.00%	50.00%
		Capital Asset Reclass		-	0.00%	0.00%
		Customer Refund CSM		(530,000)	0.00%	100.00%
		Customer Refund AP		530,000	0.00%	100.00%
		Education & Outreach		5,300	0.00%	100.00%
	One Call		25,440	0.00%	100.00%	
	Publication Subscription		3,816	0.00%	100.00%	
	Non.City Water Reimburse		158,788	100.00%	0.00%	
	<b>Total</b>		\$ 9,577,647	\$ 3,275,727	\$ 6,301,919	
	<i>Allocation Factors</i>			<i>34.20%</i>	<i>65.80%</i>	

W-D Water Pipe Inventory		<b>Breakdown</b>	
	- Allocate costs between transmission and distribution functional categories. Assumes Pipes less than or equal to 16" are Distribution-related.	Distribution	35,490,728 63.0%
		Transmission	20,804,915 37.0%
		<b>Total</b>	56,295,642 100.0%

W-K Water Pipe Inventory with Service Lines		<b>Breakdown</b>	
	Allocate Water Distribution costs between Transmission, Distribution, and Service Lines *No size records: assumption is all are 1"	Distribution	35,490,728 58.83%
		Transmission	20,804,915 34.49%
		Service Lines	4,029,007 6.68%
		<b>Total</b>	60,324,649 100.00%

<b>Inch-Foot Analysis</b>		
<i>Diameter (in)</i>	<i>Linear Feet</i>	<i>Inch-Feet</i>
0.75	799	599
1	1,314	1,314
1.5	983	1,474
2	11,004	22,009
2.5	16	39
3	268	803
4	116,991	467,963
6	2,144,789	12,868,735
8	1,181,921	9,455,372
10	81,965	819,651
12	619,567	7,434,805
14	1,296	18,147
15	15,500	232,496
16	260,458	4,167,320
18	468	8,425
20	209,715	4,194,304
24	85,229	2,045,495
28	104	2,911
30	116,456	3,493,670
36	83,180	2,994,494
42	11,013	462,562
42.5	13,261	563,591
48	16,706	801,908
50	23,263	1,163,137
50.25	12,001	603,043
60	54,606	3,276,383
66	1,492	98,501
72	3,626	261,064

Factor Derivations - Allocation to Functional Categories & Cost Components		
Code(s)	Description	Calculations

W-J	Engineering & Construction	2024 Water CIP Costs	<b>\$\$ Amount</b>	<b>Allocation</b>
		Treatment	\$ 26,885,665	9.65%
	- This factor uses the 2022 Water CIP costs to allocate Engineering & Construction costs to the various functional categories.	Storage	115,127,475	41.33%
		Trans. & Distr.	125,439,446	45.03%
		Admin	<u>11,101,650</u>	3.99%
		Total Water CIP	\$ 278,554,236	100.00%

W-BB Maximum Day

- Maximum day costs are allocated using a peak day determined using system daily production records. Fire demands are determined in HJS-7W.

Plant Production Data		
2020-2022 Avg Plant Production	63.88	mgd
2020-2022 Avg. Peak Day	89.85	mgd
Peak Hour Factor (1.6)	102.21	mgd

Base	57.74%	0.710955365
Maximum Day	40.66%	
Fire Protection	1.60%	

W-CC Peak Hour

- Peak hour costs are allocated using an estimated peak hour compared to system average and maximum day processed. Fire demands are determined in HJS-7W.

Plant Production Data		
2020-2022 Avg Plant Production	63.88	mgd
2020-2022 Avg. Peak Day	89.85	mgd
Peak Hour Factor (1.6)	102.21	mgd

Peak Hour / Avg	54.05%
Max Day (Plug)	25.41%
Peak Hr / Peak Day	12.09%
Fire Protection	8.45%

Equivalency Flow Ratios

- Used to escalate metering and readiness-to-serve costs, these ratios are industry standard and obtained from the American Waterworks Association

Equivalency Ratios						
	Flow			Fire Flow		Fire Equip
5/8"	1.00			1" or Less	2.50	1.00
3/4"	1.50			1 1/2"-3"	8.00	6.19
1"	2.50			4"	25.00	38.32
1 1/2"	5.00			6" or Greater	50.00	111.31
2"	8.00					
3"	16.00					
4"	25.00					
6"	50.00					
8"	80.00					
10"	115.00					
Unmetered	1.00					

	Collection Factor	FY 2024 Consumption	Allocated Consumption	Average Day	Maximum Day			Peak Hour			Equivalent Meters	Total Bills	Fire Equivalents
					Cap. Factor	Total Cap.	Extra Cap.	Cap. Factor	Total Cap.	Extra Cap.			
<b>Units of Service</b>													
<u>Retail Service</u>													
Residential (1)	100.0%	2,602,278	2,602,278	7,130	140.0%	9,981	2,852	230.0%	16,398	6,417	795,961	741,720	-
Residential - CAP	100.0%	187,825	187,825	515	140.0%	720	206	230.0%	1,184	463	66,975	66,169	-
Commercial (1)	100.0%	2,660,077	2,660,077	7,288	160.0%	11,661	4,373	265.0%	19,313	7,652	367,421	83,843	-
Industrial	100.0%	169,069	169,069	463	200.0%	926	463	265.0%	1,227	301	6,028	371	-
Health or Education	100.0%	1,010,575	1,010,575	2,769	185.0%	5,122	2,353	305.0%	8,445	3,322	76,397	5,266	-
Municipal - Residential	100.0%	1,841	1,841	5.04	140.0%	7	2	230.0%	12	5	309	243	-
Municipal - Commercial	100.0%	237,070	237,070	649.51	160.0%	1,039	390	265.0%	1,721	682	16,261	2,549	-
Private Fire Systems	100.0%	8,988	8,988	25	255.0%	63	38	425.0%	105	42	54,625	16,671	42,055
Public Fire	100.0%	-	-	-	100.0%	-	-	100.0%	-	-	-	-	10,028,669
<i>Subtotal: Retail Service</i>		<u>6,877,722</u>	<u>6,877,722</u>	<u>18,843</u>		<u>29,520</u>	<u>10,677</u>		<u>48,404</u>	<u>18,884</u>	<u>1,383,975</u>	<u>916,832</u>	<u>10,070,724</u>
<u>Wholesale &amp; Bulk</u>													
Wholesale	100.0%	857,599	857,599	2,350	180.0%	4,229	1,880	300.0%	7,049	2,820	-	-	-
Bulk	100.0%	-	-	-	0.0%	-	-	0.0%	-	-	-	-	-
<i>Subtotal: Wholesale &amp; Bulk</i>		<u>857,599</u>	<u>857,599</u>	<u>2,350</u>		<u>4,229</u>	<u>1,880</u>		<u>7,049</u>	<u>2,820</u>	<u>-</u>	<u>-</u>	<u>-</u>
<b>Total: Water Units of Service</b>		<u>7,735,321</u>	<u>7,735,321</u>	<u>21,193</u>		<u>33,749</u>	<u>12,557</u>		<u>55,453</u>	<u>21,703</u>	<u>1,383,975</u>	<u>916,832</u>	<u>10,070,724</u>

(1) Includes unmetered units and equivalent usage.

Class MM/AD	Maximum Day				Peak Hour	
	System MD/MM	Weekly Use Adjustment	MD Peaking Factor (2)	Estimated MH/MD	MH Peaking Factor (2)	
Residential	1.08	1.28	1.00	1.66	2.30	
Commercial	1.24	1.28	1.00	1.66	2.65	
Industrial	1.55	1.28	1.00	1.33	2.65	
Health or Education	1.44	1.28	1.00	1.66	3.05	
Fire System	2.00	1.28	1.00	1.66	4.25	
Wholesale	1.40	1.28	1.00	1.66	3.00	

(1) Peaking factors determined using customer billing information from 2020-2022.

(2) Maximum Day and Maximum Hour peaking factors are rounded.

**System Peaking Factor (1)**

	2020	2021	2022	Average
Average Day (MGD)	64.35	63.40	63.91	<b>63.88</b>
Average Day of Max Month (MGD) (MM)	70.29	65.78	74.40	<b>70.16</b>
System Maximum Day (MD)	97.33	86.46	85.77	<b>89.85</b>
<b>System MD/MM Peaking Factor</b>	<b>1.38</b>	<b>1.31</b>	<b>1.15</b>	<b>1.28</b>

(1) System peaking factors determined using plant production information from 2020-2022.

**Pittsburgh Water and Sewer Authority**

HJS-7W

*FPPTY 2024 COS & Rate Design Model*

Fire Protection Cost Allocation and Units of Service

**Determination of Allocation Factors for Public & Private Fire Costs**

Required Fire Flow	6,000	GPM
Required Duration for Fire Flow (Hours)	4	hours
Maximum Day - Fire	1,440,000	gallons
Maximum Day - System	89,854,774	gallons
% of Maximum Day for Fire	1.60%	
Peak Hour - Fire	360,000	gallons
Peak Hour - System	4,258,849	gallons
% of Maximum Day for Fire	8.45%	

<b>Fire Service Units</b>	Connections	Equivalent Factor	Equivalent Units	Percent
<u>Allocation to Public/Private</u>				
Public Hydrants	7,508	111.31	835,722	99.58%
Private Fire				
1" or Less	1,326	1.00	1,326	
1 1/2"-3"	44	6.19	273	
4"	4	38.32	144	
6" or Greater	16	111.31	1,762	
<i>Subtotal: Private Fire</i>	1,389		3,505	0.42%
Total	8,897		839,227	



**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 Water Unit Cost of Service

HJS-8W

Development of Unit Costs of Service	FY 2024 FPFTY	Unit Costs					
		Base	Extra Capacity		Meters / Services	Bills	Fire Protection
			Max Day	Peak Hour			
<u>Units of Service</u>							
Retail		6,877,722	10,677	18,884	1,383,975	916,832	10,070,724
Wholesale		857,599	1,880	2,820	-	-	-
Total System Units		7,735,321	12,557	21,703	1,383,975	916,832	10,070,724
Units		<i>kgal</i>	<i>kgal/day</i>	<i>kgal/day</i>	<i>Eq. Cost Meter</i>	<i>Total Bills</i>	<i>Eq. Fire Cnx</i>
<u>Allocated Revenue Requirement</u>							
Supply	\$ 205,031	\$ 205,031	\$ -	\$ -	\$ -	\$ -	\$ -
Treatment	42,352,721	24,455,142	17,218,840	-	-	-	678,739
Storage	12,246,397	6,618,811	3,111,795	1,480,604	-	-	1,035,186
Transmission	27,438,027	15,843,158	11,155,151	-	-	-	439,718
Distribution	34,700,968	18,754,836	8,817,474	4,195,389	-	-	2,933,269
Meters/Services	7,800,402	-	-	-	7,800,402	-	-
Billing	1,794,189	-	-	-	-	1,794,189	-
Fire Protection	1,501,585	-	-	-	-	-	1,501,585
Admin Support	27,427,805	14,111,766	8,633,519	1,215,877	1,670,955	384,340	1,411,348
Readiness-to-Serve (Debt Service)	-	-	-	-	-	-	-
<i>Total: Revenue Requirements</i>	\$ 155,467,125	\$ 79,988,746	\$ 48,936,779	\$ 6,891,870	\$ 9,471,356	\$ 2,178,529	\$ 7,999,844
Revenue Offsets	(2,171,887)	(1,117,448)	(683,650)	(96,280)	(132,316)	(30,434)	(111,758)
<b>Total: Costs of Service</b>	<b>\$ 153,295,238</b>	<b>\$ 78,871,297</b>	<b>\$ 48,253,129</b>	<b>\$ 6,795,590</b>	<b>\$ 9,339,041</b>	<b>\$ 2,148,095</b>	<b>\$ 7,888,086</b>
<b>Gross Unit Cost</b>		<b>\$ 10.20</b>	<b>\$ 3,842.87</b>	<b>\$ 313.11</b>	<b>\$ 6.75</b>	<b>\$ 2.34</b>	<b>\$ 0.78</b>
<i>Unit Cost - Retail (\$ / Unit) (Includes Distribution)</i>		\$ 10.50	\$ 3,966.50	\$ 341.97	\$ 6.75	\$ 2.34	\$ 0.78
<i>Unit Cost - Wholesale (\$ / Unit) (Excludes Distribution)</i>		\$ 7.77	\$ 3,140.65	\$ 119.81	\$ 6.75	\$ 2.34	\$ 0.78

**Customer Class Cost of Service**

Residential

	Base	Unit Costs		Meters / Services	Bills	Fire Protection	Total
		Max Day	Peak Hour				
Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	2,602,278	2,852	6,417	795,961	741,720	-	
Cost of Service	\$ 27,320,218	\$ 11,311,703	\$ 2,194,302	\$ 5,371,129	\$ 1,737,816	\$ -	\$ 47,935,167

Residential - CAP

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	187,825	206	463	66,975	66,169	-	
Cost of Service	\$ 1,971,892	\$ 816,445	\$ 158,378	\$ 451,946	\$ 155,031	\$ -	\$ 3,553,693

Commercial

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	2,660,077	4,373	7,652	367,421	83,843	-	
Cost of Service	\$ 27,927,025	\$ 17,344,420	\$ 2,616,879	\$ 2,479,351	\$ 196,440	\$ -	\$ 50,564,114

Industrial

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	169,069	463	301	6,028	371	-	
Cost of Service	\$ 1,774,986	\$ 1,837,295	\$ 102,962	\$ 40,673	\$ 869	\$ -	\$ 3,756,786

Health or Education

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	1,010,575	2,353	3,322	76,397	5,266	-	
Cost of Service	\$ 10,609,601	\$ 9,334,732	\$ 1,136,187	\$ 515,522	\$ 12,338	\$ -	\$ 21,608,381

Municipal - Residential

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	1,841	2	5	309	243	-	
Cost of Service	\$ 19,328	\$ 8,003	\$ 1,552	\$ 2,085	\$ 569	\$ -	\$ 31,537

Municipal - Commercial

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	237,070	390	682	16,261	2,549	-	
Cost of Service	\$ 2,488,903	\$ 1,545,764	\$ 233,221	\$ 109,729	\$ 5,972	\$ -	\$ 4,383,588

Private Fire System

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	8,988	38	42	54,625	16,671	42,055	
Cost of Service	\$ 94,357	\$ 151,388	\$ 14,315	\$ 368,605	\$ 39,059	\$ 32,940	\$ 700,665

Public Fire Protection

Unit Costs (\$/unit)	\$ 10.499	\$ 3,966.498	\$ 341.974	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service						10,028,669	
Cost of Service	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 7,855,146	\$ 7,855,146

Wholesale

Unit Costs (\$/unit)	\$ 7.772	\$ 3,140.649	\$ 119.806	\$ 6.748	\$ 2.343	\$ 0.783	
Units of Service	857,599	1,880	2,820				
Cost of Service	\$ 6,664,987	\$ 5,903,381	\$ 337,794	\$ -	\$ -	\$ -	\$ 12,906,162

**Total: Costs of Service**

<b>\$ 78,871,297</b>	<b>\$ 48,253,129</b>	<b>\$ 6,795,590</b>	<b>\$ 9,339,041</b>	<b>\$ 2,148,095</b>	<b>\$ 7,888,086</b>	<b>\$ 153,295,238</b>
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**Pittsburgh Water and Sewer Authority**

FPPTY 2024 COS & Rate Design Model

Adjustments to Allocated Cost of Service

COS Adjustments		Allocation Method	Residential	Residential - CAP	Commercial	Industrial	Health or Education	Municipal - Residential	Municipal - Commercial	Private Fire System	Public Fire Protection	Wholesale	Total
<u>Adjustments to Cost of Service</u>													
Public Fire (Title 66 § 1328)	Equivalent Meters		57.5%	4.8%	26.5%	0.4%	5.5%	0.0%	1.2%	3.9%			100.0%
Wholesale Contracts	Unadj. COS		36.4%	2.7%	38.4%	2.8%	16.4%	0.0%	3.3%				100.0%
Add: Bad Debt Expense	Class Contribution		84.1%		12.5%	0.2%	1.8%		0.1%	1.2%	0.0%		100.0%
BDP Forgone Revenue	Unadj. COS		37.4%		39.4%	2.9%	16.8%	0.0%	3.4%				100.0%
Gradualism: Industrial Class	Unadj. COS		37.4%	2.8%	39.5%		16.9%	0.0%	3.4%				100.0%
<b>Cost of Service by Class</b>													
Allocated Cost of Service (Unadjusted)		\$	47,935,167	\$ 3,553,693	\$ 50,564,114	\$ 3,756,786	\$ 21,608,381	\$ 31,537	\$ 4,383,588	\$ 700,665	\$ 7,855,146	\$ 12,906,162	\$ 153,295,238
% of COS			31.3%	2.3%	33.0%	2.5%	14.1%	0.0%	2.9%	0.5%	5.1%	8.4%	100.0%
<u>Adjustments to Cost of Service</u>		<u>Adjustment</u>											
Public Fire (Title 66 § 1328)		5,891,359	3,388,276	285,102	1,564,052	25,658	325,208	1,315	69,220	232,528	(5,891,359)	-	(0)
Wholesale Contracts		8,566,911	3,114,967	230,929	3,285,804	244,127	1,404,176	2,049	284,858	-	-	(8,566,911)	-
Add: Bad Debt Expense		3,360,716	2,827,086	-	421,319	6,167	61,583	-	2,746	41,815	-	-	3,360,716
BDP Forgone Revenue		2,411,841	901,250	(2,411,841)	950,678	70,633	406,269	593	82,418	-	-	-	(0)
Gradualism - Industrial (1)		1,030,000	385,498	28,579	406,640	(1,030,000)	173,776	254	35,253	-	-	-	(0)
<b>Total: Adjusted Cost of Service</b>		\$	<b>58,552,244</b>	<b>\$ 1,686,462</b>	<b>\$ 57,192,608</b>	<b>\$ 3,073,371</b>	<b>\$ 23,979,391</b>	<b>\$ 35,749</b>	<b>\$ 4,858,084</b>	<b>\$ 975,008</b>	<b>\$ 1,963,786</b>	<b>\$ 4,339,251</b>	<b>\$ 156,655,955</b>
% of COS			37.4%	1.1%	36.5%	2.0%	15.3%	0.0%	3.1%	0.6%	1.3%	2.8%	100.0%

(1) Gradualism adjusted such that class increase does not exceed 1.5x overall water system increase

**Pittsburgh Water and Sewer Authority**

HJS-11W

*FPFTY 2024 COS & Rate Design Model*

Forgone Revenue Cost of the Bill Discount Program

<b>Units</b>		Bills	CAP Usage	CAP - 50FPL Usage
5/8"	0.0%	65,253	107,437	25,925
3/4"	0.0%	550	620	82
1"	0.0%	354	215	264
Unmetered	0.0%	12	n/a	n/a
		<u>66,169</u>	<u>108,272</u>	<u>26,271</u>

<b>Forgone Revenue Cost</b>		Revenue At Full Rates	Revenue at CAP Rates	Difference
Fixed Charges		\$ 2,186,964	\$ -	\$ 2,186,964
Volume Charges		<u>449,754</u>	<u>224,877</u>	<u>224,877</u>
Total Forgone Revenue Cost		2,636,718	224,877	2,411,841

Volume Discount	50.0%
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		<b>COS Rate Build-Up - Test Year: 2024</b>									
<b>Water</b>	<b>Min. Usage</b> <i>Proposed</i>	<i>Meters/Services</i>	<i>Billing</i>	<i>Usage</i>	<i>Total COS Rates</i>	<i>Adjustments</i>					
						<i>Public Fire</i>	<i>R. T.S.</i>	<i>CAP-BDP</i>	<i>Proposed Rates</i>		
<b>Minimum Charge</b>											
5/8"	1	\$ 6.75	\$ 2.34	\$ 14.53	\$ 23.62	\$ 4.26	\$ 4.55	\$ -	\$ -	32.43	
3/4"	2	10.12	2.34	29.06	41.52	6.39	6.83	-	-	54.74	
1"	5	16.87	2.34	72.64	91.86	10.64	11.38	-	-	113.88	
1 1/2"	10	33.74	2.34	145.29	181.37	21.28	22.76	-	-	225.41	
2"	17	53.98	2.34	246.99	303.31	34.05	36.42	-	-	373.78	
3"	40	107.97	2.34	581.15	691.46	68.11	72.83	-	-	832.40	
4"	70	168.70	2.34	1,017.01	1,188.05	106.42	113.80	-	-	1,408.27	
6"	175	337.40	2.34	2,542.52	2,882.26	212.84	227.60	-	-	3,322.70	
8"	325	539.84	2.34	4,721.82	5,264.00	340.55	364.16	-	-	5,968.71	
10" & Above	548	776.02	2.34	7,961.72	8,740.08	489.54	523.48	-	-	9,753.09	
Unmetered	1	6.75	2.34	14.53	23.62	4.26	4.55	-	-	32.43	
<b>Residential - CAP</b>											
5/8"	1	\$ 6.75	\$ 2.34	\$ 14.53	\$ 23.62	\$ 4.26	\$ 4.55	\$ (32.43)	\$ -	-	
3/4"	2	10.12	2.34	29.06	41.52	6.39	6.83	(54.74)	-	-	
1"	5	16.87	2.34	72.64	91.86	10.64	11.38	(113.88)	-	-	
Unmetered	1	6.75	2.34	14.53	23.62	4.26	4.55	(32.43)	-	-	
						<i>Adjustments</i>					
<b>Monthly Fire Protection</b>		<i>Meters/Services</i>	<i>Billing</i>	<i>Fire</i>	<i>Total</i>	<i>Public Fire</i>	<i>R. T.S.</i>	<i>CAP-BDP</i>	<i>Proposed Rates</i>		
<i>Public</i>											
Per Hydrant		\$ -	\$ -	\$ 87.19	\$ 87.19	\$ (65.39)	\$ -	\$ -	\$ -	21.80	
<i>Private</i>											
1" or Less		\$ 16.87	\$ 2.34	\$ 0.78	\$ 20.00		\$ 11.38	\$ -	\$ -	31.38	
1 1/2"-3"		53.98	2.34	4.85	61.18		36.42	-	-	97.59	
4"		168.70	2.34	30.01	201.06		113.80	-	-	314.86	
6" or Greater		337.40	2.34	87.19	426.93		227.60	-	-	654.53	

Unadjusted COS-Based Rates					
Unadjusted Revenue Requirement	Fixed Charge Revenue	Total Volumetric Rev Req	Billed Volume	Proposed Rates	
Residential	\$ 47,935,167	\$ 19,826,264	\$ 28,108,903	1,830,332	\$ 15.36
Residential - CAP	3,553,693	1,328,529	2,225,163	134,578	16.53
Commercial	50,564,114	15,037,448	35,526,666	2,046,690	17.36
Industrial	3,756,786	322,571	3,434,215	157,395	21.82
Health or Education	21,608,381	3,657,193	17,951,187	855,292	20.99
Municipal - Residential	31,537	8,451	23,086	1,702	13.56
Municipal - Commercial	4,383,588	719,905	3,663,683	218,440	16.77
Private Fire System	700,665	440,605	260,060	8,988	28.94
Public Fire	7,855,146	7,855,146	-	-	n/a
Wholesale	12,906,162	-	12,906,162	857,599	15.05
<b>Totals</b>	<b>153,295,238</b>	<b>49,196,113</b>	<b>104,099,125</b>	<b>6,111,016</b>	<b>\$ 17.03</b>

Determination of Proposed Rates					
Adjusted Revenue Requirement	Fixed Charge Revenue	Total Volumetric Rev Req	Equivalent Volume (for Ratemaking)	Proposed Rates	
Residential + CAP + City Res	\$ 60,274,454	\$ 26,850,154	\$ 33,424,300	1,953,478	\$ 17.12
Commercial + City Com	62,050,692	19,137,165	42,913,527	2,265,129	18.95
Industrial	3,073,371	375,666	2,697,705	157,395	17.14
Health or Education	23,979,391	4,330,146	19,649,245	855,292	22.98
Municipal - Commercial					
Municipal - Residential					
Private Fire System	975,008	689,316	285,692	8,988	31.79
Public Fire	1,963,786	1,964,093	(306)	-	n/a
Wholesale	4,339,251	-	4,339,251	n/a	n/a
<b>Totals</b>	<b>\$ 156,655,955</b>	<b>53,346,541</b>	<b>103,309,414</b>	<b>5,240,282</b>	<b>\$ 19.71</b>

Class Increase	Ratio to Total Increase
22.5%	0.81
31.5%	1.14
40.9%	1.47
38.4%	1.39
47.0%	1.70
48.5%	1.75
18.5%	0.67
27.7%	1.00

Volume Charge (per kgal)

Volume Charge (per kgal)

**Pittsburgh Water and Sewer Authority**

HJS-13W

FPFTY 2024 COS & Rate Design Model

Proposed Rates

	2023		2024			
	FTY Prior Tariff Rates		FPFTY Proposed Rates		Percent Difference	Dollar Difference
<b>Existing &amp; Proposed Rates</b>						
<u>Minimum Charge</u>						
5/8"	\$	26.52	\$	32.43	22.3%	\$ 5.91
3/4"		46.47		54.74	17.8%	8.27
1"		102.08		113.88	11.6%	11.80
1 1/2"		201.85		225.41	11.7%	23.56
2"		337.28		373.78	10.8%	36.50
3"		766.42		832.40	8.6%	65.98
4"		1,313.93		1,408.27	7.2%	94.34
6"		3,174.80		3,322.70	4.7%	147.90
8"		5,784.48		5,968.71	3.2%	184.23
10" & Above		9,582.36		9,753.09	1.8%	170.73
<u>Minimum Charge - CAP (1)</u>						
5/8"	\$	-	\$	-	0.0%	\$ -
3/4"		-		-	0.0%	-
1"		-		-	0.0%	-
<u>Fire System Charges</u>						
Private						
1" or Less	\$	15.43	\$	31.38	103.4%	\$ 15.95
1 1/2"-3"		46.28		97.59	110.9%	51.31
4"		152.25		314.86	106.8%	162.61
6" or Greater		325.06		654.53	101.4%	329.47
Public						
Per Hydrant	\$	5.65	\$	21.80	285.7%	\$ 16.15
<u>Volume Charge</u>						
Residential	\$	14.64	\$	17.12	16.9%	\$ 2.48
Residential - CAP		14.64		17.12	16.9%	2.48
Residential - CAP (<50% FPL)		7.32		8.56	16.9%	1.24
Commercial		13.80		18.95	37.3%	5.15
Industrial		12.13		17.14	41.3%	5.01
Health or Education		16.29		22.98	41.1%	6.69
Municipal - Residential (2)		11.71		17.12	46.2%	5.41
Municipal - Commercial (2)		11.04		18.95	71.6%	7.91
Fire System		39.05		31.79	-18.6%	(7.26)
Wholesale		10.89		15.05	38.2%	15.05
<u>Unmetered Charges (per Unit)</u>						
Residential	\$	70.44	\$	83.79	19.0%	\$ 13.35
Residential - CAP		43.95		51.36	16.9%	7.41
Commercial		82.92		108.23	30.5%	25.31
DSIC (Applies to all retail customers)		5.0%		7.5%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in all years.

(2) Municipal Rates were at 80% in 2023 and are at 100% in 2024 per agreement.

	<b>FPFTY Revenue at Existing Rates</b>	<b>FPFTY Indicated COS by Customer Class</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Base Rate Revenues</b>				
Residential	\$ 49,025,385	\$ 47,935,167	-2.2%	\$ (1,090,218)
Residential - CAP	1,777,927	3,553,693	99.9%	1,775,766
Commercial	44,921,729	50,564,114	12.6%	5,642,385
Industrial	2,264,992	3,756,786	65.9%	1,491,794
Health or Education	17,976,189	21,608,381	20.2%	3,632,192
Municipal (Residential & Commercial)	3,845,954	4,415,125	14.8%	569,172
Private Fire System	689,507	700,665	1.6%	11,159
Public Fire Protection	1,322,609	7,855,146	100.0%	6,532,536
Wholesale	3,661,855	12,906,162	252.4%	9,244,307
<b>Total: Base Rate Revenues</b>	<b>\$ 125,486,146</b>	<b>\$ 153,295,238</b>	<b>22.2%</b>	<b>\$ 27,809,093</b>

	<b>FPFTY Indicated COS by Customer Class</b>	<b>FPFTY Adjusted COS by Customer Class</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Base Rate Revenues</b>				
Residential	\$ 47,935,167	\$ 58,552,244	22.1%	\$ 10,617,078
Residential - CAP	3,553,693	1,686,462	-52.5%	(1,867,231)
Commercial	50,564,114	57,192,608	13.1%	6,628,494
Industrial	3,756,786	3,073,371	-18.2%	(683,415)
Health or Education	21,608,381	23,979,391	11.0%	2,371,011
Municipal (Residential & Commercial)	4,415,125	4,893,833	10.8%	478,707
Private Fire System	700,665	975,008	39.2%	274,343
Public Fire Protection	7,855,146	1,963,786	-75.0%	(5,891,359)
Wholesale	12,906,162	4,339,251	-66.4%	(8,566,911)
<b>Total: Base Rate Revenues</b>	<b>\$ 153,295,238</b>	<b>\$ 156,655,955</b>	<b>2.2%</b>	<b>\$ 3,360,716</b>

	<b>FPFTY Revenue at Existing Rates</b>	<b>FPFTY Adjusted COS by Customer Class</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Base Rate Revenues</b>				
Residential	\$ 49,025,385	\$ 58,552,244	19.4%	\$ 9,526,860
Residential - CAP	1,777,927	1,686,462	-5.1%	(91,465)
Commercial	44,921,729	57,192,608	27.3%	12,270,878
Industrial	2,264,992	3,073,371	35.7%	808,380
Health or Education	17,976,189	23,979,391	33.4%	6,003,203
Municipal (Residential & Commercial)	3,845,954	4,893,833	27.2%	1,047,879
Private Fire System	689,507	975,008	41.4%	285,501
Public Fire Protection	1,322,609	1,963,786	100.0%	641,177
Wholesale	3,661,855	4,339,251	18.5%	677,396
<b>Total: Base Rate Revenues</b>	<b>\$ 125,486,146</b>	<b>\$ 156,655,955</b>	<b>24.8%</b>	<b>\$ 31,169,809</b>

	<b>FPFTY Revenue at Existing Rates</b>	<b>FPFTY Revenue at Proposed Rates</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Base Rate Revenues</b>				
Residential	\$ 49,025,385	\$ 58,174,270	18.7%	\$ 9,148,885
Residential - CAP	1,777,927	2,079,105	16.9%	301,178
Commercial	44,921,729	57,058,794	27.0%	12,137,064
Industrial	2,264,992	3,073,423	35.7%	808,431
Health or Education	17,976,189	23,984,749	33.4%	6,008,560
Municipal (Residential & Commercial)	3,845,954	5,042,892	31.1%	1,196,938
Private Fire System	689,507	975,033	41.4%	285,526
Public Fire Protection	1,322,609	1,964,093	100.0%	641,484
Wholesale	3,661,855	4,339,251	18.5%	677,396
<b>Total: Base Rate Revenues</b>	<b>\$ 125,486,146</b>	<b>\$ 156,691,609</b>	<b>24.9%</b>	<b>\$ 31,205,463</b>



**Pittsburgh Water and Sewer Authority**

FPPTY 2024 COS & Rate Design Model

FPPTY CCOS Comparison - Water

HJS-15W

	Unadjusted COS (1)		Revenue at Existing Rates		Revenue at Proposed Rates		Proposed Increase	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
<b>Base Rate Revenues</b>								
Residential	\$ 47,935,167	31.3%	\$ 49,025,385	39.1%	\$ 58,174,270	37.1%	\$ 9,148,885	18.7%
Residential - CAP	3,553,693	2.3%	1,777,927	1.4%	2,079,105	1.3%	301,178	16.9%
Commercial	50,564,114	33.0%	44,921,729	35.8%	57,058,794	36.4%	12,137,064	27.0%
Industrial	3,756,786	2.5%	2,264,992	1.8%	3,073,423	2.0%	808,431	35.7%
Health or Education	21,608,381	14.1%	17,976,189	14.3%	23,984,749	15.3%	6,008,560	33.4%
Municipal - Residential	31,537	0.0%	34,377	0.0%	40,317	0.0%	5,940	17.3%
Municipal - Commercial	4,383,588	2.9%	3,811,577	3.0%	5,002,575	3.2%	1,190,998	31.2%
Private Fire System	700,665	0.5%	689,507	0.5%	975,033	0.6%	285,526	41.4%
Public Fire Protection	7,855,146	5.1%	1,322,609	1.1%	1,964,093	1.3%	641,484	48.5%
Wholesale & Bulk	12,906,162	8.4%	3,661,855	2.9%	4,339,251	2.8%	677,396	18.5%
<b>Subtotal: Base Rate Revenues</b>	<b>\$ 153,295,238</b>	<b>100.0%</b>	<b>\$ 125,486,146</b>	<b>100.0%</b>	<b>\$ 156,691,609</b>	<b>100.0%</b>	<b>\$ 31,205,463</b>	<b>24.9%</b>
<b>DSIC Revenues</b>								
Residential	n/a	n/a	\$ 2,451,269		\$ 4,363,070		\$ 1,911,801	
Residential - CAP	n/a	n/a	88,896		155,933		67,037	
Commercial	n/a	n/a	2,246,086		4,279,410		2,033,323	
Industrial	n/a	n/a	113,250		230,507		117,257	
Health or Education	n/a	n/a	898,809		1,798,856		900,047	
Municipal - Residential	n/a	n/a	1,719		3,024		1,305	
Municipal - Commercial	n/a	n/a	190,579		375,193		184,614	
Private Fire System	n/a	n/a	34,475		73,127		38,652	
Public Fire Protection	n/a	n/a	-		-		-	
<b>Subtotal: DSIC Revenues</b>	<b>n/a</b>	<b>n/a</b>	<b>\$ 6,025,084</b>		<b>\$ 11,279,120</b>		<b>\$ 5,254,036</b>	
<b>Total: User Charge Revenues</b>	<b>\$ 153,295,238</b>		<b>\$ 131,511,230</b>		<b>\$ 167,970,729</b>		<b>\$ 36,459,499</b>	<b>27.7%</b>
<b>Other Revenues</b>								
Miscellaneous Revenues	2,171,887		2,171,887		2,171,887		-	0.0%
<b>Total: Water Revenues</b>	<b>\$ 155,467,125</b>		<b>\$ 133,683,117</b>		<b>\$ 170,142,615</b>		<b>\$ 36,459,499</b>	<b>27.3%</b>

(1) Difference between COS & proposed base rate revenue is attributed to BDE and rounding

**Pittsburgh Water and Sewer Authority**

FPFTY 2024 COS & Rate Design Model

Typical Bill Comparison

HJS-16W

	<b>Customer Usage</b>		<b>FTY Existing Rates</b>		<b>FPFTY Proposed Rates</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Customer Impacts (1)</b>							
<u>Residential</u>							
	5/8"	1 kgal	\$ 27.85	\$	34.86	25.2%	\$ 7.02
	5/8"	3 kgal	58.59		71.67	22.3%	13.08
	5/8"	5 kgal	89.33		108.48	21.4%	19.14
	5/8"	7 kgal	120.08		145.29	21.0%	25.21
	5/8"	12 kgal	196.94		237.31	20.5%	40.37
	1"	20 kgal	337.76		398.48	18.0%	60.72
<u>Commercial</u>							
	5/8"	3 kgal	\$ 56.83	\$	75.60	33.0%	\$ 18.78
	5/8"	5 kgal	85.81		116.35	35.6%	30.54
	5/8"	12 kgal	187.24		258.95	38.3%	71.71
	1"	13 kgal	223.10		285.39	27.9%	62.29
	2"	80 kgal	1,267.01		1,685.20	33.0%	418.19
	4"	160 kgal	2,683.73		3,347.30	24.7%	663.58
<u>Industrial</u>							
	1"	30 kgal	\$ 425.60	\$	583.06	37.0%	\$ 157.46
	1"	60 kgal	807.69		1,135.82	40.6%	328.13
	2"	100 kgal	1,411.27		1,931.13	36.8%	519.86
	4"	680 kgal	9,148.89		12,753.45	39.4%	3,604.55
	6"	400 kgal	6,199.25		7,717.64	24.5%	1,518.39
	8"	800 kgal	12,123.54		15,168.48	25.1%	3,044.93
<u>Health or Education</u>							
	5/8"	5 kgal	\$ 96.26	\$	133.68	38.9%	\$ 37.41
	5/8"	10 kgal	181.79		257.19	41.5%	75.41
	1"	40 kgal	705.84		987.04	39.8%	281.20
	2"	50 kgal	918.59		1,217.03	32.5%	298.44
	4"	200 kgal	3,603.21		4,725.35	31.1%	1,122.13
	6"	650 kgal	11,458.18		15,306.07	33.6%	3,847.89

(1) Customer bills at existing rates include a 5% DSIC and proposed rates include a 7.5% DSIC.

	2024 Revenue @ Existing Rates			2024 Revenue @ COS Rates			2024 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenues</b>									
<u>Minimum Charges</u>									
<b>Residential</b>									
5/8"	682,360	\$ 26.52	\$ 18,096,198	682,360	\$ 23.62	\$ 16,117,094	682,360	\$ 32.43	\$ 22,128,948
3/4"	30,308	46.47	1,408,403	30,308	41.52	1,258,449	30,308	54.74	1,659,049
1"	24,535	102.08	2,504,574	24,535	91.86	2,253,732	24,535	113.88	2,794,091
1 1/2"	452	201.85	91,236	452	181.37	81,979	452	225.41	101,885
2"	68	337.28	22,935	68	303.31	20,625	68	373.78	25,417
Unmetered	3,996	70.44	281,478	3,996	23.62	94,384	3,996	83.79	334,825
<i>Subtotal: Residential</i>	<i>741,720</i>		<i>\$ 22,404,824</i>	<i>741,720</i>		<i>\$ 19,826,264</i>	<i>741,720</i>		<i>\$ 27,044,215</i>
<b>Residential - CAP and CAP - 50FPL</b>									
5/8"	65,253	\$ -	\$ -	65,253	\$ 23.62	\$ 1,541,251	65,253	\$ -	\$ -
3/4"	550	-	-	550	41.52	22,837	550	-	-
1"	354	-	-	354	91.86	32,517	354	-	-
Unmetered	12	43.95	527	12	23.62	283	12	51.36	616
<i>Subtotal: Residential - CAP and CAP - 50</i>	<i>66,169</i>		<i>\$ 527</i>	<i>66,169</i>		<i>\$ 1,596,889</i>	<i>66,169</i>		<i>\$ 616</i>
<b>Commercial</b>									
5/8"	32,509	\$ 26.52	\$ 862,139	32,509	\$ 23.62	\$ 767,850	32,509	\$ 32.43	\$ 1,054,267
3/4"	8,347	46.47	387,885	8,347	41.52	346,587	8,347	54.74	456,915
1"	17,201	102.08	1,755,878	17,201	91.86	1,580,021	17,201	113.88	1,958,850
1 1/2"	10,062	201.85	2,031,015	10,062	181.37	1,824,942	10,062	225.41	2,268,075
2"	9,730	337.28	3,281,734	9,730	303.31	2,951,249	9,730	373.78	3,636,879
3"	2,822	766.42	2,162,837	2,822	691.46	1,951,294	2,822	832.40	2,349,033
4"	2,167	1,313.93	2,847,286	2,167	1,188.05	2,574,505	2,167	1,408.27	3,051,721
6"	918	3,174.80	2,914,466	918	2,882.26	2,645,916	918	3,322.70	3,050,239
8"	75	5,784.48	433,836	75	5,264.00	394,800	75	5,968.71	447,653
10" & Above	-	9,582.36	-	-	8,740.08	-	-	9,753.09	-
Unmetered	12	82.92	995	12	23.62	283	12	108.23	1,299
<i>Subtotal: Commercial</i>	<i>83,843</i>		<i>\$ 16,678,072</i>	<i>83,843</i>		<i>\$ 15,037,448</i>	<i>83,843</i>		<i>\$ 18,274,931</i>
<b>Industrial</b>									
5/8"	84	\$ 26.52	\$ 2,228	84	\$ 23.62	\$ 1,984	84	\$ 32.43	\$ 2,724
3/4"	12	46.47	558	12	41.52	498	12	54.74	657
1"	69	102.08	7,044	69	91.86	6,338	69	113.88	7,858
1 1/2"	-	201.85	-	-	181.37	-	-	225.41	-
2"	60	337.28	20,237	60	303.31	18,199	60	373.78	22,427
3"	33	766.42	25,292	33	691.46	22,818	33	832.40	27,469
4"	65	1,313.93	85,405	65	1,188.05	77,223	65	1,408.27	91,538
6"	24	3,174.80	76,195	24	2,882.26	69,174	24	3,322.70	79,745
8"	24	5,784.48	138,828	24	5,264.00	126,336	24	5,968.71	143,249
10" & Above	-	9,582.36	-	-	8,740.08	-	-	9,753.09	-
<i>Subtotal: Industrial</i>	<i>371</i>		<i>\$ 355,786</i>	<i>371</i>		<i>\$ 322,571</i>	<i>371</i>		<i>\$ 375,666</i>
<b>Health or Education</b>									
5/8"	359	\$ 26.52	\$ 9,521	359	\$ 23.62	\$ 8,479	359	\$ 32.43	\$ 11,642
3/4"	96	46.47	4,461	96	41.52	3,986	96	54.74	5,255
1"	239	102.08	24,397	239	91.86	21,954	239	113.88	27,217
1 1/2"	755	201.85	152,397	755	181.37	136,934	755	225.41	170,185
2"	1,561	337.28	526,494	1,561	303.31	473,474	1,561	373.78	583,471
3"	1,048	766.42	803,208	1,048	691.46	724,648	1,048	832.40	872,355
4"	800	1,313.93	1,051,144	800	1,188.05	950,440	800	1,408.27	1,126,616
6"	368	3,174.80	1,168,326	368	2,882.26	1,060,672	368	3,322.70	1,222,754
8"	21	5,784.48	121,474	21	5,264.00	110,544	21	5,968.71	125,343
10" & Above	19	9,582.36	182,065	19	8,740.08	166,062	19	9,753.09	185,309
<i>Subtotal: Health or Education</i>	<i>5,266</i>		<i>\$ 4,043,487</i>	<i>5,266</i>		<i>\$ 3,657,193</i>	<i>5,266</i>		<i>\$ 4,330,146</i>
<b>Municipal - Residential</b>									
5/8"	219	\$ 26.52	\$ 5,808	219	\$ 23.62	\$ 5,173	219	\$ 32.43	\$ 7,102
3/4"	-	46.47	-	-	41.52	-	-	54.74	-
1"	12	102.08	1,225	12	91.86	1,102	12	113.88	1,367
1 1/2"	12	201.85	2,422	12	181.37	2,176	12	225.41	2,705
<i>Subtotal: Municipal - Residential</i>	<i>243</i>		<i>\$ 9,455</i>	<i>243</i>		<i>\$ 8,451</i>	<i>243</i>		<i>\$ 11,174</i>
<b>Municipal - Commercial</b>									
5/8"	697	\$ 26.52	\$ 18,484	697	\$ 23.62	\$ 16,463	697	\$ 32.43	\$ 22,604
3/4"	77	46.47	3,578	77	41.52	3,197	77	54.74	4,215
1"	517	102.08	52,775	517	91.86	47,490	517	113.88	58,876
1 1/2"	409	201.85	82,557	409	181.37	74,180	409	225.41	92,193
2"	593	337.28	200,007	593	303.31	179,865	593	373.78	221,652
3"	167	766.42	127,992	167	691.46	115,473	167	832.40	139,011
4"	25	1,313.93	32,848	25	1,188.05	29,701	25	1,408.27	35,207
6"	35	3,174.80	111,118	35	2,882.26	100,879	35	3,322.70	116,295
8"	29	5,784.48	167,750	29	5,264.00	152,656	29	5,968.71	173,093
10" & Above	-	9,582.36	-	-	8,740.08	-	-	9,753.09	-
<i>Subtotal: Municipal - Commercial</i>	<i>2,549</i>		<i>\$ 797,110</i>	<i>2,549</i>		<i>\$ 719,905</i>	<i>2,549</i>		<i>\$ 863,144</i>
<i>Subtotal: Minimum Charges</i>			<i>\$ 44,289,262</i>			<i>\$ 41,168,722</i>			<i>\$ 50,899,892</i>

	2024 Revenue @ Existing Rates			2024 Revenue @ COS Rates			2024 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Fire Protection Charges</b>									
Public (per Hydrant)	90,096	\$ 14.68	\$ 1,322,609	90,096	\$ 87.19	\$ 7,855,146	90,096	\$ 21.80	\$ 1,964,093
Private									
1" or Less	15,907	\$ 15.43	\$ 245,445	15,907	\$ 20.00	\$ 318,079	15,907	\$ 31.38	\$ 499,162
1 1/2"-3"	529	46.28	24,482	529	61.18	32,362	529	97.59	51,625
4"	45	152.25	6,851	45	201.06	9,048	45	314.86	14,169
6" or Greater	190	325.06	61,761	190	426.93	81,116	190	654.53	124,361
<i>Subtotal: Fire Protection Charges</i>			\$ 1,661,149			\$ 8,295,751			\$ 2,653,409
<b>Volume Charge</b>									
Residential	1,818,344	\$ 14.64	\$ 26,620,560	1,818,344	\$ 15.36	\$ 27,929,768	1,818,344	\$ 17.12	\$ 31,130,054
Residential - CAP	108,272	14.64	1,585,098	108,272	16.53	1,789,731	108,272	17.12	1,853,612
Residential - CAP - 50FPL	26,271	7.32	192,301	26,271	17.36	456,059	26,271	8.56	224,877
Commercial	2,046,642	13.80	28,243,658	2,046,642	17.36	35,529,703	2,046,642	18.95	38,783,863
Industrial	157,395	12.13	1,909,206	157,395	21.82	3,434,367	157,395	17.14	2,697,757
Health or Education	855,292	16.29	13,932,701	855,292	20.99	17,952,572	855,292	22.98	19,654,603
Private Fire System	8,988	39.05	350,967	8,988	28.94	260,102	8,988	31.79	285,717
Municipal - Residential	1,702	14.64	24,922	1,702	13.56	23,083	1,702	17.12	29,144
Municipal - Commercial	218,440	13.80	3,014,467	218,440	16.77	3,663,233	218,440	18.95	4,139,431
<i>Subtotal: Volume Charge</i>	5,241,345		\$ 75,873,880			\$ 91,038,618	5,241,345		\$ 98,799,057
Wholesale Revenues (Set by Contract)			\$ 3,661,855	857,599	\$ 15.05	\$ 12,906,865			\$ 4,339,251
<b>Total: Base Rate Revenues</b>			\$ 125,486,146			\$ 153,409,956			\$ 156,691,609
<b>DSIC Revenues</b>									
Residential			\$ 2,451,269			\$ 3,581,702			\$ 4,363,070
Residential - CAP			88,896			253,997			155,933
Commercial			2,246,086			3,792,536			4,279,410
Industrial			113,250			281,770			230,507
Health or Education			898,809			1,620,732			1,798,856
Private Fire System			34,475			52,553			73,127
Municipal - Residential			1,719			2,569			3,024
Municipal - Commercial			190,579			339,478			375,193
Public Fire			-			-			-
<b>Total: DSIC Revenues</b>			\$ 6,025,084			\$ 9,925,339			\$ 11,279,120
<b>Other Revenues</b>									
Other Revenues			2,171,887			2,171,887			2,171,887
<b>Total: System Revenues</b>			<b>\$133,683,117</b>			<b>\$ 165,507,181</b>			<b>\$ 170,142,615</b>
<b>FPPTY Water System Revenue Requirements</b>						<b>\$ 170,106,961</b>			<b>\$ 170,106,961</b>
<b>Difference (1)</b>						<b>\$ (4,599,780)</b>			<b>\$ 35,654</b>

(1) Note difference in COS rates is due to bad debt and different DSIC revenue recovery on COS rates.

**Pittsburgh Water and Sewer Authority**

FPFTY 2024 COS & Rate Design Model

Projected Units of Service

HJS-18W

	<b>FY 2020</b>	<b>FY 2021</b>	<b>HTY</b>	<b>FTY</b>	<b>FPFTY</b>
	<i>Actual</i>	<i>Actual</i>	<i>Actual</i>	<i>Projected</i>	<i>Projected</i>
<b>Units of Service</b>					
<u>Number of Bills</u>					
Residential	772,422	768,864	758,074	758,074	741,720
Residential - CAP	30,810	32,449	37,174	38,674	55,028
Residential - CAP - 50FPL	-	6,798	10,324	11,141	11,141
Commercial	81,431	83,002	83,843	83,843	83,843
Industrial	492	380	371	371	371
Health or Education	5,688	5,520	5,266	5,266	5,266
Private Fire System	15,757	16,641	16,671	16,671	16,671
Municipal - Residential	635	340	243	243	243
Municipal - Commercial	1,787	2,362	2,549	2,549	2,549
Public Fire Hydrants	90,096	90,096	90,096	90,096	90,096
<i>Total</i>	999,118	1,006,452	1,004,611	1,006,927	1,006,928
<u>Billable Consumption (kgal)</u>					
Residential	1,951,157	1,833,447	1,766,983	1,850,529	1,818,344
Residential - CAP	74,938	73,168	80,155	76,087	108,272
Residential - CAP - 50FPL	-	19,062	26,271	26,271	26,271
Commercial	2,021,812	2,044,982	2,073,132	2,046,642	2,046,642
Industrial	172,720	195,583	103,883	157,395	157,395
Health or Education	832,774	902,028	831,073	855,292	855,292
Private Fire System	14,348	6,888	5,727	8,988	8,988
Municipal - Residential	1,952	1,581	1,574	1,702	1,702
Municipal - Commercial	195,754	249,695	209,870	218,440	218,440
<i>Total</i>	5,265,456	5,326,432	5,098,667	5,241,345	5,241,345
<u>Total Consumption (kgal) (1)</u>					
Residential	2,744,375	2,621,697	2,540,544	2,635,539	2,590,290
Residential - CAP	103,594	103,138	114,183	106,972	152,221
Residential - CAP - 50FPL	-	25,204	35,568	35,568	35,568
Commercial	2,628,340	2,674,754	2,676,992	2,660,029	2,660,029
Industrial	185,785	208,619	112,736	169,069	169,069
Health or Education	989,429	1,061,129	981,167	1,010,575	1,010,575
Private Fire System	15,404	7,975	6,856	10,078	10,078
Municipal - Residential	2,116	1,716	1,691	1,841	1,841
Municipal - Commercial	215,164	263,894	232,154	237,070	237,070
<i>Total</i>	6,884,207	6,968,126	6,701,891	6,866,741	6,866,741
<u>Wholesale &amp; Contract Consumption</u>					
Aspinwall	64,174	114,114	155,301	111,196	111,196
Fox Chapel	671,023	628,708	622,966	640,899	640,899
Hampton	3,346	7	-	-	-
PAWC	-	1,650	2,100	1,250	1,250
RSRV - 10"	92,650	93,323	85,537	90,503	90,501
RSRV - 6"	13,316	13,219	14,723	13,753	13,753
Westview	2,692	2	-	-	-
<i>Total</i>	847,201	851,023	880,627	857,601	857,599

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.

**Pittsburgh Water and Sewer Authority**  
*FPPTY 2024 COS & Rate Design Model*  
 2025 and 2026 Water Revenue Requirements

HJS-19W

	<b>2025 Revenue Requirements</b>	<b>2026 Revenue Requirements</b>
<b>Water System Revenue Requirements</b>		
<u>Operating Expenses</u>		
<i>Direct Operating Expenses</i>		
Administrative Division		
Executive Director	\$ 2,515,727	\$ 2,674,218
Customer Service	2,918,070	3,128,599
Management Information Systems	5,215,375	5,550,565
Finance	8,248,562	8,758,994
Human Resources	2,141,243	2,268,342
Legal	3,187,938	3,385,720
Safety & Security	1,771,437	1,892,206
Public Affairs	1,598,988	1,699,077
Operations Division		
Environmental Compliance	1,715,959	1,821,700
Ops Capital Assets	-	-
Warehouse	426,371	460,159
Water Treatment Plant	30,467,749	34,393,839
Water Quality (Lab)	2,473,136	2,642,150
Water Distribution	19,290,991	20,663,146
Sewer Operations	-	-
Engineering & Construction		
Engineering & Construction	15,293,623	16,269,615
<i>Other Operating Expenses</i>		
Loss / (Gain) on ALCOSAN Billings	-	-
City Services	-	-
Non-City Water Payments	-	-
Covid-Related Expenses	-	-
<i>Total Operating Expenses</i>	<u>\$ 97,265,168</u>	<u>\$ 105,608,332</u>
<u>Debt Service</u>		
Existing Debt	\$ 47,087,719	\$ 47,779,899
Future Debt	33,928,282	45,551,620
<i>Subtotal: Debt Service</i>	<u>\$ 81,016,002</u>	<u>\$ 93,331,519</u>
<u>Capital Expenditures &amp; Transfers</u>		
Internally Generated Funds / PAYGO	\$ 1,629,433	\$ 9,575,121
Internally Generated Funds / PAYGO (DSIC)	13,461,179	16,045,979
Other Transfers to Reserves	4,480,000	10,880,000
Bad Debt Expense	4,046,940	4,765,631
Hardship	88,320	88,320
Arrearage	97,988	97,988
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	<u>\$ 23,803,861</u>	<u>\$ 41,453,039</u>
<b>Total: Water System Revenue Requirements</b>	<b>\$ 202,085,030</b>	<b>\$ 240,392,889</b>
<i>Capital Costs to be Recovered through DSIC</i>	<b>\$ (13,461,179)</b>	<b>\$ (16,045,979)</b>
<b>Total: Water System Revenue Requirement (Excl DSIC)</b>	<b>\$ 188,623,851</b>	<b>\$ 224,346,911</b>

**Pittsburgh Water and Sewer Authority**  
*FPFTY 2024 COS & Rate Design Model*  
 Revenue Increase Needed for 2025 and 2026

HJS-20W

	<u><b>2024</b></u>	<u><b>2025</b></u>	<u><b>2026</b></u>
Revenue Requirement	\$ 158,827,841	\$ 188,623,851	\$ 224,346,911
Offsetting Misc Revenue	(2,171,887)	(2,215,325)	(2,259,631)
Net Rate Revenue Requirement	\$ 156,655,955	\$ 186,408,527	\$ 222,087,280
<i>Increase</i>		<i>18.99%</i>	<i>19.14%</i>
Revenue at Existing Rates + New Charges			
Existing Retail Rates	\$ 121,498,414	\$ 152,352,358	\$ 164,550,923
Wholesale	3,661,855	4,339,251	4,629,538
New Charges	-	-	17,268,557
Total	\$ 125,160,269	\$ 156,691,609	\$ 186,449,018
<b>Net Rate Revenue Need</b>	<b>\$ 31,495,685</b>	<b>\$ 29,716,918</b>	<b>\$ 35,638,262</b>
<i>Increase</i>		<i>18.97%</i>	<i>19.12%</i>
Offsetting New Charge Revenue			
Infrastructure Improvement Charge	\$ -	\$ 14,134,186	\$ 16,163,016
Customer Assistance Charge	-	3,134,371	3,667,881
Subtotal New Charge Revenue	\$ -	\$ 17,268,557	\$ 19,830,897
<b>Incremental New Charge Revenue Applied</b>	<b>\$ -</b>	<b>\$ 17,268,557</b>	<b>\$ 2,562,340</b>
<b>Net Retail Base Rate Increase Need</b>	<b>\$ 31,495,685</b>	<b>\$ 12,448,361</b>	<b>\$ 33,075,922</b>
<i>Increase</i>		<i>7.94%</i>	<i>19.66%</i>

<b>Fixed Charge Build-Up - Test Year: 2025</b>											
<b>Water</b>	<b>Min. Usage</b> <i>Proposed</i>	<i>Meters/Services</i>	<i>Billing</i>	<i>Usage</i>	<i>Total COS</i> <i>Rates</i>	<i>Adjustments</i>					
						Public Fire	R. T. S.	CAP-BDP	Proposed Rates		
<u>Minimum Charge</u>											
5/8"	0	\$ 7.28	\$ 2.53	\$ -	\$ 9.81	\$ 4.59	\$ 2.41	\$ -	\$ -	\$ 16.82	
3/4"	0	10.93	2.53	-	13.45	6.89	3.62	-	-	23.96	
1"	0	18.21	2.53	-	20.74	11.49	6.03	-	-	38.25	
1 1/2"	0	36.42	2.53	-	38.95	22.97	12.05	-	-	73.97	
2"	0	58.27	2.53	-	60.80	36.76	19.28	-	-	116.84	
3"	0	116.54	2.53	-	119.07	73.52	38.56	-	-	231.14	
4"	0	182.09	2.53	-	184.62	114.87	60.25	-	-	359.74	
6"	0	364.18	2.53	-	366.71	229.74	120.50	-	-	716.95	
8"	0	582.69	2.53	-	585.22	367.58	192.80	-	-	1,145.60	
10" & Above	0	837.61	2.53	-	840.14	528.39	277.15	-	-	1,645.69	
Unmetered	0	7.28	2.53	-	9.81	4.59	2.41	-	-	16.82	
<u>Residential - CAP</u>											
5/8"	0	\$ 7.28	\$ 2.53	\$ -	\$ 9.81	\$ 4.59	\$ 2.41	\$ (16.82)	\$ -	\$ -	
3/4"	0	10.93	2.53	-	13.45	6.89	3.62	(23.96)	-	-	
1"	0	18.21	2.53	-	20.74	11.49	6.03	(38.25)	-	-	
Unmetered	0	7.28	2.53	-	9.81	4.59	2.41	(16.82)	-	-	
<u>Monthly Fire Protection</u>											
<i>Public</i>											
Per Hydrant		\$ -	\$ -	\$ 103.75	\$ 103.75	\$ (77.81)	\$ -	\$ -	\$ -	\$ 25.94	
<i>Private</i>											
1" or Less		\$ 20.07	\$ 2.79	\$ 0.93	\$ 23.79		\$ 6.03	\$ -	\$ -	\$ 29.82	
1 1/2"-3"		64.24	2.79	5.77	72.79		19.28	-	-	92.07	
4"		200.74	2.79	35.71	239.24		60.25	-	-	299.49	
6" or Greater		401.48	2.79	103.75	508.01		120.50	-	-	628.51	



<b>Determination of Proposed Rates for 2025</b>								
2024 Adjusted Revenue Requirement	2025 Adjusted Revenue Requirement	Unrecoverable Wholesale	Fixed Charge Revenue	New Charges Revenue	Total Volumetric Rev Req	Equivalent Volume (for Ratemaking)	Proposed Rates	
<b>Volume Charge (per kgal)</b>								
Residential + CAP	\$ 60,274,454	\$ 71,721,980	\$ 215,405	\$ 13,255,561	\$ 6,827,381	\$ 51,854,443	2,778,167	\$ 18.67
Commercial + Municipal	62,050,692	73,835,566	221,753	5,700,782	7,421,287	60,935,251	2,897,159	21.04
Industrial	3,073,371	3,657,076	10,983	87,062	432,817	3,148,180	169,069	18.63
Health or Education	23,979,391	28,533,637	85,696	1,104,905	2,587,072	24,927,357	1,010,575	24.67
Municipal - Residential								
Municipal - Commercial								
Private Fire System	975,008	1,160,185		655,946	-	504,239	10,078	50.04
Public Fire	1,963,786	2,336,755		2,337,090		(335)	-	n/a
Wholesale	4,339,251	5,163,376	(533,838)	-		4,629,538	n/a	n/a
<b>Totals</b>	<b>\$ 156,655,955</b>	<b>\$ 186,408,576</b>	<b>\$ -</b>	<b>23,141,346</b>	<b>17,268,557</b>	<b>145,998,674</b>	<b>6,865,049</b>	<b>\$ 21.27</b>

**Infrastructure Improvement Charge**

Allocated Debt Service

	<b>2025</b>	<b>2026</b>
Existing PENNVEST	-	-
Future PENNVEST	12,575,098	12,915,676
Future WIFIA	1,732,366	3,457,828
<b>Total PENNVEST Costs</b>	<b>\$ 14,307,465</b>	<b>\$ 16,373,503</b>
Coverage Component	1.00	1.00
<b>Total Charge Recovery</b>	<b>\$ 14,307,465</b>	<b>\$ 16,373,503</b>
Units	6,856,663	6,856,663

**Infrastructure Improvement Charge Unit Rate** \$ **2.09** \$ **2.39** per kgal

**Customer Assistance Charge**

Allocated Customer Assistance Program Costs

	<b>2025</b>	<b>2026</b>
Forgone Revenue	\$ 2,699,628	\$ 3,201,468
Operations	244,259	263,270
Hardship	88,320	88,320
Arrearage	97,988	128,000
<b>Total Charge Recovery</b>	<b>\$ 3,130,195</b>	<b>\$ 3,681,058</b>
Units (Less CAP & Private Fire units)	6,668,874	6,668,874

**Customer Assistance Charge Unit Rate** \$ **0.47** \$ **0.55** per kgal

	2023		2024		2025		2026		Percent Difference		
	FTY Prior Tariff Rates		FPFTY Proposed Rates		Proposed Rates		Proposed Rates		2024	2025	2026
<b>Existing &amp; Proposed Rates</b>											
<u>Minimum Charge</u>											
5/8"	\$	26.52	\$	32.43	\$	16.82	\$	20.13	22.3%	-48.1%	19.7%
3/4"		46.47		54.74		23.96		28.67	17.8%	-56.2%	19.7%
1"		102.08		113.88		38.25		45.77	11.6%	-66.4%	19.7%
1 1/2"		201.85		225.41		73.97		88.51	11.7%	-67.2%	19.7%
2"		337.28		373.78		116.84		139.81	10.8%	-68.7%	19.7%
3"		766.42		832.40		231.14		276.58	8.6%	-72.2%	19.7%
4"		1,313.93		1,408.27		359.74		430.46	7.2%	-74.5%	19.7%
6"		3,174.80		3,322.70		716.95		857.90	4.7%	-78.4%	19.7%
8"		5,784.48		5,968.71		1,145.60		1,370.82	3.2%	-80.8%	19.7%
10" & Above		9,582.36		9,753.09		1,645.69		1,969.22	1.8%	-83.1%	19.7%
<u>Minimum Charge - CAP (1)</u>											
5/8"	\$	-	\$	-	\$	-	\$	-	0.0%	0.0%	0.0%
3/4"		-		-		-		-	0.0%	0.0%	0.0%
1"		-		-		-		-	0.0%	0.0%	0.0%
<u>Fire System Charges</u>											
Private											
1" or Less	\$	15.43	\$	31.38	\$	29.82	\$	35.68	103.4%	-5.0%	19.7%
1 1/2"-3"		46.28		97.59		92.07		110.17	110.9%	-5.7%	19.7%
4"		152.25		314.86		299.49		358.37	106.8%	-4.9%	19.7%
6" or Greater		325.06		654.53		628.51		752.07	101.4%	-4.0%	19.7%
Public											
Per Hydrant (2)	\$	14.68	\$	21.80	\$	25.94	\$	31.04	48.5%	19.0%	19.7%
<u>Volume Charge</u>											
Residential	\$	14.64	\$	17.12	\$	18.67	\$	22.34	16.9%	9.1%	19.7%
Residential - CAP		14.64		17.12		18.67		22.34	16.9%	9.1%	19.7%
Residential - CAP (<50% FPL)		7.32		8.56		9.34		11.17	16.9%	9.1%	19.7%
Commercial		13.80		18.95		21.04		25.18	37.3%	11.0%	19.7%
Industrial		12.13		17.14		18.63		22.29	41.3%	8.7%	19.6%
Health or Education		16.29		22.98		24.67		29.52	41.1%	7.4%	19.7%
Fire System		39.05		31.79		50.04		59.88	-18.6%	57.4%	19.7%
Municipal - Residential (2)		11.71		17.12		18.67		22.34	46.2%	9.1%	19.7%
Municipal - Commercial (2)		11.04		18.95		21.04		25.18	71.6%	11.0%	19.7%
Wholesale		10.89		15.05		16.24		19.43	38.2%	7.9%	19.7%
<u>Unmetered Charges (per Unit)</u>											
Residential	\$	70.44	\$	83.79	\$	91.50	\$	109.49	19.0%	9.2%	19.7%
Residential - CAP		43.95		51.36		74.68		89.36	16.9%	45.4%	19.7%
Commercial		82.92		108.23		122.02		146.03	30.5%	12.7%	19.7%
DSIC (Applies to all retail customers)		5.0%		7.5%		7.5%		7.5%	n/a	n/a	n/a
<u>Infrastructure Improvement Charge</u>											
All Volume (per Kgal)		n/a		n/a	\$	2.09	\$	2.39	0.0%	0.0%	14.4%
<u>Customer Assistance Charge</u>											
All Volume (per Kgal)		n/a		n/a	\$	0.47	\$	0.55	0.0%	0.0%	17.0%

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers.  
 (2) Municipal Rates were at 80% in 2023 and are at 100% in 2024 per agreement.

	2024 Revenue @ Proposed Rates			2025 Revenue @ Proposed Rates			2026 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenues</b>									
<u>Minimum Charges</u>									
Residential									
5/8"	682,360	\$ 32.43	\$ 22,128,948	682,360	\$ 16.82	\$ 11,477,295	682,360	\$ 20.13	\$ 13,735,907
3/4"	30,308	54.74	1,659,049	30,308	23.96	726,180	30,308	28.67	868,930
1"	24,535	113.88	2,794,091	24,535	38.25	938,464	24,535	45.77	1,122,967
1 1/2"	452	225.41	101,885	452	73.97	33,434	452	88.51	40,007
2"	68	373.78	25,417	68	116.84	7,945	68	139.81	9,507
Unmetered	3,996	83.79	334,825	3,996	91.50	365,634	3,996	109.49	437,522
<i>Subtotal: Residential</i>	<u>741,720</u>		<u>\$ 27,044,215</u>	<u>741,719</u>		<u>\$ 13,548,952</u>	<u>741,719</u>		<u>\$ 16,214,840</u>
Residential - CAP									
5/8"	65,253	\$ -	\$ -	65,253	\$ -	\$ -	65,253	\$ -	\$ -
3/4"	550	-	-	550	-	-	550	-	-
1"	354	-	-	354	-	-	354	-	-
Unmetered	12	51.36	616	12	74.68	896	12	89.36	1,072
<i>Subtotal: Residential - CAP</i>	<u>66,169</u>		<u>\$ 616</u>	<u>66,169</u>		<u>\$ 896</u>	<u>66,169</u>		<u>\$ 1,072</u>
Commercial									
5/8"	32,509	\$ 32.43	\$ 1,054,267	32,509	\$ 16.82	\$ 546,801	32,509	\$ 20.13	\$ 654,406
3/4"	8,347	54.74	456,915	8,347	23.96	199,994	8,347	28.67	239,308
1"	17,201	113.88	1,958,850	17,201	38.25	657,938	17,201	45.77	787,290
1 1/2"	10,062	225.41	2,268,075	10,062	73.97	744,286	10,062	88.51	890,588
2"	9,730	373.78	3,636,879	9,730	116.84	1,136,853	9,730	139.81	1,360,351
3"	2,822	832.40	2,349,033	2,822	231.14	652,277	2,822	276.58	780,509
4"	2,167	1,408.27	3,051,721	2,167	359.74	779,557	2,167	430.46	932,807
6"	918	3,322.70	3,050,239	918	716.95	658,160	918	857.90	787,552
8"	75	5,968.71	447,653	75	1,145.60	85,920	75	1,370.82	102,812
10" & Above	-	9,753.09	-	-	1,645.69	-	-	1,969.22	-
Unmetered	12	108.23	1,299	12	122.02	1,464	12	146.03	1,752
<i>Subtotal: Commercial</i>	<u>83,843</u>		<u>\$ 18,274,931</u>	<u>83,843</u>		<u>\$ 5,463,251</u>	<u>83,843</u>		<u>\$ 6,537,375</u>
Industrial									
5/8"	84	\$ 32.43	\$ 2,724	84	\$ 16.82	\$ 1,413	84	\$ 20.13	\$ 1,691
3/4"	12	54.74	657	12	23.96	288	12	28.67	344
1"	69	113.88	7,858	69	38.25	2,639	69	45.77	3,158
1 1/2"	-	225.41	-	-	73.97	-	-	88.51	-
2"	60	373.78	22,427	60	116.84	7,010	60	139.81	8,389
3"	33	832.40	27,469	33	231.14	7,628	33	276.58	9,127
4"	65	1,408.27	91,538	65	359.74	23,383	65	430.46	27,980
6"	24	3,322.70	79,745	24	716.95	17,207	24	857.90	20,590
8"	24	5,968.71	143,249	24	1,145.60	27,494	24	1,370.82	32,900
10" & Above	-	9,753.09	-	-	1,645.69	-	-	1,969.22	-
<i>Subtotal: Industrial</i>	<u>371</u>		<u>\$ 375,666</u>	<u>371</u>		<u>\$ 87,062</u>	<u>371</u>		<u>\$ 104,178</u>
Health or Education									
5/8"	359	\$ 32.43	\$ 11,642	359	\$ 16.82	\$ 6,038	359	\$ 20.13	\$ 7,227
3/4"	96	54.74	5,255	96	23.96	2,300	96	28.67	2,752
1"	239	113.88	27,217	239	38.25	9,142	239	45.77	10,939
1 1/2"	755	225.41	170,185	755	73.97	55,847	755	88.51	66,825
2"	1,561	373.78	583,471	1,561	116.84	182,387	1,561	139.81	218,243
3"	1,048	832.40	872,355	1,048	231.14	242,235	1,048	276.58	289,856
4"	800	1,408.27	1,126,616	800	359.74	287,792	800	430.46	344,368
6"	368	3,322.70	1,222,754	368	716.95	263,838	368	857.90	315,707
8"	21	5,968.71	125,343	21	1,145.60	24,058	21	1,370.82	28,787
10" & Above	19	9,753.09	185,309	19	1,645.69	31,268	19	1,969.22	37,415
<i>Subtotal: Health or Education</i>	<u>5,266</u>		<u>\$ 4,330,146</u>	<u>5,266</u>		<u>\$ 1,104,905</u>	<u>5,266</u>		<u>\$ 1,322,120</u>
Municipal - Residential									
5/8"	219	\$ 32.43	\$ 7,102	219	\$ 16.82	\$ 3,684	219	\$ 20.13	\$ 4,408
3/4"	-	54.74	-	-	23.96	-	-	28.67	-
1"	12	113.88	1,367	12	38.25	459	12	45.77	549
1 1/2"	12	225.41	2,705	12	73.97	888	12	88.51	1,062
2"	-	373.78	-	-	116.84	-	-	139.81	-
3"	-	832.40	-	-	231.14	-	-	276.58	-
4"	-	1,408.27	-	-	359.74	-	-	430.46	-
6"	-	3,322.70	-	-	716.95	-	-	857.90	-
8"	-	5,968.71	-	-	1,145.60	-	-	1,370.82	-
10" & Above	-	9,753.09	-	-	1,645.69	-	-	1,969.22	-
<i>Subtotal: Municipal - Residential</i>	<u>243</u>		<u>\$ 11,174</u>	<u>243</u>		<u>\$ 5,030</u>	<u>243</u>		<u>\$ 6,020</u>
Municipal - Commercial									
5/8"	697	\$ 32.43	\$ 22,604	697	\$ 16.82	\$ 11,724	697	\$ 20.13	\$ 14,031
3/4"	77	54.74	4,215	77	23.96	1,845	77	28.67	2,208
1"	517	113.88	58,876	517	38.25	19,775	517	45.77	23,663
1 1/2"	409	225.41	92,193	409	73.97	30,254	409	88.51	36,201
2"	593	373.78	221,652	593	116.84	69,286	593	139.81	82,907
3"	167	832.40	139,011	167	231.14	38,600	167	276.58	46,189
4"	25	1,408.27	35,207	25	359.74	8,994	25	430.46	10,762
6"	35	3,322.70	116,295	35	716.95	25,093	35	857.90	30,027
8"	29	5,968.71	173,093	29	1,145.60	33,222	29	1,370.82	39,754
10" & Above	-	9,753.09	-	-	1,645.69	-	-	1,969.22	-
<i>Subtotal: Municipal - Commercial</i>	<u>2,549</u>		<u>\$ 863,144</u>	<u>2,549</u>		<u>\$ 238,793</u>	<u>2,549</u>		<u>\$ 285,740</u>
<i>Subtotal: Minimum Charges</i>			<u>\$ 50,899,892</u>			<u>\$ 20,448,890</u>			<u>\$ 24,471,345</u>

	2024 Revenue @ Proposed Rates			2025 Revenue @ Proposed Rates			2026 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Fire Protection Charges</b>									
Public (per Hydrant)	90,096	\$ 21.80	\$ 1,964,093	90,096	\$ 25.94	\$ 2,337,090	90,096	\$ 31.04	\$ 2,796,580
Private									
1" or Less	15,907	\$ 31.38	\$ 499,162	15,907	\$ 29.82	\$ 474,347	15,907	\$ 35.68	\$ 567,562
1 1/2"-3"	529	97.59	51,625	529	92.07	48,705	529	110.17	58,280
4"	45	314.86	14,169	45	299.49	13,477	45	358.37	16,127
6" or Greater	190	654.53	124,361	190	628.51	119,417	190	752.07	142,893
<i>Subtotal: Fire Protection Charges</i>			\$ 2,653,409			\$ 2,993,036			\$ 3,581,441
<b>Volume Charge</b>									
Residential	1,818,344	\$ 17.12	\$ 31,130,054	2,590,290	\$ 18.67	\$ 48,360,709	2,590,290	\$ 22.34	\$ 57,867,072
Residential - CAP	108,272	17.12	1,853,612	152,221	18.67	2,841,960	152,221	22.34	3,400,610
Residential - CAP - 50FPL	26,271	8.56	224,877	35,568	9.34	332,027	35,568	11.17	397,295
Commercial	2,046,642	18.95	38,783,863	2,660,029	21.04	55,967,003	2,660,029	25.18	66,979,522
Industrial	157,395	17.14	2,697,757	169,069	18.63	3,149,759	169,069	22.29	3,768,552
Health or Education	855,292	22.98	19,654,603	1,010,575	24.67	24,930,885	1,010,575	29.52	29,832,174
Private Fire System	8,988	31.79	285,717	10,078	50.04	504,320	10,078	59.88	603,491
Municipal - Residential	1,702	17.12	29,144	1,841	18.67	34,371	1,841	22.34	41,128
Municipal - Commercial	218,440	18.95	4,139,431	237,070	21.04	4,987,962	237,070	25.18	5,969,434
<i>Subtotal: Volume Charge</i>	5,241,345		\$ 98,799,057	6,866,741		\$ 141,108,997	6,866,741		\$ 168,859,278
Wholesale Revenues (Set by Contract)	857,599		\$ 4,339,251	857,599		\$ 4,629,538	857,599		\$ 5,353,374
<b>Infrastructure Improvement Charge</b>									
Residential	1,818,344	\$ -	\$ -	2,590,290	\$ 2.09	\$ 5,413,705	2,590,290	\$ 2.39	\$ 6,190,792
Residential - CAP	108,272	-	-	152,221	1.05	159,071	152,221	1.20	181,904
Residential - CAP - 50FPL	26,271	-	-	35,568	1.05	37,169	35,568	1.20	42,504
Commercial	2,046,642	-	-	2,660,029	2.09	5,559,460	2,660,029	2.39	6,357,469
Industrial	157,395	-	-	169,069	2.09	353,355	169,069	2.39	404,075
Health or Education	855,292	-	-	1,010,575	2.09	2,112,102	1,010,575	2.39	2,415,274
Private Fire System	8,988	-	-	10,078	-	-	10,078	-	-
Municipal - Residential	1,702	-	-	1,841	2.09	3,848	1,841	2.39	4,400
Municipal - Commercial	218,440	-	-	237,070	2.09	495,477	237,070	2.39	566,598
<i>Subtotal: Infrastructure Improvement Charge</i>	5,241,345		\$ -	6,866,741		\$ 14,134,186	6,866,741		\$ 16,163,016
<b>Customer Assistance Charge</b>									
Residential	1,818,344	\$ -	\$ -	2,590,290	\$ 0.47	\$ 1,217,436	2,590,290	\$ 0.55	\$ 1,424,659
Residential - CAP	108,272	-	-	152,221	-	-	152,221	-	-
Residential - CAP - 50FPL	26,271	-	-	35,568	-	-	35,568	-	-
Commercial	2,046,642	-	-	2,660,029	0.47	1,250,213	2,660,029	0.55	1,463,016
Industrial	157,395	-	-	169,069	0.47	79,463	169,069	0.55	92,988
Health or Education	855,292	-	-	1,010,575	0.47	474,970	1,010,575	0.55	555,816
Private Fire System	8,988	-	-	10,078	-	-	10,078	-	-
Municipal - Residential	1,702	-	-	1,841	0.47	865	1,841	0.55	1,013
Municipal - Commercial	218,440	-	-	237,070	0.47	111,423	237,070	0.55	130,389
<i>Subtotal: Customer Assistance Charge</i>	5,241,345		\$ -	6,866,741		\$ 3,134,371	6,866,741		\$ 3,667,881
<b>Total: Base Rate Revenues</b>			\$ 156,691,609			\$ 186,449,018			\$ 222,096,335
<b>DSIC Revenues</b>									
Residential			\$ 4,363,070			\$ 5,140,560			\$ 6,127,302
Residential - CAP			155,933			252,834			301,754
Commercial			4,279,410			5,117,995			6,100,304
Industrial			230,507			275,223			327,735
Health or Education			1,798,856			2,146,715			2,559,404
Private Fire System			73,127			87,020			104,126
Municipal - Residential			3,024			3,309			3,942
Municipal - Commercial			375,193			437,524			521,412
Public Fire			-			-			-
<b>Total: DSIC Revenues</b>			\$ 11,279,120			\$ 13,461,179			\$ 16,045,979
<b>Other Revenues</b>									
Other Revenues			2,171,887			2,215,325			2,259,631
<b>Total: System Revenues</b>			\$170,142,615			\$202,125,521			\$240,401,945
<b>Water System Revenue Requirements</b>			\$170,106,961			\$202,085,030			\$240,392,889
<b>Difference</b>			\$ 35,654			\$ 40,491			\$ 9,055

**Pittsburgh Water and Sewer Authority**

HJS-25W

FPFTY 2024 COS & Rate Design Model

Typical Bill Comparison

	<b>FTY 2023</b>	<b>FPFTY 2024</b>	<b>2025</b>	<b>2026</b>
<b>Customer Impacts</b>				
<u>Residential - 5/8" / 3 Kgal</u>				
Water Base Rates	\$ 55.80	\$ 66.67	\$ 72.83	\$ 87.15
New Water Charges	-	-	7.68	8.82
Water DSIC	2.79	5.00	6.04	7.20
<b>Total Monthly Bill</b>	<b>\$ 58.59</b>	<b>\$ 71.67</b>	<b>\$ 86.55</b>	<b>\$ 103.17</b>
\$ Change		\$ 13.08	\$ 14.88	\$ 16.62
% Change		22.3%	20.8%	19.2%
<u>Commercial - 1" / 13kgal</u>				
Water Base Rates	\$ 212.48	\$ 265.48	\$ 311.77	\$ 373.11
New Water Charges	-	-	33.28	38.22
Water DSIC	10.62	19.91	25.88	30.85
<b>Total Monthly Bill</b>	<b>\$ 223.10</b>	<b>\$ 285.39</b>	<b>\$ 370.93</b>	<b>\$ 442.18</b>
\$ Change		\$ 62.29	\$ 85.54	\$ 71.25
% Change		27.9%	30.0%	19.2%
<u>Industrial - 4" / 680kgal</u>				
Water Base Rates	\$ 8,713.23	\$ 11,863.67	\$ 13,028.14	\$ 15,587.66
New Water Charges	-	-	1,740.80	1,999.20
Water DSIC	435.66	889.78	1,107.67	1,319.01
<b>Total Monthly Bill</b>	<b>\$ 9,148.89</b>	<b>\$ 12,753.45</b>	<b>\$ 15,876.61</b>	<b>\$ 18,905.87</b>
\$ Change		\$ 3,604.55	\$ 3,123.17	\$ 3,029.26
% Change		39.4%	24.5%	19.1%
<u>Health or Education - 2" / 50kgal</u>				
Water Base Rates	\$ 874.85	\$ 1,132.12	\$ 1,350.34	\$ 1,615.81
New Water Charges	-	-	128.00	147.00
Water DSIC	43.74	84.91	110.88	132.21
<b>Total Monthly Bill</b>	<b>\$ 918.59</b>	<b>\$ 1,217.03</b>	<b>\$ 1,589.22</b>	<b>\$ 1,895.02</b>
\$ Change		\$ 298.44	\$ 372.19	\$ 305.81
% Change		32.5%	30.6%	19.2%

Exhibits  
HJS -1WW – HJS-24WW  
(Wastewater Schedules)

**Pittsburgh Water and Sewer Authority**  
*FPFTY 2024 COS & Rate Design Model*  
 FPFTY Wastewater Conveyance Revenue Requirements

HJS-1WW

	<b>2024 FPFTY Revenue Requirements</b>
<b>Revenue Requirements</b>	
<u>Operating Expenses</u>	
<i>Direct Operating Expenses</i>	
Administrative Division	
Executive Director	\$ 460,536
Customer Service	3,452,782
Management Information Systems	1,050,629
Finance	1,503,985
Human Resources	336,194
Legal	581,854
Safety & Security	323,105
Public Affairs	262,606
Operations Division	
Environmental Compliance	1,507,555
Ops Capital Assets	-
Warehouse	77,654
Water Treatment Plant	-
Water Quality (Lab)	-
Water Distribution	-
Sewer Operations	5,387,047
Engineering & Construction	
Engineering & Construction	5,623,537
<i>Other Operating Expenses</i>	
Loss / (Gain) on ALCOSAN Billings	2,066,814
Covid-Related Expenses	74,691
<i>Total Operating Expenses</i>	\$ 22,708,992
<u>Debt Service</u>	
Existing Debt	\$ 14,635,683
Future Debt	2,563,968
<i>Subtotal: Debt Service</i>	\$ 17,199,651
<u>Capital Expenditures &amp; Transfers</u>	
Internally Generated Funds / PAYGO	\$ -
Internally Generated Funds / PAYGO (DSIC)	3,759,342
Other Transfers to Reserves	250,000
Bad Debt Expense	1,077,678
Arrearage	142,012
Gradualism - Stormwater	9,500,000
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	\$ 14,729,032
<b>Total: Wastewater Conveyance System Revenue Requirements</b>	<b>\$ 54,637,675</b>
<i>Capital Costs to be Recovered through DSIC</i>	<b>\$ (3,759,342)</b>
<b>Total: Wastewater Conveyance System Base Rate Revenue Requirement</b>	<b>\$ 50,878,333</b>

Wastewater Conveyance Operating Costs	FY 2024 FPFTY	Allocation	Wastewater Conveyance Functional Categories			
			Collection & Conveyance	Meters	Billing	Admin Support
<u>Operating Expenses</u>						
<i>Direct Operating Expenses</i>						
Administrative Division						
Executive Director	\$ 460,536	WW-D				100.0%
Customer Service	3,452,782	WW-E	34.2%	65.8%		
Management Information Systems	1,050,629	WW-D				100.0%
Finance	1,503,985	WW-D				100.0%
Human Resources	336,194	WW-D				100.0%
Legal	581,854	WW-D				100.0%
Safety & Security	323,105	WW-D				100.0%
Public Affairs	262,606	WW-D				100.0%
Operations Division						
Environmental Compliance	1,507,555	WW-D				100.0%
Warehouse	-	WW-D				100.0%
Ops Capital Assets	77,654	WW-D				100.0%
Water Treatment Plant	-	n/a				
Water Quality (Lab)	-	n/a				
Water Distribution	-	n/a				
Sewer Operations	5,387,047	WW-A	100.0%			
Engineering & Construction Division						
Engineering & Construction	5,623,537	WW-A	100.0%			
<i>Subtotal: Direct Operating Expenses</i>	\$ 20,567,486					
<i>Other Operating Expenses</i>						
Loss / (Gain) on ALCOSAN Billings	2,066,814	WW-D				100.0%
Covid-Related Expenses	74,691	WW-D				100.0%
<i>Subtotal: Other Operating Expenses</i>	\$ 2,141,506					
<b>Total: Operating Expenses</b>	<b>\$ 22,708,992</b>					



**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 Assignment to Functional Categories

HJS-2WW

Wastewater Conveyance Operating Costs	FY 2024 FPFTY	Allocation	Wastewater Conveyance Functional Categories			
			Collection & Conveyance	Meters	Billing	Admin Support
<u>Operating Expenses</u>						
<i>Direct Operating Expenses</i>						
Administrative Division						
Executive Director	\$ 460,536	WW-D	\$ -	\$ -	\$ -	\$ 460,536
Customer Service	3,452,782	WW-E	-	1,180,914	2,271,869	-
Management Information Systems	1,050,629	WW-D	-	-	-	1,050,629
Finance	1,503,985	WW-D	-	-	-	1,503,985
Human Resources	336,194	WW-D	-	-	-	336,194
Legal	581,854	WW-D	-	-	-	581,854
Safety & Security	323,105	WW-D	-	-	-	323,105
Public Affairs	262,606	WW-D	-	-	-	262,606
Operations Division						
Environmental Compliance	1,507,555	WW-D	-	-	-	1,507,555
Warehouse	-	WW-D	-	-	-	-
Ops Capital Assets	77,654	WW-D	-	-	-	77,654
Water Treatment Plant	-	n/a	-	-	-	-
Water Quality (Lab)	-	n/a	-	-	-	-
Water Distribution	-	n/a	-	-	-	-
Sewer Operations	5,387,047	WW-A	5,387,047	-	-	-
Engineering & Construction Division						
Engineering & Construction	5,623,537	WW-A	5,623,537	-	-	-
<i>Subtotal: Direct Operating Expenses</i>	\$ 20,567,486		\$ 5,387,047	\$ 1,180,914	\$ 2,271,869	\$ 6,104,120
<i>Other Operating Expenses</i>						
Loss / (Gain) on ALCOSAN Billings	2,066,814	WW-D	-	-	-	2,066,814
Covid-Related Expenses	74,691	WW-D	-	-	-	74,691
<i>Subtotal: Other Operating Expenses</i>	\$ 2,141,506		\$ -	\$ -	\$ -	\$ 2,066,814
<b>Total: Wastewater Conveyance Operating Costs</b>	<b>\$ 22,708,992</b>		<b>\$ 11,010,584</b>	<b>\$ 1,180,914</b>	<b>\$ 2,271,869</b>	<b>\$ 8,245,625</b>
Allocation Percentage			48.49%	5.20%	10.00%	36.31%



**Pittsburgh Water and Sewer Authority**

HJS-3WW

FPPTY 2024 COS & Rate Design Model

Allocation to Cost Categories

		<b>FY 2024</b>	<b>Allocation</b>	<b>Wastewater Conveyance Cost Drivers</b>			
		<i>FPPTY</i>		<i>Volume</i>	<i>Meter</i>	<i>Billing</i>	<i>Readiness-to-Serve</i>
<b>Wastewater Conveyance Revenue Requirements</b>							
<u>Functional Categories</u>							
Collection & Conveyance	\$	28,225,978	WW-AA	100.00%			
Meters		1,180,914	WW-BB		100.00%		
Billing		2,271,869	WW-CC			100.00%	
Admin Support		8,398,653	WW-DD	89.10%	3.73%	7.17%	
Infiltration & Inflow Costs		223,242	WW-EE	33.00%		67.00%	
<i>Total: Wastewater Conveyance Revenue Requirements</i>	\$	40,300,655					
		<b>FY 2024</b>	<b>Allocation</b>	<i>Volume</i>	<i>Meter</i>	<i>Billing</i>	<i>Readiness-to-Serve</i>
		<i>FPPTY</i>					
<b>Wastewater Conveyance Revenue Requirements</b>							
<u>Functional Categories</u>							
Collection & Conveyance	\$	28,225,978	WW-AA	\$ 28,225,978	\$ -	\$ -	\$ -
Meters		1,180,914	WW-BB	-	1,180,914	-	-
Billing		2,271,869	WW-CC	-	-	2,271,869	-
Admin Support		8,398,653	WW-DD	7,483,253	313,083	602,316	-
Infiltration & Inflow Costs		223,242	WW-EE	73,670	-	149,572	-
<i>Total: Wastewater Conveyance Revenue Requirements</i>	\$	40,300,655		\$ 35,782,901	\$ 1,493,997	\$ 3,023,757	\$ -
<b>Costs to Recover from Wastewater Conveyance Charges</b>		<b>\$ 40,300,655</b>		\$ 35,782,901	\$ 1,493,997	\$ 3,023,757	\$ -
				88.8%	3.7%	7.5%	0.0%

<b>Cost Functionalization: Wastewater Conveyance</b>					
<i>Code</i>	<i>Description</i>	<i>Coll. &amp; Convey.</i>	<i>Meters</i>	<i>Billing</i>	<i>Admin Support</i>
WW-A	Collection & Conveyance Only	100.00%			
WW-B	Meters Only		100.00%		
WW-C	Billing Only			100.00%	
WW-D	Admin Support Only				100.00%
WW-E	Customer Service		34.20%	65.80%	

<b>Allocation to Cost Drivers: Wastewater Conveyance</b>					
<i>Code</i>	<i>Description</i>	<i>Volume</i>	<i>Meter</i>	<i>Billing</i>	<i>Readiness-to-Serve</i>
WW-AA	Volume	100.00%			
WW-BB	Customer - Meters		100.00%		
WW-CC	Customer - Billing			100.00%	
WW-DD	Admin Support (Composite)	89.10%	3.73%	7.17%	
WW-EE	Infiltration & Inflow Costs	33.00%		67.00%	
WW-FF	Readiness-to-Serve				0.00%

<b>Factor Derivations - Allocation to Functional Categories &amp; Cost Components</b>						
<i>Code(s)</i>	<i>Description</i>	<i>Calculations</i>				
W-I	Customer Service	2024 Customer Service Budget				
WW-E	- This factor allocates the 2024 customer service budget between meter- and billing-related costs.	Salaries	\$	5,157,435	28.60%	71.40%
		Benefits		1,815,642	28.60%	71.40%
		Computer & Peripherals		-	100.00%	0.00%
		Annual Software Support		251,722	50.00%	50.00%
		Customer CC Fees		36,200	0.00%	100.00%
		Postage		471,117	0.00%	100.00%
		Equip Rental		1,746	100.00%	0.00%
		Billing Contract		228,960	0.00%	100.00%
		Consultants		47,700	20.00%	80.00%
		Meter Services		799,148	100.00%	0.00%
		Prof Service Other		478,967	20.00%	80.00%
		Water Liens		-	50.00%	50.00%
		Computer Software Supplies		84,800	100.00%	0.00%
		GIS Plotter Xerox		636	100.00%	0.00%
		Office Supplies		2,544	50.00%	50.00%
		TE Items		7,685	50.00%	50.00%
		Capital Asset Reclass		-	0.00%	0.00%
		Customer Refund CSM		(530,000)	0.00%	100.00%
		Customer Refund AP		530,000	0.00%	100.00%
		Education & Outreach		5,300	0.00%	100.00%
	One Call		25,440	0.00%	100.00%	
	Publication Subscription		3,816	0.00%	100.00%	
	Non.City Water Reimburse		158,788	100.00%	0.00%	
	<b>Total</b>		\$ 9,577,647	\$ 3,275,727	\$ 6,301,919	
	<i>Allocation Factors</i>			<i>34.20%</i>	<i>65.80%</i>	

W-D Water Pipe Inventory		<b>Breakdown</b>	
		Distribution	35,490,728 63.0%
	- Allocate costs between transmission and distribution functional categories. Assumes Pipes less than or equal to 16" are Distribution-related.	Transmission	20,804,915 37.0%
		<b>Total</b>	56,295,642 100.0%

W-K Water Pipe Inventory with Service Lines		<b>Breakdown</b>	
		Distribution	35,490,728 58.83%
	Allocate Water Distribution costs between Transmission, Distribution, and Service Lines	Transmission	20,804,915 34.49%
	<i>*No size records: assumption is all are 1"</i>	Service Lines	4,029,007 6.68%
		<b>Total</b>	60,324,649 100.00%

<b>Inch-Foot Analysis</b>		
<i>Diameter (in)</i>	<i>Linear Feet</i>	<i>Inch-Feet</i>
0.75	799	599
1	1,314	1,314
1.5	983	1,474
2	11,004	22,009
2.5	16	39
3	268	803
4	116,991	467,963
6	2,144,789	12,868,735
8	1,181,921	9,455,372
10	81,965	819,651
12	619,567	7,434,805
14	1,296	18,147
15	15,500	232,496
16	260,458	4,167,320
18	468	8,425
20	209,715	4,194,304
24	85,229	2,045,495
28	104	2,911
30	116,456	3,493,670
36	83,180	2,994,494
42	11,013	462,562
42.5	13,261	563,591
48	16,706	801,908
50	23,263	1,163,137
50.25	12,001	603,043
60	54,606	3,276,383
66	1,492	98,501
72	3,626	261,064

Factor Derivations - Allocation to Functional Categories & Cost Components		
Code(s)	Description	Calculations

W-J	Engineering & Construction	<u>2024 Water CIP Costs</u>	<u>\$\$ Amount</u>	<u>Allocation</u>
		Treatment	\$ 26,885,665	9.65%
	- This factor uses the 2022 Water CIP costs to allocate Engineering & Construction costs to the various functional categories.	Storage	115,127,475	41.33%
		Trans. & Distr.	125,439,446	45.03%
		Admin	<u>11,101,650</u>	3.99%
		Total Water CIP	\$ 278,554,236	100.00%

W-BB Maximum Day

- Maximum day costs are allocated using a peak day determined using system daily production records. Fire demands are determined in HJS-7W.

Plant Production Data		
2020-2022 Avg Plant Production	63.88	mgd
2020-2022 Avg. Peak Day	89.85	mgd
Peak Hour Factor (1.6)	102.21	mgd

Base	57.74%	0.710955365
Maximum Day	40.66%	
Fire Protection	1.60%	

W-CC Peak Hour

- Peak hour costs are allocated using an estimated peak hour compared to system average and maximum day processed. Fire demands are determined in HJS-7W.

Plant Production Data		
2020-2022 Avg Plant Production	63.88	mgd
2020-2022 Avg. Peak Day	89.85	mgd
Peak Hour Factor (1.6)	102.21	mgd

Peak Hour / Avg	54.05%
Max Day (Plug)	25.41%
Peak Hr / Peak Day	12.09%
Fire Protection	8.45%

Equivalency Flow Ratios

- Used to escalate metering and readiness-to-serve costs, these ratios are industry standard and obtained from the American Waterworks Association

Equivalency Ratios						
	Flow			Fire Flow		Fire Equip
5/8"	1.00			2.50	1.00	
3/4"	1.50			8.00	6.19	
1"	2.50			25.00	38.32	
1 1/2"	5.00			50.00	111.31	
2"	8.00					
3"	16.00					
4"	25.00					
6"	50.00					
8"	80.00					
10"	115.00					
Unmetered	1.00					

**Pittsburgh Water and Sewer Authority**

HJS-6WW

*FPPTY 2024 COS & Rate Design Model*

Wastewater Conveyance Units of Service

	<u>Collection Factor</u>	<b>FY 2024 Consumption</b>	<b>Allocated Consumption</b>	<b>Average Day</b>	<b>Equivalent Meters</b>	<b>Total Bills</b>
<b>Retail Units of Service</b>						
Residential (1)	100.0%	3,415,730	3,415,730	9,358	1,062,056	1,006,062
Residential - CAP (1)	100.0%	258,808	258,808	709	96,319	95,382
Commercial (1)	100.0%	2,964,032	2,964,032	8,121	410,991	102,150
Industrial	100.0%	177,980	177,980	488	6,528	408
Health or Education	100.0%	1,014,670	1,014,670	2,780	76,631	5,269
Municipal - Residential	100.0%	1,908	1,908	5	465	399
Municipal - Commercial	100.0%	234,199	234,199	642	17,177	2,736
NRG	100.0%	15,986	15,986	-	-	-
<b>Total: Wastewater Conveyance Units of Service</b>		<b>8,083,312</b>	<b>8,083,312</b>	<b>22,102</b>	<b>1,670,166</b>	<b>1,212,406</b>

(1) Includes unmetered units and equivalent usage.

**Pittsburgh Water and Sewer Authority**  
*FPPTY 2024 COS & Rate Design Model*  
Wastewater Conveyance Unit Cost of Service

HJS-7WW

	<b>FY 2024</b>	<b>Unit Costs</b>				<b>Total</b>
		<i>Volume</i>	<i>Meter</i>	<i>Billing</i>	<i>Readiness-to-Serve</i>	
<b>Development of Unit Costs of Service</b>	<i>FPPTY</i>					
<u>Units of Service</u>						
Total System Units		8,083,312	1,670,166	1,212,406	1,670,166	
Units		<i>kgal</i>	<i>Eq. Cost Meters</i>	<i>Total Bills</i>	<i>Eq. Flow Meters</i>	
<u>Revenue Requirements</u>						
Collection & Conveyance	\$ 28,225,978	\$ 28,225,978	\$ -	\$ -	\$ -	\$ 28,225,978
Meters	1,180,914	-	1,180,914	-	-	1,180,914
Billing	2,271,869	-	-	2,271,869	-	2,271,869
Admin Support	8,398,653	7,483,253	313,083	602,316	-	8,398,653
Infiltration & Inflow Costs	223,242	73,670	-	149,572	-	223,242
Readiness-to-Serve (Debt Service)	-	-	-	-	-	-
<i>Total: Revenue Requirements</i>	\$ 40,300,655	\$ 35,782,901	\$ 1,493,997	\$ 3,023,757	\$ -	\$ 40,300,655
<b>Revenue Requirement Unit Costs (\$/unit)</b>		<b>\$ 4.4268</b>	<b>\$ 0.8945</b>	<b>\$ 2.4940</b>	<b>\$ -</b>	
<u>Revenue Offsets</u>						
Wastewater Miscellaneous Revenue	(696,014)	(617,990)	(25,802)	(52,222)	-	(696,014)
<i>Total: Revenue Offsets</i>	\$ (696,014)	\$ (617,990)	\$ (25,802)	\$ (52,222)	\$ -	\$ (696,014)
Offset Unit Costs (\$/unit)		\$ (0.0765)	\$ (0.0154)	\$ (0.0431)	\$ -	
<b>Total Unit Costs (\$/unit)</b>		<b>\$ 4.35</b>	<b>\$ 0.88</b>	<b>\$ 2.45</b>	<b>\$ -</b>	
<b>Total: Costs of Service</b>		<b>\$ 35,164,911</b>	<b>\$ 1,468,195</b>	<b>\$ 2,971,536</b>	<b>\$ -</b>	<b>\$ 39,604,641</b>



**Customer Class Cost of Service**

Residential

	Unit Costs				Total
	Volume	Meter	Billing	Readiness-to-Serve	
Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	3,415,730	1,062,056	1,006,062	1,062,056	
Cost of Service	\$ 14,859,484	\$ 933,623	\$ 2,465,799	\$ -	\$ 18,258,905

Residential - CAP

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	258,808	96,319	95,382	96,319	
Cost of Service	\$ 1,125,895	\$ 84,671	\$ 233,776	\$ -	\$ 1,444,342

Commercial

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	2,964,032	410,991	102,150	410,991	
Cost of Service	\$ 12,894,456	\$ 361,290	\$ 250,364	\$ -	\$ 13,506,110

Industrial

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	177,980	6,528	408	6,528	
Cost of Service	\$ 774,268	\$ 5,738	\$ 1,000	\$ -	\$ 781,006

Health or Education

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	1,014,670	76,631	5,269	76,631	
Cost of Service	\$ 4,414,127	\$ 67,364	\$ 12,914	\$ -	\$ 4,494,405

Municipal - Residential

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	1,908	465	399	465	
Cost of Service	\$ 8,300	\$ 409	\$ 978	\$ -	\$ 9,687

Municipal - Commercial

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	234,199	17,177	2,736	17,177	
Cost of Service	\$ 1,018,837	\$ 15,100	\$ 6,706	\$ -	\$ 1,040,643

NRG

Unit Costs (\$/unit)	\$ 4.350	\$ 0.879	\$ 2.451	\$ -	
Units of Service	15,986				
Cost of Service	\$ 69,544	\$ -	\$ -	\$ -	\$ 69,544

**Total: Wastewater Cost of Service**

	<b>\$ 35,164,911</b>	<b>\$ 1,468,195</b>	<b>\$ 2,971,536</b>	<b>\$ -</b>	<b>\$ 39,604,641</b>
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**Pittsburgh Water and Sewer Authority**  
*FPPTY 2024 COS & Rate Design Model*  
 Adjustments to Allocated Cost of Service

HJS-9WW

<b>COS Adjustments</b>		Allocation Method	Residential	Residential - CAP	Commercial	Industrial	Health or Education	Municipal - Residential	Municipal - Commercial	NRG (Contract)	Total
<u>Adjustments to Cost of Service</u>											
Wholesale/Contract Adjustment	Unadj. COS		46.2%	3.7%	34.2%	2.0%	11.4%	0.0%	2.6%		100.0%
Add: Bad Debt Expense	Class Contribution		85.2%		12.7%	0.2%	1.9%		0.1%		100.0%
BDP Forgone Revenue	Unadj. COS		47.9%		35.5%	2.1%	11.8%	0.0%	2.7%		100.0%
Gradualism - Residential (1)	Unadj. COS						100.0%				100.0%
Gradualism - Industrial (2)	Unadj. COS		48.9%		36.2%		12.0%	0.0%	2.8%		100.0%
Gradualism - Stormwater (3)	Unadj. COS		47.9%		35.5%	2.1%	11.8%	0.0%	2.7%		100.0%
<b>Cost of Service by Class</b>											
Allocated Cost of Service (Unadjusted)			\$ 18,258,905	\$ 1,444,342	\$ 13,506,110	\$ 781,006	\$ 4,494,405	\$ 9,687	\$ 1,040,643	\$ 69,544	\$ 39,604,641
% of COS			46.1%	3.6%	34.1%	2.0%	11.3%	0.0%	2.6%	0.2%	99.8%
<u>Adjustments to Cost of Service</u>											
	<u>Adjustment</u>										
Wholesale/Contract Adjustment	\$ 4,465	\$ 2,062	\$ 163	\$ 1,525	\$ 88	\$ 508	\$ 1	\$ 118	\$ (4,465)	\$ -	
Add: Bad Debt Expense	1,077,678	917,981	-	136,806	2,003	19,996	-	892	-	1,077,678	
BDP Forgone Revenue	816,700	391,488	(816,700)	289,583	16,745	96,364	208	22,312	-	(0)	
Gradualism - Residential (1)	520,000	(520,000)	-	-	-	520,000	-	-	-	-	
Gradualism - Industrial (2)	3,000	1,468	-	1,086	(3,000)	361	1	84	-	(0)	
Gradualism - Stormwater (3)	9,500,000	4,553,850	-	3,368,483	194,786	1,120,924	2,416	259,541	-	9,500,000	
<b>Total: Adjusted Cost of Service</b>			<b>\$ 23,605,755</b>	<b>\$ 627,804</b>	<b>\$ 17,303,594</b>	<b>\$ 991,628</b>	<b>\$ 6,252,558</b>	<b>\$ 12,312</b>	<b>\$ 1,323,588</b>	<b>\$ 65,079</b>	<b>\$ 50,182,319</b>
% of COS			47.0%	1.3%	34.5%	2.0%	12.5%	0.0%	2.6%		100.0%

- (1) Gradualism adjustment to Residential as Health & Education subsidy is phased out
- (2) Gradualism adjusted such that class increase does not exceed 1.5x overall wastewater system increase
- (3) Transfer from Stormwater to Wastewater such that new Stormwater fee is phased in

**Pittsburgh Water and Sewer Authority**

HJS-10WW

*FPFTY 2024 COS & Rate Design Model*

Forgone Revenue Cost of the Bill Discount Program

**Units**

5/8"  
3/4"  
1"  
Unmetered

0.0%
0.0%
0.0%
0.0%

Bills	CAP Usage	CAP - 50FPL Usage
94,312	161,366	31,665
680	656	82
390	217	184
12	n/a	n/a
<u>95,394</u>	<u>162,239</u>	<u>31,931</u>

**Forgone Revenue Cost**

Fixed Charges  
Volume Charges  
Total Forgone Revenue Cost

Revenue At Full Rates	Revenue at CAP Rates	Difference
\$ 716,431	\$ -	\$ 716,431
<u>200,538</u>	<u>100,269</u>	<u>100,269</u>
916,969	100,269	816,700

Volume Discount

50.0%
-------

	<b>Min. Usage</b> <i>Existing</i>	<b>COS Rate Build-Up - Test Year: 2024</b>								
		<i>Meter</i>	<i>Billing</i>	<i>Usage</i>	<i>Total COS Rates</i>	<i>Adjustments</i>		<i>Proposed Rates</i>		
						<i>R.T.S</i>	<i>CAP-BDP</i>			
<b>Wastewater Conveyance</b>										
<u>Minimum Charge</u>										
5/8"	1	\$ 0.88	\$ 2.45	\$ 3.06	\$ 6.39	\$ 1.03	\$ -	\$ -	\$ 7.42	
3/4"	2	1.32	2.45	6.11	9.88	1.54	-	-	11.43	
1"	5	2.20	2.45	15.28	19.93	2.57	-	-	22.50	
1 1/2"	10	4.40	2.45	30.56	37.41	5.15	-	-	42.56	
2"	17	7.03	2.45	51.95	61.44	8.24	-	-	69.68	
3"	40	14.07	2.45	122.24	138.76	16.48	-	-	155.24	
4"	70	21.98	2.45	213.93	238.36	25.75	-	-	264.10	
6"	175	43.95	2.45	534.82	581.22	51.49	-	-	632.71	
8"	325	70.33	2.45	993.23	1,066.01	82.39	-	-	1,148.40	
10" & Above	548	101.09	2.45	1,674.75	1,778.29	118.43	-	-	1,896.72	
Unmetered	1	0.88	2.45	3.06	6.39	1.03	-	-	7.42	
<u>Residential - CAP</u>										
5/8"	1	\$ 0.88	\$ 2.45	\$ 3.06	\$ 6.39	\$ 1.03	(7.42)	\$ -	-	
3/4"	2	1.32	2.45	6.11	9.88	1.54	(11.43)	-	-	
1"	5	2.20	2.45	15.28	19.93	2.57	(22.50)	-	-	
Unmetered	1	0.88	2.45	3.06	6.39	1.03	(7.42)	-	-	

**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 Volume Charge Calculation

Unadjusted COS-Based Rates					
Unadjusted Revenue Requirement	Fixed Charge Revenue	Total Vol Revenue Requirement	Billed Volume	Proposed Rates	
Residential	\$ 18,258,905	\$ 6,894,822	\$ 11,364,084	2,407,557	\$ 4.72
Residential - CAP	1,444,342	510,514	933,828	194,206	4.81
Commercial	13,506,110	3,486,299	10,019,811	2,306,945	4.34
Industrial	781,006	69,718	711,287	167,004	4.26
Health or Education	4,494,405	741,102	3,753,303	858,874	4.37
Municipal - Residential	9,687	3,083	6,604	1,763	3.75
Municipal - Commercial	1,040,643	156,916	883,727	218,108	4.05
<i>Totals</i>	\$ 39,535,097	\$ 11,862,454	\$ 27,672,643	6,154,458	4.50

Determination of Proposed Rates					
Adjusted Revenue Requirement	Fixed Charge Revenue	Total Volumetric Rev Req	Equivalent Volume (for Ratemaking)	Proposed Rates	
Residential + CAP + City Res	\$ 24,245,871	\$ 7,995,989	\$ 16,249,882	2,587,561	6.28
Commercial + City Com	18,627,182	4,084,383	14,542,799	2,525,053	5.76
Industrial	991,628	76,441	915,187	167,004	5.49
Health or Education	6,252,558	820,029	5,432,529	858,874	6.33
Municipal - Commercial					
Municipal - Residential					
<i>Totals</i>	50,117,240	12,976,842	37,140,398	6,138,492	\$ 6.05

Class Increase	Ratio to Total Increase (1)
8.1%	1.25
7.2%	1.12
9.8%	1.51
0.0%	0.01
6.5%	1.00

**Pittsburgh Water and Sewer Authority**

HJS-12WW

FPFTY 2024 COS & Rate Design Model

Proposed Rates

	<b>2023 FTY Prior Tariff Rates</b>	<b>2024 FPFTY Proposed Rates</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Existing &amp; Proposed Rates</b>				
<u>Minimum Charge</u>				
5/8"	\$ 7.32	\$ 7.42	1.4%	\$ 0.10
3/4"	11.70	11.43	-2.3%	(0.27)
1"	24.27	22.50	-7.3%	(1.77)
1 1/2"	46.19	42.56	-7.9%	(3.63)
2"	76.29	69.68	-8.7%	(6.61)
3"	173.03	155.24	-10.3%	(17.79)
4"	297.52	264.10	-11.2%	(33.42)
6"	725.62	632.71	-12.8%	(92.91)
8"	1,330.48	1,148.40	-13.7%	(182.08)
10" & Above	2,218.44	1,896.72	-14.5%	(321.72)
<u>Minimum Charge - CAP (1)</u>				
5/8"	\$ -	\$ -	0.0%	\$ -
3/4"	-	-	0.0%	-
1"	-	-	0.0%	-
<u>Volume Charge</u>				
Residential	\$ 5.81	\$ 6.28	8.1%	\$ 0.47
Residential - CAP	5.81	6.28	8.1%	0.47
Residential - CAP (<50% FPL)	2.91	3.14	8.1%	0.24
Commercial	5.28	5.76	9.1%	0.48
Industrial	5.05	5.49	8.7%	0.44
Health or Education	6.38	6.33	-0.8%	(0.05)
Municipal - Residential (2)	4.65	6.28	35.1%	1.63
Municipal - Commercial (2)	4.22	5.76	36.4%	1.54
<u>Unmetered Charges (per Unit)</u>				
Residential	\$ 24.75	\$ 26.26	6.1%	\$ 1.51
Residential - CAP	17.43	18.84	8.1%	1.41
Commercial	28.44	30.46	7.1%	2.02
DSIC (Applies to all retail customers)	5.0%	7.5%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in all years.

(2) Municipal Rates were at 80% in 2023 and are at 100% in 2024 per agreement.

Comparison of Base Rate Revenues by Customer Class

	FPFTY Revenue at Existing Rates	FPFTY Indicated COS by Customer Class	Percent Difference	Dollar Difference
<b>Base Rate Revenues</b>				
Residential	\$ 21,940,695	\$ 18,258,905	-16.8%	\$ (3,681,789)
Residential - CAP	1,035,580	1,444,342	39.5%	408,762
Commercial	16,474,903	13,506,110	-18.0%	(2,968,793)
Industrial	930,249	781,006	-16.0%	(149,243)
Health or Education	6,403,078	4,494,405	-29.8%	(1,908,673)
Municipal - Residential	13,834	9,687	-30.0%	(4,147)
Municipal - Commercial	1,346,083	1,040,643	-22.7%	(305,440)
NRG Contract	65,079	69,544	6.9%	4,465
<b>Total: Base Rate Revenues</b>	<b>\$ 48,209,500</b>	<b>\$ 39,604,641</b>	<b>-17.8%</b>	<b>\$ (8,604,859)</b>

	FPFTY Indicated COS by Customer Class	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
<b>Base Rate Revenues</b>				
Residential	\$ 18,258,905	\$ 23,605,755	29.3%	\$ 5,346,849
Residential - CAP	1,444,342	627,804	-56.5%	(816,537)
Commercial	13,506,110	17,303,594	28.1%	3,797,483
Industrial	781,006	991,628	27.0%	210,623
Health or Education	4,494,405	6,252,558	39.1%	1,758,154
Municipal - Residential	9,687	12,312	27.1%	2,625
Municipal - Commercial	1,040,643	1,323,588	27.2%	282,946
NRG Contract	69,544	65,079	-6.4%	(4,465)
<b>Total: Base Rate Revenues</b>	<b>\$ 39,604,641</b>	<b>\$ 50,182,319</b>	<b>26.7%</b>	<b>\$ 10,577,678</b>

	FPFTY Revenue at Existing Rates	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
<b>Base Rate Revenues</b>				
Residential	\$ 21,940,695	\$ 23,605,755	7.6%	\$ 1,665,060
Residential - CAP	1,035,580	627,804	-39.4%	(407,775)
Commercial	16,474,903	17,303,594	5.0%	828,690
Industrial	930,249	991,628	6.6%	61,380
Health or Education	6,403,078	6,252,558	-2.4%	(150,519)
Municipal - Residential	13,834	12,312	-11.0%	(1,522)
Municipal - Commercial	1,346,083	1,323,588	-1.7%	(22,494)
NRG Contract	65,079	65,079	0.0%	-
<b>Total: Base Rate Revenues</b>	<b>\$ 48,209,500</b>	<b>\$ 50,182,319</b>	<b>4.1%</b>	<b>\$ 1,972,819</b>

	FPFTY Revenue at Existing Rates	FPFTY Revenue at Proposed Rates	Percent Difference	Dollar Difference
<b>Base Rate Revenues</b>				
Residential	\$ 21,940,695	\$ 23,111,883	5.3%	\$ 1,171,188
Residential - CAP	1,035,580	1,119,353	8.1%	83,773
Commercial	16,474,903	17,197,777	4.4%	722,874
Industrial	930,249	993,291	6.8%	63,043
Health or Education	6,403,078	6,256,703	-2.3%	(146,374)
Municipal - Residential	13,834	14,635	5.8%	801
Municipal - Commercial	1,346,083	1,430,914	6.3%	84,831
NRG Contract	65,079	65,079	0.0%	-
<b>Total: Base Rate Revenues</b>	<b>\$ 48,209,500</b>	<b>\$ 50,189,636</b>	<b>4.1%</b>	<b>\$ 1,980,136</b>

**Pittsburgh Water and Sewer Authority**

FPPTY 2024 COS & Rate Design Model

FPPTY CCOS Comparison - Wastewater Conveyance

	Unadjusted COS (1)		Revenue at Existing Rates		Revenue at Proposed Rates		Proposed Increase	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
<b>Base Rate Revenues</b>								
Residential	\$ 18,258,905	46.1%	\$ 21,940,695	45.5%	\$ 23,111,883	46.0%	\$ 1,171,188	5.3%
Residential - CAP	1,444,342	3.6%	1,035,580	2.1%	1,119,353	2.2%	83,773	8.1%
Commercial	13,506,110	34.1%	16,474,903	34.2%	17,197,777	34.3%	722,874	4.4%
Industrial	781,006	2.0%	930,249	1.9%	993,291	2.0%	63,043	6.8%
Health or Education	4,494,405	11.3%	6,403,078	13.3%	6,256,703	12.5%	(146,374)	-2.3%
Municipal - Residential	9,687	0.0%	13,834	0.0%	14,635	0.0%	801	5.8%
Municipal - Commercial	1,040,643	2.6%	1,346,083	2.8%	1,430,914	2.9%	84,831	6.3%
Wholesale & Bulk	69,544	0.2%	65,079	0.1%	65,079	0.1%	-	0.0%
<b>Subtotal: Base Rate Revenues</b>	<b>\$ 39,604,641</b>	<b>100.0%</b>	<b>\$ 48,209,500</b>	<b>100.0%</b>	<b>\$ 50,189,636</b>	<b>100.0%</b>	<b>\$ 1,980,136</b>	<b>4.1%</b>
<b>DSIC Revenues</b>								
Residential	n/a	n/a	\$ 1,097,035	45.6%	\$ 1,733,391	46.1%	\$ 636,356	
Residential - CAP	n/a	n/a	51,779	2.2%	83,951	2.2%	32,172	
Commercial	n/a	n/a	823,745	34.2%	1,289,833	34.3%	466,088	
Industrial	n/a	n/a	46,512	1.9%	74,497	2.0%	27,984	
Health or Education	n/a	n/a	320,154	13.3%	469,253	12.5%	149,099	
Municipal - Residential	n/a	n/a	692	0.0%	1,098	0.0%	406	
Municipal - Commercial	n/a	n/a	67,304	2.8%	107,319	2.9%	40,014	
<b>Subtotal: DSIC Revenues</b>	<b>n/a</b>	<b>n/a</b>	<b>\$ 2,407,221</b>	<b>100.0%</b>	<b>\$ 3,759,342</b>	<b>100.0%</b>	<b>\$ 1,352,121</b>	
<b>Total: User Charge Revenues</b>	<b>\$ 39,604,641</b>		<b>\$ 50,616,721</b>		<b>\$ 53,948,977</b>		<b>\$ 3,332,256</b>	<b>6.6%</b>
<b>Other Revenues</b>								
Miscellaneous Revenues	696,014		696,014		696,014		-	0.0%
<b>Total: Wastewater Conveyance Revenues</b>	<b>\$ 40,300,655</b>		<b>\$ 51,312,735</b>		<b>\$ 54,644,992</b>		<b>\$ 3,332,256</b>	<b>6.5%</b>

(1) Difference between COS & proposed base rate revenue is attributed to BDE, stormwater gradualism, and rounding.



**Pittsburgh Water and Sewer Authority**

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FPFTY 2024 COS & Rate Design Model

Typical Bill Comparison

	<b>Customer Usage</b>		<b>FTY Existing Rates</b>		<b>FPFTY Proposed Rates</b>	<b>Percent Difference</b>	<b>Dollar Difference</b>
<b>Customer Impacts (1)</b>							
<u>Residential</u>							
	5/8"	1 kgal	\$ 7.69	\$	7.98	3.8%	\$ 0.29
	5/8"	3 kgal	19.89		21.48	8.0%	1.59
	5/8"	5 kgal	32.09		34.98	9.0%	2.89
	5/8"	7 kgal	44.29		48.48	9.5%	4.19
	5/8"	12 kgal	74.79		82.24	10.0%	7.45
	1"	20 kgal	116.99		125.45	7.2%	8.46
<u>Commercial</u>							
	5/8"	3 kgal	\$ 18.77	\$	20.36	8.5%	\$ 1.59
	5/8"	5 kgal	29.86		32.74	9.7%	2.88
	5/8"	12 kgal	68.67		76.09	10.8%	7.42
	1"	13 kgal	69.84		73.72	5.6%	3.89
	2"	80 kgal	429.38		465.00	8.3%	35.63
	4"	160 kgal	811.36		841.19	3.7%	29.83
<u>Industrial</u>							
	1"	30 kgal	\$ 158.05	\$	171.73	8.7%	\$ 13.69
	1"	60 kgal	317.12		348.78	10.0%	31.66
	2"	100 kgal	520.21		564.75	8.6%	44.54
	4"	680 kgal	3,546.92		3,883.98	9.5%	337.05
	6"	400 kgal	1,954.96		2,008.06	2.7%	53.09
	8"	800 kgal	3,915.69		4,037.86	3.1%	122.17
<u>Health or Education</u>							
	5/8"	5 kgal	\$ 34.48	\$	35.20	2.1%	\$ 0.71
	5/8"	10 kgal	67.98		69.22	1.8%	1.24
	1"	40 kgal	259.95		262.35	0.9%	2.41
	2"	50 kgal	301.17		299.46	-0.6%	(1.71)
	4"	200 kgal	1,183.27		1,168.53	-1.2%	(14.74)
	6"	650 kgal	3,943.93		3,912.42	-0.8%	(31.51)

(1) Customer bills at existing rates include a 5% DSIC and proposed rates include a 7.5% DSIC.

	2024 Revenue @ Existing Rates			2024 Revenue @ COS Rates			2024 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenues</b>									
<b>Minimum Charges</b>									
Residential									
5/8"	945,171	\$ 7.32	\$ 6,918,652	945,171	\$ 6.39	\$ 6,035,972	945,171	\$ 7.42	\$ 7,013,169
3/4"	31,308	11.70	366,304	31,308	9.88	309,378	31,308	11.43	357,850
1"	24,933	24.27	605,124	24,933	19.93	496,893	24,933	22.50	560,993
1 1/2"	546	46.19	25,220	546	37.41	20,424	546	42.56	23,238
2"	108	76.29	8,239	108	61.44	6,635	108	69.68	7,525
Unmetered	3,996	24.75	98,901	3,996	6.39	25,519	3,996	26.26	104,935
<b>Subtotal: Residential</b>	<b>1,006,062</b>		<b>\$ 8,022,439</b>	<b>1,006,062</b>		<b>\$ 6,894,822</b>	<b>1,006,062</b>		<b>\$ 8,067,710</b>
Residential - CAP									
5/8"	77,884	\$ -	\$ -	77,884	\$ 6.39	\$ 497,376	77,884	\$ -	\$ -
3/4"	632	-	-	632	9.88	6,245	632	-	-
1"	342	-	-	342	19.93	6,816	342	-	-
Unmetered	12	17.43	209	12	-	-	12	18.84	226
<b>Subtotal: Residential - CAP</b>	<b>78,870</b>		<b>\$ 209</b>	<b>78,870</b>		<b>\$ 510,437</b>	<b>78,870</b>		<b>\$ 226</b>
Commercial									
5/8"	44,741	\$ 7.32	\$ 327,504	44,741	\$ 6.39	\$ 285,721	44,741	\$ 7.42	\$ 331,978
3/4"	9,787	11.70	114,508	9,787	9.88	96,713	9,787	11.43	111,865
1"	20,095	24.27	487,706	20,095	19.93	400,476	20,095	22.50	452,138
1 1/2"	10,506	46.19	485,272	10,506	37.41	393,002	10,506	42.56	447,135
2"	10,736	76.29	819,049	10,736	61.44	659,591	10,736	69.68	748,084
3"	2,797	173.03	483,965	2,797	138.76	388,112	2,797	155.24	434,206
4"	2,316	297.52	689,056	2,316	238.36	552,030	2,316	264.10	611,656
6"	1,085	725.62	787,298	1,085	581.22	630,627	1,085	632.71	686,490
8"	75	1,330.48	99,786	75	1,066.01	79,951	75	1,148.40	86,130
10" & Above	-	2,218.44	-	-	1,778.29	-	-	1,896.72	-
Unmetered	12	28.44	341	12	6.39	77	12	30.46	366
<b>Subtotal: Commercial</b>	<b>102,150</b>		<b>\$ 4,294,485</b>	<b>102,150</b>		<b>\$ 3,486,299</b>	<b>102,150</b>		<b>\$ 3,910,049</b>
Industrial									
5/8"	84	\$ 7.32	\$ 615	84	\$ 6.39	\$ 536	84	\$ 7.42	\$ 623
3/4"	12	11.70	140	12	9.88	119	12	11.43	137
1"	69	24.27	1,675	69	19.93	1,375	69	22.50	1,553
1 1/2"	-	46.19	-	-	37.41	-	-	42.56	-
2"	85	76.29	6,485	85	61.44	5,222	85	69.68	5,923
3"	33	173.03	5,710	33	138.76	4,579	33	155.24	5,123
4"	77	297.52	22,909	77	238.36	18,353	77	264.10	20,336
6"	24	725.62	17,415	24	581.22	13,949	24	632.71	15,185
8"	24	1,330.48	31,932	24	1,066.01	25,584	24	1,148.40	27,562
10" & Above	-	2,218.44	-	-	1,778.29	-	-	1,896.72	-
<b>Subtotal: Industrial</b>	<b>408</b>		<b>\$ 86,880</b>	<b>408</b>		<b>\$ 69,718</b>	<b>408</b>		<b>\$ 76,441</b>
Health or Education									
5/8"	359	\$ 7.32	\$ 2,628	359	\$ 6.39	\$ 2,293	359	\$ 7.42	\$ 2,664
3/4"	96	11.70	1,123	96	9.88	949	96	11.43	1,097
1"	239	24.27	5,801	239	19.93	4,763	239	22.50	5,378
1 1/2"	755	46.19	34,873	755	37.41	28,243	755	42.56	32,133
2"	1,559	76.29	118,936	1,559	61.44	95,781	1,559	69.68	108,631
3"	1,048	173.03	181,335	1,048	138.76	145,421	1,048	155.24	162,692
4"	800	297.52	238,016	800	238.36	190,684	800	264.10	211,280
6"	373	725.62	270,656	373	581.22	216,796	373	632.71	236,001
8"	21	1,330.48	27,940	21	1,066.01	22,386	21	1,148.40	24,116
10" & Above	19	2,218.44	42,150	19	1,778.29	33,787	19	1,896.72	36,038
<b>Subtotal: Health or Education</b>	<b>5,269</b>		<b>\$ 923,459</b>	<b>5,269</b>		<b>\$ 741,102</b>	<b>5,269</b>		<b>\$ 820,029</b>
Municipal - Residential									
5/8"	375	\$ 7.32	\$ 2,745	375	\$ 6.39	\$ 2,393	375	\$ 7.42	\$ 2,783
3/4"	-	11.70	-	-	9.88	-	-	11.43	-
1"	12	24.27	291	12	-	-	12	22.50	270
1 1/2"	12	46.19	554	12	-	-	12	42.56	511
2"	-	76.29	-	-	-	-	-	69.68	-
3"	-	173.03	-	-	-	-	-	155.24	-
4"	-	297.52	-	-	6.39	-	-	264.10	-
6"	-	725.62	-	-	9.88	-	-	632.71	-
8"	-	1,330.48	-	-	19.93	-	-	1,148.40	-
10" & Above	-	2,218.44	-	-	-	-	-	1,896.72	-
<b>Subtotal: Municipal - Residential</b>	<b>399</b>		<b>\$ 3,591</b>	<b>399</b>		<b>\$ 23,039</b>	<b>399</b>		<b>\$ 3,563</b>
Municipal - Commercial									
5/8"	803	\$ 7.32	\$ 5,878	803	\$ 6.39	\$ 5,128	803	\$ 7.42	\$ 5,958
3/4"	89	11.70	1,041	89	9.88	879	89	11.43	1,017
1"	565	24.27	13,713	565	19.93	11,260	565	22.50	12,713
1 1/2"	409	46.19	18,892	409	37.41	15,300	409	42.56	17,407
2"	602	76.29	45,927	602	61.44	36,985	602	69.68	41,947
3"	167	173.03	28,896	167	138.76	23,173	167	155.24	25,925
4"	25	297.52	7,438	25	238.36	5,959	25	264.10	6,603
6"	47	725.62	34,104	47	581.22	27,317	47	632.71	29,737
8"	29	1,330.48	38,584	29	1,066.01	30,914	29	1,148.40	33,304
10" & Above	-	2,218.44	-	-	1,778.29	-	-	1,896.72	-
<b>Subtotal: Municipal - Commercial</b>	<b>2,736</b>		<b>\$ 194,472</b>	<b>2,736</b>		<b>\$ 156,916</b>	<b>2,736</b>		<b>\$ 174,611</b>
<b>Subtotal: Minimum Charges</b>			<b>\$ 13,525,536</b>			<b>\$ 11,882,334</b>			<b>\$ 13,052,629</b>

	2024 Revenue @ Existing Rates			2024 Revenue @ COS Rates			2024 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Volume Charge</b>									
Residential	2,395,569	\$ 5.81	\$ 13,918,255	2,395,569	\$ 4.72	\$ 11,307,085	2,395,569	\$ 6.28	\$ 15,044,173
Residential - CAP	162,239	5.81	942,611	162,239	4.81	780,372	162,239	6.28	1,018,864
Residential - CAP - 50FPL	31,931	2.91	92,760	31,931	4.34	138,580	31,931	3.14	100,263
Commercial	2,306,897	5.28	12,180,418	2,306,897	4.34	10,011,934	2,306,897	5.76	13,287,729
Industrial	167,004	5.05	843,369	167,004	4.26	711,436	167,004	5.49	916,850
Health or Education	858,874	6.38	5,479,618	858,874	4.37	3,753,281	858,874	6.33	5,436,675
Municipal - Residential	1,763	5.81	10,243	1,763	3.75	6,612	1,763	6.28	11,072
Municipal - Commercial	218,108	5.28	1,151,611	218,108	4.05	883,338	218,108	5.76	1,256,303
<b>Subtotal: Volume Charge</b>	<b>6,142,386</b>		<b>\$ 34,618,885</b>			<b>\$ 27,592,638</b>	<b>6,142,386</b>		<b>\$ 37,071,928</b>
Wholesale and Contract Revenues			\$ 65,079			\$ 69,544			\$ 65,079
<b>Total: Base Rate Revenues</b>			<b>\$ 48,209,500</b>			<b>\$ 39,544,515</b>			<b>\$ 50,189,636</b>
<b>DSIC Revenues</b>									
Residential			1,097,035			\$ 1,365,143			\$ 1,733,391
Residential - CAP			51,779			96,811			83,951
Commercial			823,745			1,012,368			1,289,833
Industrial			46,512			58,587			74,497
Health or Education			320,154			337,079			469,253
Municipal - Residential			692			727			1,098
Municipal - Commercial			67,304			78,019			107,319
<b>Total: DSIC Revenues</b>			<b>\$ 2,407,221</b>			<b>\$ 2,948,733</b>			<b>\$ 3,759,342</b>
<b>Other Revenues</b>									
Other Revenues			696,014			696,014			696,014
<b>Total: System Revenues</b>			<b>\$ 51,312,735</b>			<b>\$ 43,189,262</b>			<b>\$ 54,644,992</b>
<b>FPPTY Wastewater Conveyance Revenue Requirements</b>						<b>\$ 54,637,675</b>			<b>\$ 54,637,675</b>
<b>Difference</b>						<b>\$ (11,448,413)</b>			<b>\$ 7,317</b>

(1) Note difference in COS rates is combination of bad debt, DSIC, and Stormwater gradualism.

**Pittsburgh Water and Sewer Authority**

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FPFTY 2024 COS & Rate Design Model

Projected Units of Service

	<b>FY 2020</b> <i>Actual</i>	<b>FY 2021</b> <i>Actual</i>	<b>HTY</b> <b>FY 2022</b> <i>Actual</i>	<b>FTY</b> <b>FY 2023</b> <i>Projected</i>	<b>FPFTY</b> <b>FY 2024</b> <i>Projected</i>
<b>Units of Service</b>					
<u>Number of Bills</u>					
Residential	1,035,309	1,033,432	1,029,504	1,029,504	1,006,062
Residential - CAP	43,155	53,677	64,440	71,940	95,382
Commercial	99,481	101,018	102,150	102,150	102,150
Industrial	524	416	408	408	408
Health or Education	5,688	5,520	5,269	5,269	5,269
Municipal	2,579	2,940	3,135	3,135	3,135
<i>Total</i>	<u>1,186,736</u>	<u>1,197,003</u>	<u>1,204,906</u>	<u>1,212,406</u>	<u>1,212,406</u>
<u>Billable Consumption (kgal)</u>					
Residential	2,592,137	2,435,500	2,303,751	2,443,796	2,395,569
Residential - CAP	110,800	136,746	146,068	145,943	194,170
Commercial	2,293,724	2,318,856	2,308,112	2,306,897	2,306,897
Industrial	184,338	206,245	110,428	167,004	167,004
Health or Education	832,652	911,462	832,509	858,874	858,874
Municipal	200,073	248,852	210,688	219,871	219,871
<i>Total</i>	<u>6,213,724</u>	<u>6,257,661</u>	<u>5,911,557</u>	<u>6,142,386</u>	<u>6,142,386</u>
<u>Total Consumption (kgal) (1)</u>					
Residential	3,628,227	3,463,346	3,312,153	3,467,909	3,403,742
Residential - CAP	149,128	173,561	201,247	194,606	258,772
Commercial	2,947,520	2,989,247	2,955,185	2,963,984	2,963,984
Industrial	195,819	217,775	120,345	177,980	177,980
Health or Education	989,429	1,071,055	983,525	1,014,670	1,014,670
Municipal	212,065	263,122	233,133	236,107	236,107
<i>Total</i>	<u>8,122,187</u>	<u>8,178,107</u>	<u>7,805,587</u>	<u>8,055,254</u>	<u>8,055,254</u>
<u>Wholesale &amp; Contract Consumption</u>					
NRG	109,255	15,986	15,794	15,794	15,794

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.

**Pittsburgh Water and Sewer Authority**  
*FPPTY 2024 COS & Rate Design Model*  
 2025 and 2026 Wastewater Conveyance Revenue Requirements

HJS-18WW

	<b>2025</b>	<b>2026</b>
	<b>Revenue Requirements</b>	<b>Revenue Requirements</b>
<b>Revenue Requirements</b>		
<u>Operating Expenses</u>		
<i>Direct Operating Expenses</i>		
Administrative Division		
Executive Director	\$ 484,779	\$ 515,321
Customer Service	3,696,522	3,965,186
Management Information Systems	1,005,000	1,069,591
Finance	1,589,494	1,687,854
Human Resources	412,617	437,108
Legal	614,314	652,427
Safety & Security	341,355	364,627
Public Affairs	308,124	327,411
Operations Division		
Environmental Compliance	1,593,390	1,691,579
Ops Capital Assets	-	-
Warehouse	82,162	88,672
Water Treatment Plant	-	-
Water Quality (Lab)	-	-
Water Distribution	-	-
Sewer Operations	6,593,741	8,169,281
Engineering & Construction		
Engineering & Construction	5,795,235	6,149,812
<i>Other Operating Expenses</i>		
Loss / (Gain) on ALCOSAN Billings	2,400,861	2,771,926
City Services	-	-
Non-City Water Payments	-	-
<i>Total Operating Expenses</i>	<u>\$ 24,917,595</u>	<u>\$ 27,890,795</u>
<u>Debt Service</u>		
Existing Debt	\$ 14,804,837	\$ 15,022,465
Future Debt	5,304,097	6,925,693
<i>Subtotal: Debt Service</i>	<u>\$ 20,108,934</u>	<u>\$ 21,948,158</u>
<u>Capital Expenditures &amp; Transfers</u>		
Internally Generated Funds / PAYGO	\$ 161,291	\$ 1,407,658
Internally Generated Funds / PAYGO (DSIC)	4,238,190	4,896,878
Other Transfers to Reserves	1,750,000	4,250,000
Bad Debt Expense	1,297,729	1,528,191
DWSL	250,000	250,000
Hardship	128,000	128,000
Arrearage	142,012	142,012
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	<u>\$ 7,967,222</u>	<u>\$ 12,602,739</u>
<b>Total: Wastewater Conveyance System Revenue Requirements</b>	<b>\$ 52,993,750</b>	<b>\$ 62,441,692</b>
<i>Capital Costs to be Recovered through DSIC</i>	<b>\$ (4,238,190)</b>	<b>\$ (4,896,878)</b>
<b>Total: Wastewater Conveyance System Base Rate Revenue Requirement</b>	<b>\$ 48,755,561</b>	<b>\$ 57,544,814</b>

**Pittsburgh Water and Sewer Authority**

HJS-19WW

FPFTY 2024 COS &amp; Rate Design Model

Revenue Increase Needed for 2025 and 2026

	<u>2024</u>	<u>2025</u>	<u>2026</u>
Revenue Requirement	\$ 41,378,333	\$ 48,755,561	\$ 57,544,814
Stormwater Gradualism	9,500,000	8,500,000	8,500,000
Offsetting Misc Revenue	(696,014)	(709,934)	(724,133)
Contract Revenue	(65,079)	(65,405)	(65,731)
Net Rate Revenue Requirement	\$ 50,117,240	\$ 56,480,222	\$ 65,254,949
<i>Increase</i>		<i>12.70%</i>	<i>15.54%</i>
Revenue at Existing Rates + New Charges			
Existing Retail Rates	\$ 48,046,585	\$ 50,124,557	\$ 52,216,572
New Charges	-	-	4,292,623
Total	\$ 48,046,585	\$ 50,124,557	\$ 56,509,195
<b>Net Rate Revenue Need</b>	<b>\$ 2,070,655</b>	<b>\$ 6,355,665</b>	<b>\$ 8,745,754</b>
<i>Increase</i>		<i>12.68%</i>	<i>15.48%</i>
Offsetting New Charge Revenue			
Infrastructure Improvement Charge	\$ -	\$ 2,956,313	\$ 3,036,213
Customer Assistance Charge	-	1,336,310	1,572,130
Subtotal New Charge Revenue	\$ -	\$ 4,292,623	\$ 4,608,343
Incremental New Charge Revenue Applied	\$ -	\$ 4,292,623	\$ 315,720
<b>Net Retail Base Rate Increase Need</b>	<b>\$ 2,070,655</b>	<b>\$ 2,063,042</b>	<b>\$ 8,430,034</b>
<i>Increase</i>		<i>4.12%</i>	<i>16.22%</i>

**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 2025 Minimum Charge Calculation

HJS-20WW

	<b>Min. Usage</b> <i>Proposed</i>	<b>COS Rate Build-Up - Test Year: 2025</b>								
		<i>Meter</i>	<i>Billing</i>	<i>Usage</i>	<i>Total COS Rates</i>	<i>Adjustments</i>		<i>Proposed Rates</i>		
						<i>R. T.S</i>	<i>CAP-BDP</i>			
<b>Wastewater Conveyance</b>										
<u>Minimum Charge</u>										
5/8"	0	\$ 0.92	\$ 2.55	\$ -	\$ 3.47	\$ 0.51	\$ -	\$ -	\$ 3.98	
3/4"	0	1.37	2.55	-	3.92	0.77	-	-	4.69	
1"	0	2.29	2.55	-	4.84	1.28	-	-	6.12	
1 1/2"	0	4.58	2.55	-	7.13	2.57	-	-	9.69	
2"	0	7.32	2.55	-	9.87	4.11	-	-	13.98	
3"	0	14.64	2.55	-	17.20	8.21	-	-	25.41	
4"	0	22.88	2.55	-	25.43	12.83	-	-	38.26	
6"	0	45.76	2.55	-	48.31	25.66	-	-	73.97	
8"	0	73.22	2.55	-	75.77	41.06	-	-	116.83	
10" & Above	0	105.25	2.55	-	107.81	59.02	-	-	166.82	
Unmetered	0	0.92	2.55	-	3.47	0.51	-	-	3.98	
<u>Residential - CAP</u>										
5/8"	0	\$ 0.92	\$ 2.55	\$ -	\$ 3.47	\$ 0.51	(3.98)	\$ -	-	
3/4"	0	1.37	2.55	-	3.92	0.77	(4.69)	-	-	
1"	0	2.29	2.55	-	4.84	1.28	(6.12)	-	-	
Unmetered	0	0.92	2.55	-	3.47	0.51	(3.98)	-	-	

**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 2025 Volume Charge Calculation

HJS-21WW

<b>Determination of Proposed Rates</b>							
	2024 Adjusted Revenue Requirement	2025 Adjusted Revenue Requirement	Fixed Charge Revenue	New Charges Revenue	Total Volumetric Rev Req	Equivalent Volume (for Ratemaking)	Proposed Rates
<u>Volume Charge (per kgal)</u>							
Residential + CAP	\$ 24,245,871	\$ 27,324,176	\$ 4,085,592	\$ 1,920,543	\$ 21,318,041	3,723,164	\$ 5.73
Commercial + Municipal	18,627,182	20,992,127	879,108	1,728,049	18,384,970	3,198,243	5.75
Industrial	991,628	1,117,527	10,365	96,109	1,011,053	177,980	5.69
Health or Education	6,252,558	7,046,396	122,904	547,922	6,375,570	1,014,670	6.29
Municipal - Metered							
Municipal - Unmetered							
<i>Totals</i>	50,117,240	56,480,227	5,097,969	4,292,623	47,089,635	8,114,056	\$ 5.80

**Infrastructure Improvement Charge**

Allocated Debt Service

	<u>2025</u>	<u>2026</u>
Existing PENNVEST	\$ -	\$ -
Future PENNVEST	2,966,541	3,046,886
Future WIFIA	-	-
Total PENNVEST Costs	\$ 2,966,541	\$ 3,046,886
Coverage Component	1.00	1.00
Total Charge Recovery	\$ 2,966,541	\$ 3,046,886
Units	8,119,421	8,119,421
Infrastructure Improvement Charge Unit Rate	\$ 0.37	\$ 0.38
	per kgal	per kgal

**Incorporated Unit Rate** \$ **0.37** \$ **0.38** per Kgal

**Customer Assistance Charge**

Allocated Customer Assistance Program Costs

Forgone Revenue	\$ 995,637	\$ 1,174,453
Operations	82,711	89,149
Hardship	128,000	128,000
Arrearage	142,012	142,012
Total Charge Recovery	\$ <b>1,348,360</b>	\$ <b>1,533,614</b>
Units (Less CAP units)	7,860,649	7,860,649
Customer Assistance Charge Unit Rate	\$ 0.17	\$ 0.20
	per kgal	per kgal

**Incorporated Unit Rate** \$ **0.17** \$ **0.20** per Kgal



	2023		2024		2025		2026		Percent Difference		
	FTY Prior Tariff Rates		FPFTY Proposed Rates		Proposed Rates		Proposed Rates		2024	2025	2026
<b>Existing &amp; Proposed Rates</b>											
<u>Minimum Charge</u>											
5/8"	\$	7.32	\$	7.42	\$	3.98	\$	4.63	1.4%	-46.4%	16.3%
3/4"		11.70		11.43		4.69		5.45	-2.3%	-59.0%	16.2%
1"		24.27		22.50		6.12		7.11	-7.3%	-72.8%	16.2%
1 1/2"		46.19		42.56		9.69		11.26	-7.9%	-77.2%	16.2%
2"		76.29		69.68		13.98		16.25	-8.7%	-79.9%	16.2%
3"		173.03		155.24		25.41		29.53	-10.3%	-83.6%	16.2%
4"		297.52		264.10		38.26		44.47	-11.2%	-85.5%	16.2%
6"		725.62		632.71		73.97		85.97	-12.8%	-88.3%	16.2%
8"		1,330.48		1,148.40		116.83		135.78	-13.7%	-89.8%	16.2%
10" & Above		2,218.44		1,896.72		166.82		193.88	-14.5%	-91.2%	16.2%
<u>Minimum Charge - CAP (1)</u>											
5/8"	\$	-	\$	-	\$	-	\$	-	0.0%	0.0%	0.0%
3/4"		-		-		-		-	0.0%	0.0%	0.0%
1"		-		-		-		-	0.0%	0.0%	0.0%
<u>Volume Charge</u>											
Residential	\$	5.81	\$	6.28	\$	5.73	\$	6.66	8.1%	-8.8%	16.2%
Residential - CAP		5.81		6.28		5.73		6.66	8.1%	-8.8%	16.2%
Residential - CAP - 50FPL		2.91		3.14		2.87		3.33	8.1%	-8.8%	16.2%
Commercial		5.28		5.76		5.75		6.68	9.1%	-0.2%	16.2%
Industrial		5.05		5.49		5.69		6.61	8.7%	3.6%	16.2%
Health or Education		6.38		6.33		6.29		7.31	-0.8%	-0.6%	16.2%
Municipal - Residential (2)		4.65		6.28		5.73		6.66	35.1%	-8.8%	16.2%
Municipal - Commercial (2)		4.22		5.76		5.75		6.68	36.4%	-0.2%	16.2%
<u>Unmetered Charges (per Unit)</u>											
Residential	\$	24.75	\$	26.26	\$	26.90	\$	31.27	6.1%	2.4%	16.2%
Residential - CAP		17.43		18.84		22.92		26.64	8.1%	21.7%	16.2%
Commercial		28.44		30.46		32.73		38.03	7.1%	7.5%	16.2%
<u>Infrastructure Improvement Charge</u>											
All Volume (per Kgal)		n/a		n/a	\$	0.37	\$	0.38	0.0%	0.0%	2.7%
<u>Customer Assistance Charge</u>											
All Volume (per Kgal)		n/a		n/a	\$	0.17	\$	0.20	0.0%	0.0%	17.6%
DSIC (Applies to all retail customers)		5.0%		7.5%		7.5%		7.5%			

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers.  
 (2) Municipal Rates were at 80% in 2023 and are at 100% in 2024 per agreement.

	2024 Revenue @ Proposed Rates			2025 Revenue @ Proposed Rates			2026 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenues</b>									
<u>Minimum Charges</u>									
<i>Residential</i>									
5/8"	945,171	\$ 7.42	\$ 7,013,169	945,171	\$ 3.98	\$ 3,761,781	945,171	\$ 4.63	\$ 4,376,142
3/4"	31,308	11.43	357,850	31,308	4.69	146,835	31,308	5.45	170,629
1"	24,933	22.50	560,993	24,933	6.12	152,590	24,933	7.11	177,274
1 1/2"	546	42.56	23,238	546	9.69	5,291	546	11.26	6,148
2"	108	69.68	7,525	108	13.98	1,510	108	16.25	1,755
Unmetered	3,996	26.26	104,935	3,996	26.90	107,492	3,996	31.27	124,955
<i>Subtotal: Residential</i>	<i>1,006,062</i>		<i>\$ 8,067,710</i>	<i>1,006,062</i>		<i>\$ 4,175,498</i>	<i>1,006,062</i>		<i>\$ 4,856,902</i>
<i>Residential - CAP</i>									
5/8"	77,884	\$ -	\$ -	77,884	\$ -	\$ -	77,884	\$ -	\$ -
3/4"	632	-	-	632	-	-	632	-	-
1"	342	-	-	342	-	-	342	-	-
Unmetered	12	18.84	226	12	22.92	275	12	26.64	320
<i>Subtotal: Residential - CAP</i>	<i>78,870</i>		<i>\$ 226</i>	<i>78,870</i>		<i>\$ 275</i>	<i>78,870</i>		<i>\$ 320</i>
<i>Commercial</i>									
5/8"	44,741	\$ 7.42	\$ 331,978	44,741	\$ 3.98	\$ 178,069	44,741	\$ 4.63	\$ 207,151
3/4"	9,787	11.43	111,865	9,787	4.69	45,901	9,787	5.45	53,339
1"	20,095	22.50	452,138	20,095	6.12	122,981	20,095	7.11	142,875
1 1/2"	10,506	42.56	447,135	10,506	9.69	101,803	10,506	11.26	118,298
2"	10,736	69.68	748,084	10,736	13.98	150,089	10,736	16.25	174,460
3"	2,797	155.24	434,206	2,797	25.41	71,072	2,797	29.53	82,595
4"	2,316	264.10	611,656	2,316	38.26	88,610	2,316	44.47	102,993
6"	1,085	632.71	686,490	1,085	73.97	80,257	1,085	85.97	93,277
8"	75	1,148.40	86,130	75	116.83	8,762	75	135.78	10,184
10" & Above	-	1,896.72	-	-	166.82	-	-	193.88	-
Unmetered	12	30.46	366	12	32.73	393	12	38.03	456
<i>Subtotal: Commercial</i>	<i>102,150</i>		<i>\$ 3,910,049</i>	<i>102,150</i>		<i>\$ 847,938</i>	<i>102,150</i>		<i>\$ 985,628</i>
<i>Industrial</i>									
5/8"	84	\$ 7.42	\$ 623	84	\$ 3.98	\$ 334	84	\$ 4.63	\$ 389
3/4"	12	11.43	137	12	4.69	56	12	5.45	65
1"	69	22.50	1,553	69	6.12	422	69	7.11	491
1 1/2"	-	42.56	-	-	9.69	-	-	11.26	-
2"	85	69.68	5,923	85	13.98	1,188	85	16.25	1,381
3"	33	155.24	5,123	33	25.41	839	33	29.53	974
4"	77	264.10	20,336	77	38.26	2,946	77	44.47	3,424
6"	24	632.71	15,185	24	73.97	1,775	24	85.97	2,063
8"	24	1,148.40	27,562	24	116.83	2,804	24	135.78	3,259
10" & Above	-	1,896.72	-	-	166.82	-	-	193.88	-
<i>Subtotal: Industrial</i>	<i>408</i>		<i>\$ 76,441</i>	<i>408</i>		<i>\$ 10,365</i>	<i>408</i>		<i>\$ 12,047</i>
<i>Health or Education</i>									
5/8"	359	\$ 7.42	\$ 2,664	359	\$ 3.98	\$ 1,429	359	\$ 4.63	\$ 1,662
3/4"	96	11.43	1,097	96	4.69	450	96	5.45	523
1"	239	22.50	5,378	239	6.12	1,463	239	7.11	1,699
1 1/2"	755	42.56	32,133	755	9.69	7,316	755	11.26	8,501
2"	1,559	69.68	108,631	1,559	13.98	21,795	1,559	16.25	25,334
3"	1,048	155.24	162,692	1,048	25.41	26,630	1,048	29.53	30,947
4"	800	264.10	211,280	800	38.26	30,608	800	44.47	35,576
6"	373	632.71	236,001	373	73.97	27,591	373	85.97	32,067
8"	21	1,148.40	24,116	21	116.83	2,453	21	135.78	2,851
10" & Above	19	1,896.72	36,038	19	166.82	3,170	19	193.88	3,684
<i>Subtotal: Health or Education</i>	<i>5,269</i>		<i>\$ 820,029</i>	<i>5,269</i>		<i>\$ 122,904</i>	<i>5,269</i>		<i>\$ 142,845</i>
<i>Municipal - Residential</i>									
5/8"	375	\$ 7.42	\$ 2,783	375	\$ 3.98	\$ 1,493	375	\$ 4.63	\$ 1,736
3/4"	-	11.43	-	-	4.69	-	-	5.45	-
1"	12	22.50	270	12	6.12	73	12	7.11	85
1 1/2"	12	42.56	511	12	9.69	116	12	11.26	135
<i>Subtotal: Municipal - Residential</i>	<i>399</i>		<i>\$ 3,563</i>	<i>399</i>		<i>\$ 1,682</i>	<i>399</i>		<i>\$ 1,957</i>
<i>Municipal - Commercial</i>									
5/8"	803	\$ 7.42	\$ 5,958	803	\$ 3.98	\$ 3,196	803	\$ 4.63	\$ 3,718
3/4"	89	11.43	1,017	89	4.69	417	89	5.45	485
1"	565	22.50	12,713	565	6.12	3,458	565	7.11	4,017
1 1/2"	409	42.56	17,407	409	9.69	3,963	409	11.26	4,605
2"	602	69.68	41,947	602	13.98	8,416	602	16.25	9,783
3"	167	155.24	25,925	167	25.41	4,243	167	29.53	4,932
4"	25	264.10	6,603	25	38.26	957	25	44.47	1,112
6"	47	632.71	29,737	47	73.97	3,477	47	85.97	4,041
8"	29	1,148.40	33,304	29	116.83	3,388	29	135.78	3,938
10" & Above	-	1,896.72	-	-	166.82	-	-	193.88	-
<i>Subtotal: Municipal - Commercial</i>	<i>2,736</i>		<i>\$ 174,611</i>	<i>2,736</i>		<i>\$ 31,515</i>	<i>2,736</i>		<i>\$ 36,629</i>
<i>Subtotal: Minimum Charges</i>			<i>\$ 13,052,629</i>			<i>\$ 5,190,178</i>			<i>\$ 6,036,328</i>

	2024 Revenue @ Proposed Rates			2025 Revenue @ Proposed Rates			2026 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Volume Charge</b>									
Residential	2,395,569	\$ 6.28	\$ 15,044,173	3,467,909	\$ 5.73	\$ 19,871,116	3,467,909	\$ 6.66	\$ 23,096,271
Residential - CAP	162,239	6.28	1,018,864	215,859	5.73	1,236,874	215,859	6.66	1,437,623
Residential - CAP - 50FPL	31,931	3.14	100,263	42,913	2.87	122,945	42,913	3.33	142,899
Commercial	2,306,897	5.76	13,287,729	2,963,984	5.75	17,042,907	2,963,984	6.68	19,799,413
Industrial	167,004	5.49	916,850	177,980	5.69	1,012,706	177,980	6.61	1,176,447
Health or Education	858,874	6.33	5,436,675	1,014,670	6.29	6,382,272	1,014,670	7.31	7,417,235
Municipal - Residential	1,763	6.28	11,072	1,908	5.73	10,932	1,908	6.66	12,706
Municipal - Commercial	218,108	5.76	1,256,303	234,199	5.75	1,346,643	234,199	6.68	1,564,447
<b>Subtotal: Volume Charge</b>	<b>6,142,386</b>		<b>\$ 37,071,928</b>	<b>8,119,421</b>		<b>\$ 47,026,394</b>			<b>\$ 54,647,042</b>
Wholesale and Contract Revenues			\$ 65,079			\$ 65,405			\$ 65,731
<b>Infrastructure Improvement Charge</b>									
Residential	2,395,569	\$ -	\$ -	3,467,909	\$ 0.37	\$ 1,283,126	3,467,909	\$ 0.38	\$ 1,317,805
Residential - CAP	162,239	-	-	215,859	0.19	39,934	215,859	0.19	41,013
Residential - CAP - 50FPL	31,931	-	-	42,913	0.19	7,939	42,913	0.19	8,153
Commercial	2,306,897	-	-	2,963,984	0.37	1,096,674	2,963,984	0.38	1,126,314
Industrial	167,004	-	-	177,980	0.37	65,853	177,980	0.38	67,632
Health or Education	858,874	-	-	1,014,670	0.37	375,428	1,014,670	0.38	385,574
Municipal - Residential	1,763	-	-	1,908	0.37	706	1,908	0.38	725
Municipal - Commercial	218,108	-	-	234,199	0.37	86,654	234,199	0.38	88,996
<b>Subtotal: Infrastructure Improvement Charge</b>	<b>6,142,386</b>		<b>\$ -</b>	<b>8,119,421</b>		<b>\$ 2,956,313</b>			<b>\$ 3,036,213</b>
<b>Customer Assistance Charge</b>									
Residential	2,395,569	\$ -	\$ -	3,467,909	\$ 0.17	\$ 589,544	3,467,909	\$ 0.20	\$ 693,582
Residential - CAP	162,239	-	-	215,859	-	-	215,859	-	-
Residential - CAP - 50FPL	31,931	-	-	42,913	-	-	42,913	-	-
Commercial	2,306,897	-	-	2,963,984	0.17	503,877	2,963,984	0.20	592,797
Industrial	167,004	-	-	177,980	0.17	30,257	177,980	0.20	35,596
Health or Education	858,874	-	-	1,014,670	0.17	172,494	1,014,670	0.20	202,934
Municipal - Residential	1,763	-	-	1,908	0.17	324	1,908	0.20	382
Municipal - Commercial	218,108	-	-	234,199	0.17	39,814	234,199	0.20	46,840
<b>Subtotal: Customer Assistance Charge</b>	<b>6,142,386</b>		<b>\$ -</b>	<b>8,119,421</b>		<b>\$ 1,336,310</b>			<b>\$ 1,572,130</b>
<b>Total: Base Rate Revenues</b>			<b>\$ 50,189,636</b>			<b>\$ 56,574,600</b>			<b>\$ 65,357,444</b>
<b>DSIC Revenues</b>									
Residential			\$ 1,733,391			\$ 1,943,946			\$ 2,247,342
Residential - CAP			83,951			105,597			122,251
Commercial			1,289,833			1,461,855			1,687,811
Industrial			74,497			83,938			96,879
Health or Education			469,253			528,982			611,144
Municipal - Residential			1,098			1,023			1,183
Municipal - Commercial			107,319			112,847			130,268
<b>Total: DSIC Revenues</b>			<b>\$ 3,759,342</b>			<b>\$ 4,238,190</b>			<b>\$ 4,896,878</b>
<b>Other Revenues</b>									
Other Revenues			696,014			709,934			724,133
<b>Total: System Revenues</b>			<b>\$ 54,644,992</b>			<b>\$ 61,522,724</b>			<b>\$ 70,978,455</b>
<b>FPPTY Wastewater Conveyance Revenue Requirements</b>						<b>\$ 61,493,750</b>	<b>\$ 70,941,692</b>		
<b>Difference</b>						<b>\$ 28,973</b>	<b>\$ 36,763</b>		

(1) Note difference in COS rates is combination of bad debt and DSIC.

**Pittsburgh Water and Sewer Authority**

HJS-24WW

FPPTY 2024 COS & Rate Design Model

Typical Bill Comparison

	<b>FTY 2023</b>	<b>FPPTY 2024</b>	<b>2025</b>	<b>2026</b>
<b>Customer Impacts</b>				
<u>Residential - 5/8" / 3 Kgal</u>				
Sewer Base Rates	\$ 18.94	\$ 19.98	\$ 21.17	\$ 24.61
New Sewer Charges	-	-	1.62	1.74
Sewer DSIC	0.95	1.50	1.71	1.98
<b>Total Monthly Bill</b>	<b>\$ 19.89</b>	<b>\$ 21.48</b>	<b>\$ 24.50</b>	<b>\$ 28.33</b>
\$ Change		\$ 1.59	\$ 3.02	\$ 3.83
% Change		<i>8.0%</i>	<i>14.1%</i>	<i>15.6%</i>
<u>Commercial - 1" / 13kgal</u>				
Sewer Base Rates	\$ 66.51	\$ 68.58	\$ 80.87	\$ 93.95
New Sewer Charges	-	-	7.02	7.54
Sewer DSIC	3.33	5.14	6.59	7.61
<b>Total Monthly Bill</b>	<b>\$ 69.84</b>	<b>\$ 73.72</b>	<b>\$ 94.48</b>	<b>\$ 109.10</b>
\$ Change		\$ 3.89	\$ 20.76	\$ 14.62
% Change		<i>5.6%</i>	<i>28.2%</i>	<i>15.5%</i>
<u>Industrial - 4" / 680kgal</u>				
Sewer Base Rates	\$ 3,378.02	\$ 3,613.00	\$ 3,907.46	\$ 4,539.27
New Sewer Charges	-	-	367.20	394.40
Sewer DSIC	168.90	270.98	320.60	370.03
<b>Total Monthly Bill</b>	<b>\$ 3,546.92</b>	<b>\$ 3,883.98</b>	<b>\$ 4,595.26</b>	<b>\$ 5,303.70</b>
\$ Change		\$ 337.05	\$ 711.28	\$ 708.44
% Change		<i>9.5%</i>	<i>18.3%</i>	<i>15.4%</i>
<u>Health or Education - 2" / 50kgal</u>				
Sewer Base Rates	\$ 286.83	\$ 278.57	\$ 328.48	\$ 381.75
New Sewer Charges	-	-	27.00	29.00
Sewer DSIC	14.34	20.89	26.66	30.81
<b>Total Monthly Bill</b>	<b>\$ 301.17</b>	<b>\$ 299.46</b>	<b>\$ 382.14</b>	<b>\$ 441.56</b>
\$ Change		\$ (1.71)	\$ 82.68	\$ 59.42
% Change		<i>-0.6%</i>	<i>27.6%</i>	<i>15.5%</i>

Exhibits  
HJS-1SW to HJS-13SW  
(Stormwater Schedules)

**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 FPFTY Stormwater Revenue Requirements

HJS-1SW

	<b>2024 FPFTY Revenue Requirements</b>
<b>Stormwater Revenue Requirements</b>	
<u>Operating Expenses</u>	
<i>Direct Operating Expenses</i>	
Administrative Division	
Executive Director	\$ 486,323
Customer Service	3,398,059
Management Information Systems	1,109,457
Finance	1,588,198
Procurement	-
Human Resources	355,019
Legal	614,434
Safety & Security	341,197
Public Affairs	277,310
Operations Division	
Environmental Compliance	1,507,555
Ops Capital Assets	-
Warehouse	82,002
Water Treatment Plant	-
Water Quality (Lab)	-
Water Distribution	-
Sewer Operations	5,970,047
Engineering & Construction Division	
Engineering & Construction	5,741,630
<i>Subtotal: Direct Operating Expenses</i>	\$ 21,471,231
<i>Other Operating Expenses</i>	
Loss / (Gain) on ALCOSAN Billings	\$ -
<i>Subtotal: Other Operating Expenses</i>	\$ -
<i>Subtotal: Operating Expenses</i>	\$ 21,471,231
<u>Debt Service</u>	
Existing Debt	14,635,683
Proposed Debt	2,099,203
<i>Subtotal: Debt Service</i>	\$ 16,734,886
<u>Capital Expenditures &amp; Transfers</u>	
Internally Generated Funds / PAYGO	\$ -
Internally Generated Funds / PAYGO - DSIC	-
Other Transfers to Reserves	110,000
Bad Debt Expense	1,533,142
Stormwater Credit Program Cost	180,489
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	\$ 1,643,142
<b>Total: Stormwater Revenue Requirements</b>	<b>\$ 40,029,748</b>
<i>Capital Costs to be Recovered through DSIC</i>	-
<b>Total: Stormwater System Base Rate Revenue Requirement</b>	<b>\$ 40,029,748</b>

**Pittsburgh Water and Sewer Authority**

HJS-2SW

*FPFTY 2024 COS & Rate Design Model*

Net Revenue Requirements

**FY 2024**

*Proposed*

**Determination of Revenue Requirement**

Operating Expenses \$ 21,471,231

Debt Service

Existing \$ 14,635,683

Proposed 2,099,203

*Subtotal: Debt Service* \$ 16,734,886

Other Capital Costs

Internally Generated Funds / PAYGO \$ -

Internally Generated Funds / PAYGO - DSIC -

Other Transfers to Reserves 110,000

Bad Debt Expense (1) 1,533,142

Stormwater Credit Program Cost (1) 180,489

*Subtotal: Other Capital Costs* \$ 1,823,631

*Total: Revenue Requirements* **\$ 40,029,748**

Revenue Offsets

Allocated Offsets \$ (698,179)

Less: Gradualism Adjustment (9,500,000)

*Total: Net Revenue Requirements for Ratemaking* **\$ 29,831,569**

(1) Varies based on level of revenue requirement and fee.

**Units of Service**

<u>Billable Units - Non Stormwater Only</u>	<u>Parcels</u>	<u>Equivalencies</u>	<u>Equivalent Units</u>
Residential Rate (per ERU)			
Tier 1	11,231	0.5	5,615
Tier 2	58,537	1.0	58,537
Tier 3	12,782	2.0	25,564
Other	-	1.0	-
<i>Subtotal: Residential Units</i>	<u>82,550</u>		<u>89,716</u>
Residential - CAP			
Tier 1	1,457	0.5	729
Tier 2	5,658	1.0	5,658
Tier 3	669	2.0	1,338
Other	-	1.0	-
<i>Subtotal: Residential - CAP Units</i>	<u>7,784</u>		<u>7,725</u>
Commercial	15,670	1.0	71,110
Industrial	76	1.0	1,512
Health or Education	1,049	1.0	11,595
Municipal	967	1.0	6,021
Other	22,464	1.0	28,126
<i>Subtotal: Billable Units - Non Stormwater Only</i>	<u>130,560</u>		<u>215,805</u>
<u>Stormwater Only</u>			
Residential - SW Only			
Tier 1	407	0.5	204
Tier 2	599	1.0	599
Tier 3	121	2.0	242
Other	-	1.0	-
<i>Subtotal: Residential - SW Only</i>	<u>1,127</u>		<u>1,045</u>
Non-Residential	<u>10,730</u>	1.0	<u>32,026</u>
<i>Subtotal: Stormwater Only</i>	<u>11,857</u>		<u>33,071</u>
<i>Total: Billable Units</i>	<b>142,417</b>		<b>248,876</b>



**Pittsburgh Water and Sewer Authority**

HJS-4SW

*FPFTY 2024 COS & Rate Design Model*

Stormwater COS by Customer Class

		<b><u>FY 2024</u></b>
		COS
Stormwater Revenue Requirements	\$	40,029,748
Less: Allocated Offsets		(698,179)
<i>Net Stormwater Revenue Requirements</i>	\$	<u>39,331,569</u>
Stormwater ERUs		<u>248,876</u>
<b>Annual Stormwater Cost per ERU</b>	<b>\$</b>	<b>158.04</b>

Customer Class Cost of Service	ERUs	Full COS Rate		COS by Class	% by Class
		Unit Rate	Unit Rate (Monthly)		
Residential	90,761	\$ 158.04	\$ 13.17	\$ 14,343,579	36.5%
Residential - CAP	7,725	158.04	13.17	1,220,834	3.1%
Commercial	103,136	158.04	13.17	16,299,284	41.4%
Industrial	1,512	158.04	13.17	238,952	0.6%
Health or Education	11,595	158.04	13.17	1,832,437	4.7%
Municipal	6,021	158.04	13.17	951,540	2.4%
Other	28,126	158.04	13.17	4,444,943	11.3%
	<u>248,876</u>			<u>\$ 39,331,569</u>	<u>100.0%</u>

**Pittsburgh Water and Sewer Authority**  
*FPPTY 2024 COS & Rate Design Model*  
 Adjustments to Cost of Service - Stormwater

HJS-5SW

<b>COS Adjustments</b>		Allocation Method	Residential	Residential - CAP	Commercial	Industrial	Health or Education	Municipal	Other	Total
<b>Adjustments to Cost of Service</b>										
Gradualism - Between WW/Storm	Unadj. COS		36.5%	3.1%	41.4%	0.6%	4.7%	2.4%	11.3%	100.0%
Add: Bad Debt Expense	Unadj. COS		36.5%	3.1%	41.4%	0.6%	4.7%	2.4%	11.3%	100.0%
Add: Bad Debt Expense (SWO)	Unadj. COS (Weighted by SWO)		2.9%	0.2%	66.4%	1.0%	7.5%	3.9%	18.1%	100.0%
Add: Cost of Credits and Incentives	Unadj. COS		36.5%	3.1%	41.4%	0.6%	4.7%	2.4%	11.3%	100.0%
BDP Forgone Revenue	Unadj. COS		37.6%		42.8%	0.6%	4.8%	2.5%	11.7%	100.0%
<b>Cost of Service by Class</b>										
Allocated Cost of Service (Unadjusted)			\$ 14,343,579	\$ 1,220,834	\$ 16,299,284	\$ 238,952	\$ 1,832,437	\$ 951,540	\$ 4,444,943	\$ 39,331,569
Exclude: Bad Debt & Credit Program			(624,933)	(53,190)	(710,141)	(10,411)	(79,837)	(41,457)	(193,661)	(1,713,631)
Net Cost of Service (1)			\$ 13,718,646	\$ 1,167,644	\$ 15,589,143	\$ 228,541	\$ 1,752,600	\$ 910,082	\$ 4,251,282	\$ 37,617,938
<i>% of COS</i>			36.5%	3.1%	41.4%	0.6%	4.7%	2.4%	11.3%	100.0%
<b>Adjustments to Cost of Service</b>										
Gradualism - Between WW/Storm	Adjustment	\$ (9,500,000)	\$ (3,464,494)	\$ (294,876)	\$ (3,936,868)	\$ (57,715)	\$ (442,600)	\$ (229,831)	\$ (1,073,615)	\$ (9,500,000)
Add: Bad Debt Expense (NSWO)		573,351	209,092	17,797	237,601	3,483	26,712	13,871	64,796	573,351
Add: Bad Debt Expense (SWO)		959,791	27,949	2,379	637,417	9,345	71,661	37,212	173,829	959,791
Add: Cost of Credits and Incentives		180,489	65,821	5,602	74,796	1,097	8,409	4,367	20,397	180,489
BDP Forgone Revenue		808,292	304,213	(808,292)	345,692	5,068	38,864	20,181	94,273	-
<b>Total: Adjusted Cost of Service</b>			<b>\$10,861,227</b>	<b>\$ 90,254</b>	<b>\$12,947,780</b>	<b>\$ 189,818</b>	<b>\$ 1,455,646</b>	<b>\$ 755,881</b>	<b>\$ 3,530,962</b>	<b>\$ 29,831,569</b>
<i>% of COS</i>			36.4%	0.3%	43.4%	0.6%	4.9%	2.5%	11.8%	100.0%

(1) Net Cost of Service excludes Bad Debt Expense and Cost of Credits and Incentives since these costs vary based on the amount of the Stormwater fee.

**Pittsburgh Water and Sewer Authority**  
 FPFTY 2024 COS & Rate Design Model  
 Stormwater Rate Design

HJS-6SW

**Unit Cost for Ratemaking**

**FY 2024**

Net Stormwater Revenue Requirements	\$ 29,831,569
Add: Cost of BDP Forgone Revenue	808,292
Net Costs to Recover for Ratemaking	<u>\$ 30,639,860</u>
Stormwater ERUs	<u>248,876</u>
<b>Annual Stormwater Cost per ERU for Ratemaking</b>	<b>\$ 123.11</b>
<b>Monthly Stormwater Charge per ERU</b>	<b>\$ 10.26</b>

**Monthly Stormwater Rates**

	Units	Proposed Rate (\$/ERU)	Revenues	Class COS	Difference (\$)	Difference (%)
<u>Residential</u>						
Tier 1	11,638	\$ 5.13	\$ 716,435			
Tier 2	59,136	10.26	7,280,824			
Tier 3	12,903	20.52	3,177,235			
Other	-	10.26	-			
<i>Subtotal: Residential</i>	<u>83,677</u>		<u>11,174,494</u>	\$ 10,861,227	\$ 313,267	2.8%
<u>Residential - CAP</u>						
Tier 1	1,457	\$ 0.77	\$ 13,463			
Tier 2	5,658	1.54	104,560			
Tier 3	669	3.08	24,726			
Other	-	1.54	-			
<i>Subtotal: Residential - CAP</i>	<u>7,784</u>		<u>142,749</u>	\$ 90,254	\$ 52,494	36.8%
<u>Non-Residential</u>						
Commercial	103,136	\$ 10.26	\$ 12,698,104			
Industrial	1,512	10.26	186,157			
Health or Education	11,595	10.26	1,427,576			
Municipal	6,021	10.26	741,306			
Other	28,126	10.26	3,462,873			
<i>Subtotal: Non-Residential</i>	<u>150,390</u>		<u>18,516,017</u>	\$ 18,880,087	\$ (364,071)	-2.0%
<i>Total Stormwater</i>	<u>241,851</u>		<u>29,833,260</u>	\$ 29,831,569	\$ 1,691	0.0%

	Unadjusted COS		Revenue at Existing Rates		Revenue at Proposed Rates		Proposed Increase	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
<b>Base Rate Revenues</b>								
Residential	\$ 14,343,579	36.5%	\$ 8,659,298	37.5%	\$ 11,174,494	37.5%	\$ 2,515,197	29.0%
Residential - CAP	1,220,834	3.1%	111,233	0.5%	142,749	0.5%	31,516	28.3%
Commercial	16,299,284	41.4%	9,839,174	42.6%	12,698,104	42.6%	2,858,930	29.1%
Industrial	238,952	0.6%	144,245	0.6%	186,157	0.6%	41,913	29.1%
Health or Education	1,832,437	4.7%	1,106,163	4.8%	1,427,576	4.8%	321,413	29.1%
Municipal	951,540	2.4%	574,403	2.5%	741,306	2.5%	166,902	29.1%
Other	4,444,943	11.3%	2,683,220	11.6%	3,462,873	11.6%	779,653	29.1%
<b>Subtotal: Base Rate Revenues</b>	<b>\$ 39,331,569</b>	<b>100.0%</b>	<b>\$ 23,117,736</b>	<b>100.0%</b>	<b>\$ 29,833,260</b>	<b>100.0%</b>	<b>\$ 6,715,523</b>	<b>29.0%</b>
<b>DSIC Revenues</b>								
Residential	n/a	n/a	\$ -	0.0%	\$ -	0.0%	-	0.0%
Residential - CAP	n/a	n/a	-	0.0%	-	0.0%	-	0.0%
Commercial	n/a	n/a	-	0.0%	-	0.0%	-	0.0%
Industrial	n/a	n/a	-	0.0%	-	0.0%	-	0.0%
Health or Education	n/a	n/a	-	0.0%	-	0.0%	-	0.0%
Municipal	n/a	n/a	-	0.0%	-	0.0%	-	0.0%
<b>Subtotal: DSIC revenues</b>	<b>\$ -</b>	<b>0.0%</b>	<b>\$ -</b>	<b>0.0%</b>	<b>\$ -</b>	<b>0.0%</b>	<b>\$ -</b>	<b>0.0%</b>
<b>Total: User Charge Revenues</b>	<b>\$ 39,331,569</b>		<b>\$ 23,117,736</b>		<b>\$ 29,833,260</b>		<b>\$ 6,715,523</b>	<b>100.0%</b>
<b>Other Revenues</b>	698,179		698,179		698,179		-	0.0%
<b>Total: Stormwater Conveyance Revenues</b>	<b>\$ 40,029,748</b>		<b>\$ 23,815,916</b>		<b>\$ 30,531,439</b>		<b>\$ 6,715,523</b>	<b>100.0%</b>

	2024 Revenue @ Existing Rates			2024 Revenue @ COS Rates			2024 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenue</b>									
<u>Non-Stormwater Only</u>									
Residential									
Tier 1	11,231	\$ 3.98	\$ 536,393	11,231	\$ 6.58	\$ 887,456	11,231	\$ 5.13	\$ 691,380
Tier 2	58,537	7.95	5,584,430	58,537	13.17	9,251,001	58,537	10.26	7,207,075
Tier 3	12,782	15.90	2,438,806	12,782	26.34	4,040,053	12,782	20.52	3,147,440
Other	-	7.95	-	-	13.17	-	-	10.26	-
<i>Subtotal: Residential</i>	82,550		\$ 8,559,628	82,550		\$ 14,178,509	82,550		\$ 11,045,895
Residential - CAP									
Tier 1	1,457	\$ 0.60	\$ 10,490	1,457	\$ 6.58	\$ 115,130	1,457	\$ 0.77	\$ 13,463
Tier 2	5,658	1.20	81,475	5,658	13.17	894,172	5,658	1.54	104,560
Tier 3	669	2.40	19,267	669	26.34	211,453	669	3.08	24,726
Other	-	1.20	-	-	13.17	-	-	1.54	-
<i>Subtotal: Residential - CAP</i>	7,784		\$ 111,233	7,784		\$ 1,220,755	7,784		\$ 142,749
Non-Residential									
Commercial	71,110	\$ 7.95	\$ 6,783,894	71,110	\$ 13.17	\$ 11,237,997	71,110	\$ 10.26	\$ 8,755,063
Industrial	1,512	7.95	144,245	1,512	13.17	238,952	1,512	10.26	186,157
Health or Education	11,595	7.95	1,106,163	11,595	13.17	1,832,437	11,595	10.26	1,427,576
Municipal	6,021	7.95	574,403	6,021	13.17	951,540	6,021	10.26	741,306
Other	28,126	7.95	2,683,220	28,126	13.17	4,444,943	28,126	10.26	3,462,873
<i>Subtotal: Non-Residential</i>	118,364		\$ 11,291,926			\$ 18,705,869	118,364		\$ 14,572,976
<i>Subtotal: Non-Stormwater Only</i>			\$ 19,962,786			\$ 34,105,133			\$ 25,761,620
<u>Stormwater Only</u>									
Residential - SW Only									
Tier 1	407	\$ 3.98	\$ 19,438	407	\$ 6.58	\$ 32,160	407	\$ 5.13	\$ 25,055
Tier 2	599	7.95	57,145	599	13.17	94,664	599	10.26	73,749
Tier 3	121	15.90	23,087	121	26.34	38,245	121	20.52	29,795
Other	-	7.95	-	-	13.17	-	-	10.26	-
<i>Subtotal: Residential - SW Only</i>	1,127		\$ 99,670	1,127		\$ 165,069	1,127		\$ 128,599
Non-Residential	32,026	7.95	3,055,280	32,026	13.17	5,061,287	32,026	10.26	3,943,041
<i>Subtotal: Stormwater Only</i>			\$ 3,154,950			\$ 5,226,356			\$ 4,071,640
<b>Stormwater User Charge Revenue</b>			\$ 23,117,736			\$ 39,331,490			\$ 29,833,260
<b>DSIC Revenues</b>									
Residential			\$ -			\$ -			\$ -
Non-Residential			-			-			-
<i>Subtotal: DSIC Revenues</i>			\$ -			\$ -			\$ -
<b>Other Revenues</b>									
Other Revenues			698,179			698,179			698,179
<b>Total: System Revenues</b>			\$ 23,815,916			\$ 40,029,669			\$ 30,531,439
<b>FPPTY Stormwater Revenue Requirements</b>						\$ 40,029,748			\$ 30,529,748
<b>Difference</b>						\$ (79)			\$ 1,691

**Pittsburgh Water and Sewer Authority**  
*FPFTY 2024 COS & Rate Design Model*  
 2025 and 2026 Stormwater Revenue Requirements

HJS-9SW

	<b>2025</b>	<b>2026</b>
	<b>Revenue Requirements</b>	<b>Revenue Requirements</b>
<b>Stormwater Revenue Requirements</b>		
<u>Operating Expenses</u>		
<i>Direct Operating Expenses</i>		
Administrative Division		
Executive Director	\$ 511,924	\$ 544,175
Customer Service	3,642,506	3,913,045
Management Information Systems	1,061,273	1,129,481
Finance	1,678,494	1,782,362
Procurement	-	-
Human Resources	435,720	461,583
Legal	648,711	688,958
Safety & Security	360,469	385,044
Public Affairs	325,377	345,744
Operations Division		
Environmental Compliance	1,593,390	1,691,579
Ops Capital Assets	-	-
Warehouse	86,762	93,637
Water Treatment Plant	-	-
Water Quality (Lab)	-	-
Water Distribution	-	-
Sewer Operations	7,211,721	8,824,340
Engineering & Construction Division		
Engineering & Construction	5,902,574	6,264,330
<i>Subtotal: Direct Operating Expenses</i>	\$ 23,458,921	\$ 26,124,277
<i>Other Operating Expenses</i>		
Loss / (Gain) on ALCOSAN Billings	\$ -	\$ -
City Services	-	-
Non-City Water Payments	-	-
<i>Subtotal: Other Operating Expenses</i>	\$ -	\$ -
<i>Subtotal: Operating Expenses</i>	\$ 23,458,921	\$ 26,124,277
<u>Debt Service</u>		
Existing Debt	14,804,837	15,022,465
Proposed Debt	4,247,298	5,268,314
<i>Subtotal: Debt Service</i>	\$ 19,052,135	\$ 20,290,779
<u>Capital Expenditures &amp; Transfers</u>		
Internally Generated Funds / PAYGO	\$ 209,276	\$ 1,017,221
Internally Generated Funds / PAYGO - DSIC	-	-
Other Transfers to Reserves	770,000	1,870,000
Bad Debt Expense	1,846,195	2,174,058
Stormwater Credit Program Cost	212,102	241,305
<i>Subtotal: Capital Expenditures &amp; Transfers</i>	\$ 2,825,471	\$ 5,061,279
<b>Total: Stormwater Revenue Requirements</b>	<b>\$ 45,548,629</b>	<b>\$ 51,717,641</b>

**Pittsburgh Water and Sewer Authority**  
*FPFTY 2024 COS & Rate Design Model*  
 Revenue Increase Needed for 2025 and 2026

HJS-10SW

	<b><u>FY 2024</u></b>	<b><u>FY 2025</u></b>	<b><u>FY 2026</u></b>
Revenue Requirement	\$ 40,029,748	\$ 45,548,629	\$ 51,717,641
Stormwater Gradualism	(9,500,000)	(8,500,000)	(8,500,000)
Offsetting Misc Revenue	(698,179)	(712,143)	(726,386)
	<hr/>	<hr/>	<hr/>
Net Rate Revenue Requirement	\$ 29,831,569	\$ 36,336,487	\$ 42,491,255
<i>Increase</i>		<i>21.81%</i>	<i>16.94%</i>
Revenue at Existing Rates	\$ 23,303,779	\$ 29,833,260	\$ 36,341,353
<b>Net Rate Revenue Need</b>	<b>\$ 6,527,790</b>	<b>\$ 6,503,227</b>	<b>\$ 6,149,902</b>
<i>Increase</i>	<i>28.01%</i>	<i>21.80%</i>	<i>16.92%</i>
Offsetting New Charge Revenue			
Infrastructure Improvement Charge	\$ -	\$ -	\$ -
Customer Assistance Charge	\$ -	\$ 1,041,772	\$ 1,215,401
	<hr/>	<hr/>	<hr/>
Subtotal New Charge Revenue	\$ -	\$ 1,041,772	\$ 1,215,401
Incremental Revenue Applied	\$ -	\$ 1,041,772	\$ 173,629
<b>Net Retail Base Rate Increase Nee</b>	<b>\$ 6,527,790</b>	<b>\$ 5,461,454</b>	<b>\$ 5,976,273</b>
<i>Increase</i>	<i>28.01%</i>	<i>18.31%</i>	<i>16.93%</i>





	2024 Revenue @ Proposed Rates			2025 Revenue @ Proposed Rates			2026 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
<b>Base Rate Revenue</b>									
<u>Non-Stormwater Only</u>									
Residential									
Tier 1	11,231	\$ 5.13	\$ 691,380	11,231	\$ 6.07	\$ 818,066	11,231	\$ 7.10	\$ 956,881
Tier 2	58,537	10.26	7,207,075	58,537	12.14	8,527,670	58,537	14.20	9,974,705
Tier 3	12,782	20.52	3,147,440	12,782	24.28	3,724,164	12,782	28.40	4,356,106
Other	-	10.26	-	-	12.14	-	-	14.20	-
<i>Subtotal: Residential</i>	82,550		\$ 11,045,895	82,550		\$ 13,069,900	82,550		\$ 15,287,692
Residential - CAP									
Tier 1	1,457	\$ 0.77	\$ 13,463	1,457	\$ 0.91	\$ 15,910	1,457	\$ 1.06	\$ 18,533
Tier 2	5,658	1.54	104,560	5,658	1.82	123,571	5,658	2.13	144,618
Tier 3	669	3.08	24,726	669	3.64	29,222	669	4.26	34,199
Other	-	1.54	-	-	1.82	-	-	2.13	-
<i>Subtotal: Residential - CAP</i>	7,784		\$ 142,749	7,784		\$ 168,703	7,784		\$ 197,351
Non-Residential									
Commercial	71,110	\$ 10.26	\$ 8,755,063	71,110	\$ 12.14	\$ 10,359,305	71,110	\$ 14.20	\$ 12,117,144
Industrial	1,512	10.26	186,157	1,512	12.14	220,268	1,512	14.20	257,645
Health or Education	11,595	10.26	1,427,576	11,595	12.14	1,689,160	11,595	14.20	1,975,788
Municipal	6,021	10.26	741,306	6,021	12.14	877,139	6,021	14.20	1,025,978
Other	28,126	10.26	3,462,873	28,126	12.14	4,097,396	28,126	14.20	4,792,670
<i>Subtotal: Non-Residential</i>	118,364		\$ 14,572,976	118,364		\$ 17,243,268			\$ 20,169,226
<i>Subtotal: Non-Stormwater Only</i>			\$ 25,761,620			\$ 30,481,870			\$ 35,654,268
<u>Stormwater Only</u>									
Residential - SW Only									
Tier 1	407	\$ 5.13	\$ 25,055	407	\$ 6.07	\$ 29,646	407	\$ 7.10	\$ 34,676
Tier 2	599	10.26	73,749	599	12.14	87,262	599	14.20	102,070
Tier 3	121	20.52	29,795	121	24.28	35,255	121	28.40	41,237
Other	-	10.26	-	-	12.14	-	-	14.20	-
<i>Subtotal: Residential - SW Only</i>	1,127		\$ 128,599	1,127		\$ 152,163	1,127		\$ 177,983
Non-Residential	32,026	10.26	\$ 3,943,041	32,026	12.14	4,665,548	32,026	14.20	5,457,230
<i>Subtotal: Stormwater Only</i>			\$ 4,071,640			\$ 4,817,710			\$ 5,635,213
<u>Customer Assistance Charge</u>									
Residential	90,761	\$ -	\$ -	90,761	\$ 0.36	\$ 392,088	90,761	\$ 0.42	\$ 457,435
Residential - CAP	7,725	-	-	7,725	-	-	7,725	-	-
Commercial	103,136	-	-	103,136	0.36	445,548	103,136	0.42	519,805
Industrial	1,512	-	-	1,512	0.36	6,532	1,512	0.42	7,620
Health or Education	11,595	-	-	11,595	0.36	50,090	11,595	0.42	58,439
Municipal	6,021	-	-	6,021	0.36	26,011	6,021	0.42	30,346
Other	28,126	-	-	28,126	0.36	121,504	28,126	0.42	141,755
<i>Subtotal: Customer Assistance Charge</i>	248,876		\$ -	248,876		\$ 1,041,772			\$ 1,215,401
<b>Stormwater User Charge Revenue</b>			\$ 29,833,260			\$ 36,341,353			\$ 42,504,882
<b>DSIC Revenues</b>									
Residential			\$ -			\$ -			\$ -
Non-Residential			-			-			-
<i>Subtotal: DSIC Revenues</i>			\$ -			\$ -			\$ -
<b>Other Revenues</b>									
Other Revenues			698,179			712,143			726,386
<b>Total: System Revenues</b>			\$ 30,531,439			\$ 37,053,496			\$ 43,231,268
<b>FPPTY Stormwater Revenue Requirements</b>			\$ -			\$ 37,048,629			\$ 43,217,641
<b>Difference</b>						\$ 4,866			\$ 13,627

**Pittsburgh Water and Sewer Authority**  
**FPFTY 2024 COS & Rate Design Model**  
 Typical Bill Comparison

HJS-13SW

	<b>FTY 2023</b>	<b>FPFTY 2024</b>	<b>2025</b>	<b>2026</b>
<b>Customer Impacts</b>				
<u>Residential - 1 ERU</u>				
Stormwater Base Rates	\$ 7.95	\$ 10.26	\$ 12.14	\$ 14.20
New Stormwater Charges	-	-	0.36	0.42
Stormwater DSIC	-	-	-	-
<b>Total Monthly Bill</b>	<b>\$ 7.95</b>	<b>\$ 10.26</b>	<b>\$ 12.50</b>	<b>\$ 14.62</b>
\$ Change		\$ 2.31	\$ 2.24	\$ 2.12
% Change		29.1%	21.8%	17.0%
<u>Commercial - 8 ERU</u>				
Stormwater Base Rates	\$ 63.60	\$ 82.08	\$ 97.12	\$ 113.60
New Stormwater Charges	-	-	2.88	3.36
Stormwater DSIC	-	-	-	-
<b>Total Monthly Bill</b>	<b>\$ 63.60</b>	<b>\$ 82.08</b>	<b>\$ 100.00</b>	<b>\$ 116.96</b>
\$ Change		\$ 18.48	\$ 17.92	\$ 16.96
% Change		29.1%	21.8%	17.0%
<u>Industrial - 30 ERU</u>				
Stormwater Base Rates	\$ 238.50	\$ 307.80	\$ 364.20	\$ 426.00
New Stormwater Charges	-	-	10.80	12.60
Stormwater DSIC	-	-	-	-
<b>Total Monthly Bill</b>	<b>\$ 238.50</b>	<b>\$ 307.80</b>	<b>\$ 375.00</b>	<b>\$ 438.60</b>
\$ Change		\$ 69.30	\$ 67.20	\$ 63.60
% Change		29.1%	21.8%	17.0%
<u>Health or Education - 32 ERU</u>				
Stormwater Base Rates	\$ 254.40	\$ 328.32	\$ 388.48	\$ 454.40
New Stormwater Charges	-	-	11.52	13.44
Stormwater DSIC	-	-	-	-
<b>Total Monthly Bill</b>	<b>\$ 254.40</b>	<b>\$ 328.32</b>	<b>\$ 400.00</b>	<b>\$ 467.84</b>
\$ Change		\$ 73.92	\$ 71.68	\$ 67.84
% Change		29.1%	21.8%	17.0%

**VERIFICATION**

I, Harold J. Smith, hereby state that: (1) I am a Vice President of Raftelis Financial Consultants, Inc.; (2) I have been retained by The Pittsburgh Water and Sewer Authority (“PWSA”) and am authority to present testimony on its behalf; (3) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (4) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Dated: 05/03/2023 | 8:03 AM PDT  
\_\_\_\_\_

DocuSigned by:  
*Harold J. Smith*  
39798602E9BB445...  
\_\_\_\_\_  
Harold J. Smith, Vice President  
Raftelis Financial Consultants, Inc.

Consultant to:  
The Pittsburgh Water and Sewer Authority



BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

**KEITH READLING**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)

R-2023-3039921 (Wastewater)

R-2023-3039919 (Stormwater)

TOPICS:

Stormwater Program Revenue Requirements  
Identifying Impervious Area  
Stormwater Fee Structure, Stormwater Fee Billing,  
Stormwater Credit Program

May 9, 2023

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**TABLE OF EXHIBITS**

Appendix A	Resume of K. Reading
Exhibit KR-1	Technical Memorandum #4 – Revenue Requirements, prepared by Black & Veatch for PWSA, dated August 1, 2013
Exhibit KR-2	Stormwater Fee Credit Manual Proposed Revisions to be Effective 2/8/24

1     **I.     INTRODUCTION**

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

3     A.     My name is Keith Readling. My business address is 807 E Main Street, Suite 6-050,  
4             Durham NC 27701.

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

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

12    **Q.     PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK**  
13    **EXPERIENCE.**

14    A.     I obtained a Bachelor of Science degree in Civil Engineering from North Carolina State  
15             University in 1985 and am a registered Professional Engineer in North Carolina. My  
16             engineering license is inactive as I do not practice engineering. I have more than 35  
17             years of experience in municipal stormwater management and civil engineering. As an  
18             executive and leader of Raftelis' Stormwater Management Consulting Division, I work  
19             with entities across the United States with a focus on stormwater utility development and  
20             implementation, as well as stormwater program and financial planning. I have consulted  
21             with many of the largest and most complex stormwater utilities in the country and have  
22             assisted with the establishment of about 50 stormwater utilities in at least 16 different  
23             states, serving as lead consultant for many of those projects. Additionally, I have  
24             managed the development of more than 30 stormwater utility impervious area or intensity

1 of development databases and utility billing and collections or integration systems to  
2 support the connectivity of geographic billing data to legacy account-based billing  
3 systems.

4 A complete description of my background and experience is set forth in Appendix  
5 A to this testimony.

6 **Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA**  
7 **PUBLIC UTILITY COMMISSION (“PUC” OR “COMMISSION”)?**

8 A. Yes. I presented written Direct, Supplemental Direct, Rebuttal and Rejoinder testimony  
9 in support of PWSA’s most recent rate case at Docket Numbers R-2021-3024773 (water),  
10 R-2021-3024774 (wastewater), and R-2021-3024779 (stormwater). I also presented  
11 written Direct Testimony in support of PWSA’s Compliance Plan Stage 2 Stormwater  
12 Proceeding at Docket Nos. M-2018-2640802 and M-2018-2640803.

13 **Q. PLEASE DESCRIBE YOUR WORK WITH THE PITTSBURGH WATER AND**  
14 **SEWER AUTHORITY (“PWSA”).**

15 A. Initially and up through the original tariff filing, I assisted PWSA with developing its  
16 stormwater rates. This has included reviewing the development of stormwater revenue  
17 requirements, working with PWSA staff to plan rate structures, billing policies and  
18 procedures, data development, and overseeing stormwater billing information and  
19 software development. Since the fee went into place, I have assisted PWSA staff with  
20 technical matters relating to customer service and inquiry response, evaluation of the  
21 credits program, quality control review of billing data, and related matters.

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

23 A. The purpose of my testimony is to describe PWSA’s existing stormwater fee, how it was  
24 developed, some minor modifications to the credits program, and answer some technical  
25 questions.



1 **Q. HOW DOES YOUR TESTIMONY RELATE TO THAT OF OTHER PWSA**  
2 **WITNESSES?**

3 A. Mr. Igwe describes PWSA's stormwater system and provides an overview of PWSA's  
4 original stormwater fee proposal. Mr. Smith's testimony describes how the stormwater  
5 revenue requirements were determined and also addresses proposed adjustments to arrive  
6 at the proposed stormwater fee. Ms. Mechling's testimony provides information related  
7 to stormwater and customer service issues and she sponsors the proposed Stormwater  
8 Tariff Supplement No. 3 which sets forth the new proposed rates, the proposed  
9 Infrastructure Improvement Charge (IIC) and Customer Assistance Charge (CAC) and  
10 updates the tariff text regarding the credits program as I will discuss later. My testimony  
11 describes how PWSA developed the stormwater fee and provides other details as to how  
12 it was implemented and how changes to the credit program are proposed.

13 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

14 A. Yes. Exhibit KR-1 is a technical memorandum on revenue requirements, prepared by  
15 Black & Veatch for PWSA dated August 1, 2013. Exhibit KR-2 is an updated version of  
16 the PWSA Credit Manual.<sup>1</sup> I also assisted with the development of information  
17 reflecting units of service, credit program costs and gradualism.

18

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<sup>1</sup> PWSA Exhs. JAM-15 (clean) and JAM-16 (red-lined) sponsored by Ms. Mechling set forth these proposals in the tariffs.

1     **II.     STORMWATER PROGRAM REVENUE REQUIREMENTS**

2     **Q.     WHAT ARE THE REVENUE REQUIREMENTS THAT FORM THE BASIS FOR**  
 3     **THE STORMWATER RATE CALCULATION?**

4     A.     The stormwater program revenue requirements are the total costs associated with  
 5           stormwater management, including flood control, strategic planning, and water quality  
 6           related regulatory compliance. The way in which the stormwater revenue requirements  
 7           were determined is described in the testimony of Harold Smith. As shown on HJS-1SW,  
 8           the revenue requirements for FY2024 total approximately \$40.0 million. This figure  
 9           includes:

- 10           • Costs associated with control of combined sewer overflows;
- 11           • Costs associated with separate storm sewer operation and maintenance;
- 12           • Rate-funded stormwater capital projects;
- 13           • 50% of costs associated with combined wastewater system maintenance and  
 14           existing debt service;
- 15           • Future debt service based on stormwater capital projects in the CIP; and
- 16           • Administrative costs shared between water, wastewater, and stormwater.

17     **Q.     HOW WERE CONVEYANCE AND DEBT SERVICE COSTS ALLOCATED**  
 18     **BETWEEN STORMWATER AND WASTEWATER RATES?**

19     A.     We looked at several methods for allocating conveyance and debt service costs between  
 20           stormwater and wastewater rates. We considered the relationship of stormwater peak  
 21           flow and total volume of stormwater to the volume of all flows in combined systems. For  
 22           the peak flow method, I reviewed work performed by Black & Veatch for PWSA in  
 23           2013<sup>2</sup> wherein the three largest storms during a “typical year” for the Pittsburgh region  
 24           were considered in terms of what portion of flows within combined sewers on those days  
 25           was stormwater. These three largest storms of the year suggest that during those storms,

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<sup>2</sup> Exhibit KR-1 – Technical Memorandum #4 – Revenue Requirements, prepared by Black & Veatch for PWSA, dated August 1, 2013.

1 stormwater accounted for about 70% of the total flow. Using this as the rationale for  
2 allocating O&M and debt service costs, 70% of the costs would be attributable to  
3 stormwater. We also approached the issue using a total volume method wherein we  
4 evaluated the total volume of stormwater contributed to the system based upon rainfall  
5 totals in a “typical year” and a “wet year.” Under this method, stormwater accounts for  
6 less than 20% of the flow, and thus less than 20% of costs would be allocated to  
7 stormwater.

8 During smaller rainfall events and dry weather, stormwater is a smaller fraction of  
9 the total flow, and during large (but rare) storm events, stormwater is a large portion of  
10 the flow. To balance the demand placed on the system by stormwater over time, I  
11 recommended allocating O&M and debt service costs for shared infrastructure evenly  
12 between the two services. An even split balances the peak flow and total flow allocation  
13 methodologies. Calculated rates are driven by the 50-50 split between sewer and  
14 stormwater for these shared infrastructure costs, which include gravity collection sewers,  
15 manholes, and power operated equipment.

16 **Q. DID PWSA ANTICIPATE THAT STORMWATER BILLS WOULD INITIALLY**  
17 **HAVE A HIGHER NON-PAYMENT RATE THAN WATER OR WASTEWATER**  
18 **SERVICE?**

19 A. Yes. We anticipated that stormwater-only bills (those on accounts without an existing  
20 water and/or wastewater service and, therefore, new PWSA customers) would have a  
21 higher non-payment rate than existing PWSA customers with water/wastewater bills.  
22 When impervious area fees were implemented by the Northeast Ohio Regional Sewer  
23 District and by the Philadelphia Water Department the collection rate for stormwater-  
24 only customers was significantly lower than for customers who also were already water  
25 and wastewater customers. Initially the collection rate for stormwater-only customers

1 averaged about 60% for these two utilities. There are a number of reasons for this. Many  
2 of these properties are economically stressed, and essentially all have absentee owners. In  
3 addition, PWSA has comparatively little leverage to collect on stormwater fees sent to  
4 these properties in the near-term. For stormwater fees being added onto existing  
5 water/wastewater bills, we continue to anticipate PWSA will have the same collection  
6 rate as for water/wastewater bills.

7 **Q. HOW DID YOU ACCOUNT FOR HIGHER RATES OF NON-PAYMENT FROM**  
8 **STORMWATER ONLY CUSTOMERS?**

9 A. In the initial rate case the Bad Debt Expense shown on HJS-2SW reflected a 40% rate of  
10 non-payment from stormwater only customers while the non-payment rate for existing  
11 water and wastewater customer was set at 2%. As of April 2023, the collection rate for  
12 stormwater only customers has increased to 70%, and this is anticipated to marginally  
13 improve to 75%, as reflected in the updated bad debt expense for the rate case.

14 **Q. WILL PWSA'S PROPOSED STORMWATER RATES RECOVER ALL OF THE**  
15 **REVENUE REQUIREMENTS ALLOCATED TO STORMWATER?**

16 A. No. The proposed rates will generate about 3/4 of the needed revenue to fund the full  
17 \$40.0 million stormwater program as described.

18 The under recovery of the total revenue requirement for stormwater through the  
19 stormwater fee is intentional and consistent with PWSA's use of the "gradualism"  
20 ratemaking practice. Gradualism is the easing of full stormwater costs in the stormwater  
21 rate in a measured way. As explained more by Ms. Mechling, gradualism is viewed by  
22 PWSA as a rate mitigation feature is an important feature of the overall rate request.  
23 Gradualism provides another benefit; it accounts for the fact that PWSA does not plan to  
24 dramatically expand its stormwater program in the near term; costs that were previously

1 recovered through the wastewater fee are shifting to the stormwater fee. Based on my  
2 experience implementing new stormwater rates, customers expect to see new projects or  
3 initiatives when charged a substantially higher overall fee. As PWSA is not dramatically  
4 enhancing its stormwater program, I did not advise PWSA to pursue full recovery of  
5 revenue requirements from the stormwater fee in the first year and I support the  
6 continued easing of the shift of costs from wastewater conveyance to stormwater as  
7 proposed in this filing.

### 8 **III. IDENTIFYING IMPERVIOUS AREA**

#### 9 **Q. WHAT IS IMPERVIOUS AREA?**

10 A. Impervious area is a hard surface that prevents or significantly impedes precipitation or  
11 snowmelt from soaking into the ground. When precipitation falls on an impervious area,  
12 it runs off the property rather than being absorbed into the ground. Impervious surfaces  
13 include areas such as rooftops and paved areas.

#### 14 **Q. WHY IS IMPERVIOUS AREA IMPORTANT TO THE DEVELOPMENT OF A** 15 **STORMWATER FEE?**

16 A. Impervious surface area is the most commonly used metric across the United States to  
17 charge for costs related to stormwater services like flood control and water quality  
18 management. Impervious surfaces, like sidewalks, rooftops and driveways, impede  
19 water's ability to infiltrate into the ground. Therefore, the more impervious area on a  
20 property, the more runoff the property generates and the greater the demand for the  
21 utility's stormwater conveyance, flood control and water quality management services.

#### 22 **Q. DID PWSA BASE ITS STORMWATER FEE ON IMPERVIOUS AREA?**

23 A. Yes. PWSA's stormwater fee is based on a property's impervious area.

1 **Q. WHAT IS AN EQUIVALENT RESIDENTIAL UNIT?**

2 A. An Equivalent Residential Unit (“ERU”) is the amount of impervious area found on a  
3 typical residential property in the service area. Based on parcel, land use, and existing  
4 water and wastewater account characteristics, properties that are classified as single  
5 family residential (“SFR”) in PWSA’s service territory include townhouses, row houses,  
6 mobile homes, single family homes, and two-, three- and four-family homes. These types  
7 of properties are substantially similar in their impervious area amounts, so it is reasonable  
8 to treat them similarly under the proposed residential rate structure. Under this definition,  
9 there are about 92,000 SFR parcels in Pittsburgh.

10 Using measured impervious area data, Raftelis performed a statistical analysis on  
11 the impervious area values for properties classified as SFR. The Raftelis team found that  
12 the median impervious area found on these SFR parcels is about 1,650 square feet, and  
13 this is the current ERU value.

14 The ERU is also the billing unit that is used to calculate the stormwater fee for  
15 other (non-SFR) properties.

16 **Q. HAS PWSA CALCULATED IMPERVIOUS AREA FOR ALL PARCELS IN ITS**  
17 **SERVICE TERRITORY?**

18 A. No. PWSA engaged Michael Baker International (“Michael Baker”) to capture  
19 impervious area on parcels containing impervious features that were visible in 2017  
20 Allegheny County imagery. While all currently mapped parcels were reviewed as part of  
21 this effort, not all parcels have impervious area and therefore impervious area was not  
22 determined for all parcels. During 2022 PWSA systematically updated the impervious  
23 areas based on newer aerial imagery and is now using building permits to identify parcels  
24 where changes may have been made in terms of constructed impervious features. The

1 Authority also updated the parcel polygons from Allegheny County. Updating  
2 impervious features and parcel polygons will be an ongoing effort by PWSA.

3 **Q. HOW DOES PWSA IDENTIFY AND CALCULATE IMPERVIOUS AREA?**

4 A. Initially, using ArcGIS mapping software, impervious area polygons were created on  
5 properties containing impervious features that were visible in 2017 Allegheny County  
6 imagery. This software and other similar software allow users to look at multiple layers  
7 of geographic data at once, for example, parcel polygons and aerial photos, then draw  
8 features that are seen in the overlay. The creation of impervious area polygons is done by  
9 humans who look at impervious features they see in the photos, like parking lots or  
10 buildings, and draw the outlines of these features with a mouse or other input device to  
11 create closed polygons. Later these polygons can be intersected topologically with parcel  
12 polygons to measure the area of features that fall on any given parcel.

13 These features had to meet PWSA's definition of 'impervious' – which includes  
14 sidewalks, rooftops and driveways – that prevent or impede water's ability to infiltrate  
15 into the ground. Excluded are public roadways and railroad ballast.

16 Michael Baker captured impervious surface features in separate geographic layer  
17 files based on feature type. Michael Baker and PWSA have completed quality  
18 assurance/quality checks ("QA/QC") on the data. Raftelis received the impervious area  
19 data from PWSA on October 16, 2020. Raftelis performed limited QA/QC on the data.

20 Also using ArcGIS, Raftelis merged the separate geographic layer files into one  
21 impervious feature layer, excluding the features described above. This impervious area  
22 layer was intersected with the current parcel layer to determine the impervious area on a  
23 per parcel basis. The impervious area and its relationship to parcel polygons undergo

1 ongoing QA/QC and are updated when new parcel polygons, new aerial imagery, or  
 2 customer research shows new or changed features.

3 **Q. IN CALCULATING IMPERVIOUS AREA, HAS PWSA IDENTIFIED PARCELS**  
 4 **THAT DO NOT CURRENTLY RECEIVE WATER OR WASTEWATER**  
 5 **SERVICE FROM PWSA THAT WILL BE CHARGED FOR STORMWATER**  
 6 **SERVICE?**

7 A. Yes. As part of this process, PWSA has identified parcels with impervious area that  
 8 cannot be associated with an existing PWSA water or wastewater account. These are  
 9 commonly called “stormwater-only” parcels as they first became PWSA customers with  
 10 the implementation of the stormwater fee in 2022 and are billed only for stormwater  
 11 service. There are approximately 6,000 stormwater-only parcels.

12  
 13 **IV. STORMWATER FEE STRUCTURE**

14 **Q. PLEASE PROVIDE AN OVERVIEW OF PWSA’S PROPOSED STORMWATER**  
 15 **FEE.**

16 A. As described above, PWSA is not proposing any changes to the current rate structure for  
 17 the stormwater fee and it will continue to be based on the amount of impervious area on a  
 18 property. Impervious surface area is the most common rate structure among those  
 19 communities with stormwater fees because it is a good surrogate for directly measuring a  
 20 ratepayer’s demand on the stormwater system. For residential customers, PWSA  
 21 implemented a three-tiered rate structure which is described in further detail below. For  
 22 non-residential customers, PWSA bills per ERU of impervious area.

23 **Q. PLEASE DESCRIBE THE STORMWATER FEE FOR SINGLE FAMILY**  
 24 **RESIDENTIAL CUSTOMERS.**

25 A. PWSA implemented a three-tiered rate structure for SFR customers. Statistical analysis  
 26 was performed by Raftelis to analyze and determine the most appropriate residential



1 tiering structure. Of the tiering structures considered, PWSA decided on a structure in  
 2 which the middle tier contains 70% of all the SFR properties, making it by far the largest  
 3 group. Properties with less than 1,015 square feet of impervious area are considered the  
 4 low tier and are billed for the median amount of impervious area found on parcels in that  
 5 tier, which is about 830 square feet of impervious area, or 0.5 ERUs. Properties in the  
 6 middle tier are billed for 1 ERU. Those properties with 2,710 square feet or more of  
 7 impervious area fall into the high tier and are billed for the median amount of impervious  
 8 area found on parcels in that tier, which is about 3,355 square feet of impervious area, or  
 9 2 ERUs.

10 **Q. WHAT TYPES OF PROPERTIES ARE CLASSIFIED AS “SINGLE FAMILY**  
 11 **RESIDENTIAL”?**

12 A. For purposes of the stormwater fee, residential customers include single family homes,  
 13 townhouses, rowhouses, mobile homes, and two-, three-, or four-family buildings.

14 **Q. WHY IS PWSA CONTINUING TO MAINTAIN A TIERED STORMWATER FEE**  
 15 **FOR SINGLE FAMILY RESIDENTIAL CUSTOMERS?**

16 A. The impervious area found on a residential lot in Pittsburgh varies from about 400 square  
 17 feet to more than 4,000 square feet. Using tiers instead of one flat rate allows PWSA to  
 18 differentiate among SFR ratepayers and maintain an equitable approach across the  
 19 various types of development and homes.

20 **Q. HOW DID PWSA DETERMINE THE APPROPRIATE BREAKPOINTS**  
 21 **BETWEEN THESE TIERS?**

22 A. We considered three tiering alternatives, where the middle tiers encompassed 50%, 60%  
 23 and 70% of the SFR properties, respectively. The 70% middle tier option was selected  
 24 because it recognized similarity among parcels within the center of the impervious area  
 25 frequency histogram with only significantly smaller and larger properties being included

1 in Tier 1 and Tier 3, respectively. A summary of the parcels and ERUs by tier is  
 2 presented on HJS-3SW.

3 **Q. WHAT TYPES OF PROPERTIES ARE CLASSIFIED AS “NON-SINGLE**  
 4 **FAMILY RESIDENTIAL”?**

5 A. Non-single-family residential properties are any properties not included in the definition  
 6 of single-family residential property described above. This includes apartment buildings,  
 7 commercial properties, industrial properties, condominiums, schools, and railroad  
 8 properties. Specifically, these properties are customers in the existing Commercial,  
 9 Industrial, and Health and Education Classes. City parcels are mostly non-residential  
 10 with the exception of those existing accounts already classified as Residential.

11 **Q. FOR NON-SINGLE-FAMILY RESIDENTIAL CUSTOMERS, HOW IS THE**  
 12 **TOTAL ERU DETERMINED?**

13 A. The ERUs for non-single-family residential customers are calculated by dividing the  
 14 impervious area on the property (in square feet) by the ERU value of 1,650 square feet.  
 15 This number is then rounded up to the nearest integer to provide their total ERU. A  
 16 summary of the parcels and ERUs is presented on HJS-3SW. To calculate a monthly  
 17 charge, the total ERU is multiplied by the per ERU fee to calculate the total monthly  
 18 stormwater charge.

19 **Q. WHY DOES PWSA CONTINUE TO SUPPORT THIS APPROACH FOR NON-**  
 20 **SINGLE-FAMILY RESIDENTIAL CUSTOMERS?**

21 A. This approach for non-single-family customers strikes a balance between fairness and  
 22 technical simplicity. While SFR properties are fairly similar in size and composition,  
 23 non-single-family properties can vary greatly among those categories and encompass a  
 24 wide range of customer classifications. A flat rate or tiered rate such as used with SFR  
 25 properties is not equitable across such a wide range of classifications.

1 **Q. HOW IS THE MONTHLY STORMWATER RATE DETERMINED?**

2 A. The process for calculating the stormwater rate to be assessed to all customers follows a  
3 similar process as the water and wastewater conveyance CCOSS presented in the Direct  
4 Testimony of PWSA witness, Mr. Smith.

5 First, the unadjusted cost of service rate is determined so that stormwater costs  
6 can be assigned to customer classes. The determination of cost of service by customer  
7 class is presented in HJS-4SW. Once the unadjusted cost of service by customer class is  
8 determined, appropriate adjustments are made to determine the adjusted cost of service  
9 by customer class, as presented on HJS-5SW. The adjustments, which are described  
10 throughout this testimony and the testimony of Mr. Smith, include:

- 11 • **Gradualism Between Sewer and Stormwater** – This adjustment reduces the  
12 total revenue requirement by \$9.5 million which helps mitigate customer  
13 impacts.
- 14 • **Bad Debt Expense** – Bad debt expense for stormwater-only and non-  
15 stormwater-only customers.
- 16 • **Cost of Credits and Incentives** – The credit program results in forgone  
17 revenue that must be recovered from all customer classes.
- 18 • **Cost of Bill Discount Program Forgone Revenue** – As specified in the  
19 Direct Testimony of Ms. Mechling, PWSA is continuing a 85% discount on  
20 the stormwater fee for enrolled CAP-BDP customers.

21 Once costs had been appropriately allocated to customer classes, Raftelis  
22 designed rates to recover the adjusted net stormwater revenue requirement. PWSA is  
23 proposing a uniform stormwater rate per ERU. The proposed rate is \$10.26 per ERU for  
24 the FPFTY. The rate design process and proposed rates for residential and non-residential  
25 customers are shown in HJS-6SW.

1 **Q. HOW ARE STORMWATER FEES DEVELOPED FOR YEARS TWO AND**  
2 **THREE OF THE MULTI-YEAR PLAN?**

3 A. Stormwater rates to recover the revenue requirements for FY 2025 and FY 2026 shown  
4 on Schedule HJS-9SW were developed in a manner similar to the way in which water  
5 and wastewater conveyance rates were developed for FY 2025 and FY 2026 as described  
6 in the testimony of Mr. Smith.

7 As shown on Schedule HJS-10SW, rate revenue requirements are determined by first  
8 making a stormwater gradualism adjustment and then subtracting the miscellaneous  
9 revenue.

10 As is the case with water and wastewater conveyance, a stormwater CAC and IIC are  
11 being introduced in FY 2025 to shift recovery of the costs of PENNVEST and WIFIA  
12 loans utilized for stormwater projects as well as PWSA's low income customer assistance  
13 programs from base rates to the new reconcilable charges. Therefore, the next step in the  
14 process is to adjust revenue requirements to reflect the revenue from these charges. It  
15 should be noted that the stormwater IIC in FY 2024 is set at \$0 because PWSA is not  
16 proposing to implement the new reconcilable charges until 2025. As part of the proposed  
17 semi-annual filings and reconciliation, described more fully by Ms. Mechling and set  
18 forth in the proposed tariffs, the amount of the charges will be adjusted.

19 Lastly, stormwater rates per ERU for FY 2025 and FY 2026 are determined by dividing  
20 the net revenue requirements to be recovered through stormwater fees by the projected  
21 number of ERUs as shown on HJS-11SW.

1 **Q. IS THERE A MINIMUM STORMWATER FEE?**

2 A. Yes. A property is not charged a stormwater fee if the impervious area on the property is  
3 less than 400 square feet. The minimum stormwater fee that can be charged for SFR  
4 properties with impervious area greater than or equal to 400 square feet is for those  
5 properties that fall into Tier 1 and are billed for 0.5 ERU. The minimum stormwater fee  
6 for non-single-family residential properties with impervious area greater than or equal to  
7 400 square feet is 1 ERU.

8 **Q. IF A CUSTOMER BELIEVES THEIR IMPERVIOUS AREA CALCULATION**  
9 **OR RESIDENTIAL TIER ASSIGNMENT IS INACCURATE, WILL A PROCESS**  
10 **BE AVAILABLE TO QUESTION THE IMPERVIOUS AREA?**

11 A. Yes. Consistent with current practices, PWSA will process customer disputes related to  
12 stormwater charges in the same manner as it currently processes disputes related to its  
13 other charges. PWSA's stormwater dispute process includes a further evaluation  
14 regarding the measured impervious area.

15 **V. STORMWATER FEE BILLING**

16 **Q. IS PWSA PROPOSING TO MAKE ANY CHANGE TO HOW STORMWATER, A**  
17 **NON-METERED SERVICE, BE ADDED TO EXISTING PWSA BILLS?**

18 A. No. The stormwater fee will be added to bills for existing PWSA accounts or will be the  
19 sole fee on bills for stormwater-only accounts. Stormwater fees are calculated on a per  
20 parcel basis, and the fee for a parcel (or multiple aggregated parcels) will be billed to one  
21 or more of the accounts associated with the parcel(s). PWSA maintains a parcel number  
22 as a characteristic of an account. These data have been reviewed for accuracy and  
23 updated where necessary by Raftelis. PWSA uses software to manage the parcel-account  
24 relationship, parcel aggregations, and other stormwater billing information that influence  
25 the stormwater fees billed.

1 **Q. HOW IS STORMWATER BILLING DATA KEPT UP TO DATE?**

2 A. PWSA staff updates stormwater billing source data – impervious surface area data and  
3 parcel boundary data – in response to customer inquiries and event triggers indicating  
4 new or changed development (such as development permits, Certificates of Occupancy  
5 issued, building inspections, etc.). Updates are also be made as needed following new  
6 releases of aerial imagery.

7

8 **VI. STORMWATER CREDIT PROGRAM**

9 **Q. DOES PWSA OFFER A CREDIT PROGRAM THAT ALLOWS CUSTOMERS**  
10 **TO REDUCE THEIR MONTHLY STORMWATER FEE?**

11 A. Yes. For the initial filing, PWSA proposed a credit program that would allow residential  
12 or non-residential customers to reduce their stormwater fee by taking specific actions to  
13 reduce their demand for stormwater service. That program is in place.

14 **Q. WHAT ARE THE OVERALL GOALS OF A CREDIT PROGRAM?**

15 A. One goal is to refine the stormwater fee for an individual ratepayer to account for things  
16 that happen on their site that cause their true stormwater demand to be different than that  
17 computed from impervious area. Another is to encourage customers to undertake or  
18 maintain helpful best management practices. In designing the credit program, PWSA has  
19 sought to create a program that can achieve meaningful benefits in terms of stormwater  
20 reduction and recognize customers' efforts to reduce stormwater runoff, while also  
21 imposing minimal administrative burden on ratepayers or the Authority.

22 **Q. WHAT CREDITS DOES PWSA MAKE AVAILABLE TO NON-SINGLE-**  
23 **FAMILY RESIDENTIAL CUSTOMERS?**

24 A. PWSA offers a Stormwater Control Structures Credit which is available to non-single  
25 family residential properties with well-maintained, functioning structural stormwater

1 controls that meet either the 2019 City of Pittsburgh stormwater standards (up to 60%  
2 credit) or the 2016 City of Pittsburgh stormwater standards (up to 45% credit).

3 **Q. WHY DOES PWSA BASE ITS NON-RESIDENTIAL CREDIT ON THE 2019**  
4 **DEVELOPMENT STANDARDS?**

5 A. PWSA bases its non-residential credit primarily on the 2019 Development Standards  
6 because these are the standards that were in place when the stormwater fee went into  
7 effect (Ord. No. 12-2019, art. I, § 13101, eff. 3-20-19). Similarly, the 2016 Development  
8 Standards were recently in place. By tying the performance of stormwater controls to an  
9 existing or recent past standard we hoped to minimize the administrative burden that the  
10 credits program would place on ratepayers and the Authority. Using these standards  
11 provides clear guidance for both PWSA and its customers as to whether requirements for  
12 a credit have been met and ensures that the stormwater controls will meaningfully reduce  
13 stormwater runoff from a property.

14 **Q. WHAT CREDITS DOES PWSA MAKE AVAILABLE TO SINGLE FAMILY**  
15 **RESIDENTIAL CUSTOMERS?**

16 A. PWSA offers a Residential Downspout Disconnection and Street Planters Credit for  
17 residential customers. Additionally, residential customers can get a credit for capturing  
18 and slowly releasing the runoff from 3/4-inch of rain from the impervious surfaces on the  
19 property.

20 **Q. WHY DID PWSA PROPOSE THIS TYPE OF CREDIT FOR RESIDENTIAL**  
21 **CUSTOMERS?**

22 A. Downspout disconnection and rerouting of roof drainage to street planters can divert  
23 runoff from significant amounts of impervious area on residential properties, which  
24 would be very beneficial to the proper function of PWSA's infrastructure in some areas  
25 of the City where planters are available. While PWSA recognized that not all properties

1 would be able to disconnect downspouts or reroute to street planters due to limitations at  
 2 the property, this initial residential credit offering was intended to recognize customers  
 3 who meaningfully reduced their demand for stormwater service by disconnecting  
 4 downspouts or rerouting drainage to street planters while limiting the administrative  
 5 burden for PWSA.

6 Although it is not technically a credit, I would also note that customers can simply  
 7 remove impervious area in order to potentially qualify for a lower tier of the stormwater  
 8 fee.

9 **Q. IS PWSA UPDATING THE CREDIT PROGRAM TO OFFER OTHER TYPES**  
 10 **OF CREDITS?**

11 A. Yes, PWSA has updated the credit program. See exhibit KR-2 and also Exhibits JAM-15  
 12 and JAM-16. One update is to more explicitly show that non-residential properties can  
 13 receive the 45% and 60% credits through passive management of stormwater via the  
 14 property’s green space. This would require an engineering analysis but may be  
 15 demonstrable for lightly developed properties with runoff patterns where runoff from  
 16 impervious surfaces is routed to green areas. The other update is to offer a one-time \$40  
 17 credit for installed rain barrels that capture and retain roof runoff from single family  
 18 properties.

19 **Q. DOES PWSA VERIFY THAT STORMWATER MITIGATION MEASURES ARE**  
 20 **INSTALLED AND MAINTAINED?**

21 A. Continued eligibility for credits is contingent on the proper function of stormwater  
 22 controls. This function will be verified by periodic field reviews by PWSA or through  
 23 coordination with City staff.



1 **Q. OVER WHAT TIME PERIOD DO CREDITS APPLY?**

2 A. Credits are valid for up to three (3) years. Customers can reapply every three years to  
3 continue receiving a credit as long as the stormwater mitigation measure remains in place  
4 and is working properly, thereby reducing the property's demand for stormwater service.

5 **Q. WHAT IMPACT DOES PWSA EXPECT THE UPDATED CREDIT PROGRAM**  
6 **WILL HAVE ON STORMWATER REVENUE?**

7 A. PWSA anticipates participation in the credit program to result in revenue offsets of  
8 approximately 1% of full billings. Now that we have credit participation rates from 2022,  
9 we see that the value of credits issued is so far lower than expected. Estimates for  
10 "forgone revenues" from the credit program have been included in the stormwater rate  
11 calculation. In addition to that, we estimate the revenue lost from the addition of the rain  
12 barrel credit to be \$40,000 per year.

13 **VII. CONCLUSION**

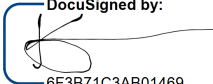
14 **Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?**

15 A. Yes.

**VERIFICATION**

I, Keith Readling, hereby state that: (1) I am the Executive Vice President, Raftelis Financial Consultants, Consultant to The Pittsburgh Water and Sewer Authority (“PWSA”); (2) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and, (3) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

Date: 05/08/2023 | 8:45 AM EDT

DocuSigned by:  
  
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Keith Readling  
Executive Vice President  
Raftelis Financial Consultants

Consultant to:  
The Pittsburgh Water and Sewer Authority

# **APPENDIX A**

# Keith Reading

Executive Vice President



## PROFILE

Keith has 38 years of experience in municipal stormwater management and civil engineering. As an executive, he has broad responsibilities for service delivery to clients across the U.S., with a particular focus on program and financial planning, stormwater utility development and implementation, and enterprise fund data and systems development for local governments. Keith has consulted with and/or helped stand up many of the largest and most complex stormwater utilities in the U.S. and is one of the foremost authorities in the country regarding stormwater management programs, data, systems, and business processes. He has assisted with the establishment of more than 45 stormwater utilities. As a senior manager for data-related services in this capacity, he has developed more than 30 stormwater utility impervious area or intensity of development rate structures, databases and utility billing and collections or integration systems to support the connectivity of geographic billing data to legacy account-based billing systems. Keith's other technical expertise includes water resources and civil engineering planning, analysis, graphical and non-graphical database development and management, and environmental and regulatory compliance efforts. He is experienced in all aspects of implementing municipal stormwater management programs, from strategic planning and regulatory compliance services to database architecture and customer service support systems. Keith also co-authored a chapter entitled, "Expanding Financing and Pricing Concepts into Stormwater," for the Fourth Edition of the industry guidebook, *Water and Wastewater Finance and Pricing: The Changing Landscape*.

## REPRESENTATIVE PROJECT DESCRIPTIONS

### Pittsburgh Water and Sewer Authority (PA)

Keith served as senior manager, technical advisor and subject matter expert as the Pittsburgh Water and Sewer Authority (PWSA) planned for and implemented a stormwater fee in early 2022 to begin recovering costs related to stormwater management, as directed by PWSA's oversight body, the Pennsylvania Public Utility Commission. Ahead of implementation, he oversaw the development of a stormwater billing information management software, impervious area data revisions and parcel-to-account relationships, and billing policies. He also served as a key advisor to PWSA staff and management on the credit program, customer relationship concerns, data maintenance processes, and customer outreach. Keith continues to support PWSA with stormwater utility administration on a regular basis, advising on key program, billing, and credit policy considerations.

### City of Charlotte and Mecklenburg County (NC)

Keith served as project manager, and has served as Principal in Charge for a number of projects for the City of Charlotte and Mecklenburg County over the past 15 years. One highlighted project was strategic planning in support of business process improvements for all business processes that relate to stormwater utility billing, collections, database maintenance, and customer service. The outcomes from this project supported improvements in the connectivity between the third-party billing vendor and the stormwater utility. Past projects have included residential rate structure changes, utility credit policy development and adjustment, capital project prioritization assistance, and various financial planning services.

## Specialties

- Stormwater program planning & development
- Stormwater finance & utility development
- Management policy & practice
- Business process development & improvement
- Data & systems integration
- Database architecture & design

## Professional History

- Raftelis: Executive Vice President (2016-present); Vice President (2014-2015); Director of Stormwater Management Consulting (2011-2013)
- AMEC: Vice President (1998-2011); Senior project manager
- (1995-1998); project manager (1991-1995)
- Jarvis Associates: Project Engineer (1988-1991)
- Talbert, Cox, & Associates: Project Engineer (1985-1988)

## Education

- Bachelor of Science in Civil Engineering - North Carolina State University (1985)

## Professional Registrations

- Registered Professional Engineer: NC (Inactive)

## Professional Memberships

- American Public Works Association: Past President, North Carolina Chapter, Water Resources Division

### **Town of Westford (MA)**

As a subconsultant, Keith served as finance lead for a project with the Town of Westford (Town) to evaluate future program scope and cost, and provide funding options for an expanded stormwater management program for the Town. Ultimately, the Town opted to implement a stormwater fee and Keith oversaw the data development, analyses, and all technical, procedural, and communications-related efforts to successfully implement the new funding approach. The Town's stormwater program is now funded through a dedicated stormwater utility fee.

### **Sewerage and Water Board of New Orleans (LA)**

Keith served as project manager for a recent effort whereby the Sewerage and Water Board of New Orleans evaluated different funding approaches for generating additional stormwater management funds to fund operation and maintenance of various new large flood control infrastructure and to fund an expanded groundwater management program. Keith was responsible for all aspects of the evaluation including rate base estimates, rate structure recommendations, and impact analyses.

### **Northeast Ohio Regional Sewer District (OH)**

Keith serves in an ongoing role for an engagement with the Northeast Ohio Regional Sewer District (District) which includes data management, policy development, and financial analysis tasks. The primary effort was focused on building a billing database and related functionality to support the District's stormwater management program, which began billing on January 1, 2013, then was stopped and restarted as a result of legal challenges, in which the District eventually prevailed. During the project, the Raftelis team enhanced the database to provide for ongoing maintenance of about 400,000 stormwater accounts, and numerous customer service and program reporting functions. Raftelis led a process to refine stormwater billing and program policies, which required various updates and expansions of current processes, partly driven by the results of several lawsuits.

Keith also served as Data Lead in the development of the user fee to support the District's stormwater management program. In this role, he oversaw data collection and data development, including developing and reviewing key data process algorithms and the rate structure. In addition, Keith aided the client in the creation and revision of key business processes related to periodic data updates from the 60 municipalities and portions of three counties in the District's service area. He was the lead database architect and also provided guidance relating to the District's customer service protocols and billing policies.

### **City of Baltimore (MD)**

Keith served as Program Manager for a complex and fast-paced project to implement a stormwater fee for the City of Baltimore Bureau of Water and Wastewater. He was responsible for oversight of all data-, systems-, and policy-related efforts in support of developing the fee.

### **City of Philadelphia (PA)**

Keith served as lead analyst for this project for the Philadelphia Water Department to assess many aspects of the stormwater utility's residential rate structure, phase-in plans, credits program, and economic assistance program. The project required detailed account assessment at the individual account level for more than 500,000 records. Keith developed the database architecture for the analysis and directed the analytical efforts of programmers and DBAs. He was also responsible for developing summary reports that depicted the estimated implications of proposed rate and credit and phase-in policy shifts.

### **City of Manchester (NH)**

Keith served as Data Track Manager on this project to develop a user fee to support the City of Manchester's (City) stormwater program. Keith was responsible for the associated graphical GIS-based impervious area database used for billing stormwater service charges as well as the creation of billing policies and the connection of stormwater-specific characteristics to the legacy sanitary sewer billing system.

### **Lexington-Fayette Urban County Government (KY)**

Keith served as Data Manager for the stormwater utility project for this combined city-county government. Keith managed data collection and data development, including developing and reviewing the impervious area database. He developed the concepts and was lead architect for middleware developed and deployed to connect stormwater billing characteristics to a third-party billing system maintained by American Water Company. He also developed the concepts and architecture for an enterprise customer service and database maintenance platform that connected to the legacy billing system and the City/County 311 (LexCall) system. Keith also provided billing policy, collections, and enforcement recommendations.

### **Georgetown County (SC)**

Keith served as Principal in Charge for the development and implementation of Georgetown County's (County) stormwater utility. Keith was responsible for all phases of the utility development, including: analyzing the proposed cost-of-service; determining strategic, organizational, and staffing needs; developing the rate structure analysis; coordinating the public education effort; developing the impervious area database; creating the billing system; and developing a stormwater fee crediting policy with design guidelines and credit procedures. He developed and deployed the master account database and developed the connectivity protocol for this database to connect to the County's tax database for billing.

### **City of Dallas (TX)**

Keith serves as project manager for the study and implementation of a stormwater rate structure change for the City of Dallas (City). The City implemented a stormwater fee in 1991 that generates about \$49 million annually. The rate structure change represents a significant effort on the part of the City to assure the financial stability of its Storm Drainage Fund, recover costs more equitably from its ratepayers, and to do both in a transparent fashion. Now implemented, the updated rate structure embodies a considerable change, not only for ratepayers receiving changed bills, but also for the City's business processes for billing and account maintenance. Raftelis was tasked with determining the stormwater cost-of-service and developing the stormwater financial plan. Raftelis also updated available impervious area data and evaluated potential rate structures. The team performed an account review and evaluated the impacts upon customers of a rate structure change. In addition, we evaluated the billing mechanism and performed account to parcel matching. Raftelis assisted the City with necessary rate ordinance changes and with public outreach around the rate structure changes.

### **City of Mount Lebanon (PA)**

Keith served as Lead Data Consultant for this project to establish a stormwater utility for the City of Mount Lebanon. The work included editing an existing cost-of-service model developed by others, developing a rate structure and rate, developing data and billing policies, codifying an ordinance establishing the utility and rates, developing a credits program, developing the master account database, and connecting the database to a third-party privatized billing system.

### **Arapahoe County and Douglas County (CO)**

Keith served as technical advisor for both Douglas and Arapahoe Counties' stormwater billing and data management tasks in support of developing a stormwater utility fee. His involvement included review of cadastral and imagery source data, discussions about the potential connectivity between an external parcel-based data management system and legacy tax billing systems (for conveying the potential fees), and decisions about appropriate rate structures that would be defensible and supportable by the extent and quality of the source data. Much of his work on these two separate projects fed into what ultimately became a Stormwater Authority (SEMSWA).

### **City of Jacksonville (NC)**

Keith served as Principal in Charge for this project to identify compliance efforts, prepare the City of Jacksonville's (City) annual National Pollutant Discharge Elimination System (NPDES) report, establish and facilitate a stormwater advisory committee, and develop a stormwater post-construction ordinance for the City. In addition to directing the compliance efforts, Keith facilitated all stakeholder meetings and City Council education sessions. Keith also served as Principal in

Charge for the development of a user fee to support the City's stormwater management program. He facilitated a citizens' stormwater advisory team to build consensus and provide informed policy guidance to City staff. In addition, he was responsible for all phases of utility development, including analyzing the cost-of-service and rate structure, determining organizational and staffing needs, developing the impervious area database, and managing the overall project administration. Currently, he is assisting the City with regulatory compliance for new coastal runoff laws and editing the City's administrative process manual that defines how developers procure permits for new development.

### **Wake County (NC)**

Keith served as Principal in Charge for this multi-faceted project to implement the recommendations for better land development standards of a County-wide stakeholder group. The project involved several disparate elements: facilitation of a stakeholder group tasked with developing a multi-jurisdictional post-construction ordinance, development of a risk-based methodology for erosion control enforcement, and an innovative pilot basin model that will help Wake County (County) test development scenarios. Keith facilitated the stakeholder and staff-level discussions to arrive at business process decisions to ensure that the multi-jurisdictional ordinance, administered by the County, is workable for the participating jurisdictions, developers, and permitting staff.

### **City of Rock Island (IL)**

Keith served as Data Track Leader for developing this stormwater utility for the City of Rock Island (City) which, at the time, was the first stormwater utility in Illinois. His efforts included developing the ERU value that is still used today (2,800 square feet of impervious surface) by performing statistical analysis on a residential property sample. He also developed statistical relationships that ultimately allowed the City to implement a simplified residential rate based solely on the gross property area found on a residential land parcel. Connectivity of the stormwater fees to the existing City water billing system was also developed as part of this project.

### **City of Champaign (IL)**

Keith served as Manager of data-related services for the first phase of this multi-phase stormwater utility feasibility study and implementation project for the City of Champaign (City). His role was to evaluate available data and recommend a rate structure and billing mechanism supportable by the legacy data (for efficiency). In this capacity, Keith determined that the Urbana-Champaign Sanitary District (UCSD) could provide billing and customer services for the stormwater utility most efficiently, if processes were put into place to connect that system to the City's GIS-derived rate structure and customer base. This decision was facilitated by the UCSD's unusual billing policies that essentially always bill owners (instead of occupants) for wastewater services.

### **City of Urbana (IL)**

On a parallel track with the work in Champaign, IL, Keith provided similar services to the City of Urbana. Although the projects were separate and distinct, they were procured and performed on the same schedule to save money, and under the approach that assumed a common billing method would be found.

### **City of Raleigh Public Utilities Department (NC)**

In March 2012, the City of Raleigh (City) contracted Raftelis to conduct a comprehensive organizational analysis and development study for the City's Public Utility Department within a 20-week time frame. For several years, the City had been discussing whether to relocate its stormwater utility from the Public Works Department to the Public Utilities Department. The move could have had far-reaching effects on the relationship between stormwater and transportation, the efficiency of planning, design, and engineering activities, regulatory compliance, and customer service management. Keith was the Project Lead on the Raftelis team. With extensive knowledge of and experience in the field of surface water management, the Raftelis team was asked to compile, measure, and analyze the costs and benefits of relocating the utility. As this data would inevitably be presented in both qualitative and quantitative formats, Raftelis conducted both types of analyses to arrive at its recommendation. Finally, Raftelis reported its findings to the leadership of Public Utilities, Public Works, and the City Council.

### **Montgomery County (OH)**

Keith is serving as a solutions architect for a solid waste rate study for Montgomery County Environmental Services (MCES). The first phase of the study will include three components: 1) information technology and business systems review; 2) solid waste rate benchmarking; and 3) rate development and financial planning. The primary task under the information technology and business systems review is to perform an audit of the County's billing system. MCES is concerned that it is not billing all of the customers it is serving and that it may be incorrectly billing some of those customers that it is billing. One of the complicating factors is that MCES must rely on private haulers for billing information. The objective of the solid waste rate benchmarking is to identify the way other solid waste districts in Ohio and across the country charge for the services provided. MCES currently recovers about half of its revenue from tipping fees and half from annual property charges. The third component of this phase of work will be to develop a multi-year financial plan for the solid waste enterprise fund. The model will be used to evaluate alternative charge methodologies and, ultimately, it will be a financial planning tool for MCES.

### **City of Morristown (TN)**

Keith served as project director for the development of a unified solution for viewing, editing, and billing stormwater, solid waste, and wastewater services for the City of Morristown (TN). This solution allows City staff to view billing data for those services on a particular account, allows staff to change accounts and communicate those changes to the City's third-party biller, and also provides account rectification protocols where City records do not align with records maintained by the biller. Development of this solution included database and software creation, data analysis, and coordination with the third-party biller. Raftelis team members also developed documentation and training materials to describe the use and operation of the software solution and offered recommendations on related business processes.

### **Carlisle Borough (PA)**

Raftelis was engaged by the Borough of Carlisle to provide assistance in assessing the financial needs of its growing stormwater program and evaluating the feasibility of a fee as the most appropriate funding mechanism. Keith served as Principal in Charge for this successful effort. He provided expertise based on an extensive engineering background during the program assessment phases. Keith led numerous public outreach meetings and presented several updates to elected officials. Subsequent to the feasibility study, Raftelis was engaged by the Borough to implement the stormwater fee based on implementation and data maintenance considerations and recommendations made during the feasibility phase. Keith led the implementation effort for the fee.

### **Lower Paxton Township (PA)**

Raftelis was engaged by Lower Paxton Township to evaluate the feasibility of establishing a stormwater fee as the funding mechanism for the Township's growing stormwater program. Keith served as Principal in Charge of this project. Keith provided expert guidance to the Township as the project team evaluated its current program and envisioned the scope and costs of the future program, and is assisted with the Township's implementation of the stormwater fee which went live in 2019. Keith served as primary liaison to the Township Board.



## STORMWATER PROGRAM AND UTILITY DEVELOPMENT - FULL CLIENT LIST

Keith served or is serving as project manager, Data and Systems Manager, Consultant, or Principal in Charge responsible for various components of stormwater management program or utility consulting for these clients:

- Arapahoe County (CO)
- City of Archdale (NC)
- City of Albemarle (NC)
- City of Atlanta (GA)
- City of Baltimore (MD)
- Beaufort County (SC)
- City of Beaufort (SC)
- City of Bellingham (MA)
- City of Bluffton (SC)
- Boston Water and Sewer Commission (MA)
- City of Burlington (NC)
- City of Butner (NC)
- Camden County (NC)
- Capital Region Water (PA)
- Borough of Carlisle (PA)
- City of Cartersville (GA)
- City of Champaign (IL)
- City of Chapel Hill (NC)
- City of Charlotte (NC)
- City of Colorado Springs (CO)
- City of Columbia (SC)
- Columbia County (GA)
- City of Creedmoor (NC)
- Cumberland County (NC)
- City of Dallas (TX)
- DC Water (DC)
- City of Decatur (GA)
- Douglas County (CO)
- City of Durham (NC)
- Durham County (NC)
- City of East Point (GA)
- City of Fayetteville (NC)
- City of Franklin (MA)
- City of Fort Worth (TX)
- City of Gainesville (GA)
- Georgetown County (SC)
- City of Goldsboro (NC)
- Granville County (NC)
- City of Greensboro (NC)
- City of Greenville (NC)
- City of Greenville (SC)
- City of Griffin (GA)
- City of Hilton Head Island (SC)
- Horry County (SC)
- City of Hudson Oaks (TX)
- City of Indianapolis (IN)
- City of Jacksonville (NC)
- City of Kannapolis (NC)
- City of Kernersville (NC)
- Lexington-Fayette County (KY)
- Lower Paxton Township (PA)
- City of Manchester (NH)
- City of Marathon (FL)
- City of Maryville (TN)
- City of Meadville (PA)
- Mecklenburg County (NC)
- City of Milford (MA)
- City of Mooresville (NC)
- City of Morristown (TN)
- City of Mount Lebanon (PA)
- City of Nashville (TN)
- City of New Castle (DE)
- New Hanover County (NC)
- City of New Orleans (LA)
- Town of North East (MD)
- Northeast Ohio Regional Sewer District (OH)
- Person County (NC)
- City of Philadelphia (PA)
- Pittsburgh Water and Sewer Authority (PA)
- City of Pompano Beach (FL)
- City of Portland (ME)
- City of Port Royal SC)
- City of Raleigh (NC)
- City of Reno (NV)
- Richland County (SC)
- City of Rock Island (IL)
- City of Rocky Mount (NC)
- San Diego County (CA)
- City of San Jose (CA)
- City of Shelby (MT)
- St. Louis MSD (MO)
- City of South Burlington (VT)
- City of Tega Cay (SC)
- City of Urbana (IL)
- Wake County (NC)
- Town of Westford (MA)
- Village of Wilmette (IL)
- City of Wilmington (NC)
- City of Yarmouth (MA)

# Exhibit KR-1

TECHNICAL MEMORANDUM 4

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## Revenue Requirements

**PREPARED FOR:** Pittsburgh Water & Sewer Authority

**DATE:** August 1, 2013

The purpose of this Technical Memorandum (TM) is to summarize the estimated stormwater program revenue requirements and associated cost allocation methodology.

This Technical Memorandum is organized as follows:

Section 1 – Revenue Requirements

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# 1 Revenue Requirements Analysis

## 1.1 Background

The revenue requirements analysis includes a six-year financial plan for Fiscal Year (FY) 2012 through FY 2017. In this financial plan, FY 2014 is set as the “Test Year” as it is assumed to be a likely year in which a stormwater rate structure could be realistically launched if PWSA decide to implement a stormwater rate structure.

The revenue requirements analysis involves the following components:

- Allocation factors;
- O&M cost projections;
- Capital cost projections;
- Other revenue requirement adjustments; and
- Net revenue requirement projections

The following sub-sections discuss each of these revenue requirement analysis components.

### 1.1.1 Allocation Factors

To determine the revenue requirements, allocation factors were required, as the current financial records at PWSA only differentiate between water and wastewater costs. As such, the costs associated with stormwater are a portion of the overall wastewater costs. To separate the wastewater costs into stormwater and sanitary components for the purposes of budgeting for the stormwater authority, allocation factors were developed that focused on the peak flow of the system and the size of the collection system. The following sections describe the methodology that was used to develop those representative allocation factors.

#### *1.1.1.1 Operation and Maintenance Conveyance Cost Allocation Factor*

To allocate the O&M costs associated with the combined sewer collection system, a comparison of peak flows was established. The peak flow comparison was used, given that the combined sewer collection system is sized to convey wet weather events, essentially stormwater, which require larger infrastructure and, therefore, higher O&M costs than if the system was only sized to convey sanitary flows.

To determine the percentage of dry weather flows versus the wet weather flows, results from the current Main Rivers Planning Basin effort were used to be consistent with other feasibility studies that are currently underway within the region and the ability to correlate to documented dry weather flows. The Main Rivers Planning Basin was used based on its coverage of the majority of the PWSA system, which is assumed herein to represent the typical flow characteristics within the entire PWSA sewer system.

Table 5.1 compares total runoff from the watersheds during the top three rainfall events in 2003, which is being used by the region as the “Typical Year”. The total runoff from the watersheds was added to the average dry weather flow of 63.0 million gallons per day (MGD) to determine the total volume for that day. When comparing the percentages for the two largest events during the “Typical Year”, the approximate ratio of stormwater runoff to sanitary (dry weather) runoff was approximately 73/27. The smaller storm event illustrates that the ratio was reduced to a 60/40 storm-to-sanitary ratio.

The results of the flow comparisons are presented below.

**Table 1.1: Peak Day Runoff of Three (3) Storm Events During the 2003 Typical Year**

<b>(8/29/03 to 8/30/03, 1.60 inch rainfall)</b>		
<b>Avg. Dry Weather Flow</b>	63.0 MGD	26.4%
<b>Runoff from Watersheds</b>	175.2 MGD	73.6%
<b>Total Flow</b>	238.2 MGD	100%
<b>(7/21/03 to 7/22/03, 1.53 inch rainfall)</b>		
<b>Avg. Dry Weather Flow</b>	63.0 MGD	26.7%
<b>Runoff from Watersheds</b>	172.8 MGD	73.3%
<b>Total Flow</b>	235.8 MGD	100%
<b>(7/4/03, 0.92 inch rainfall)</b>		
<b>Avg. Dry Weather Flow</b>	63.0 MGD	40.0%
<b>Runoff from Catchments</b>	94.4 MGD	60.0%
<b>Total Flow</b>	157.4 MGD	100%

In summary, it was determined that a 70/30 stormwater to sanitary ratio was reasonable to allocate the O&M costs for the conveyance system. The 70/30 ratio is supported by the results documented in Table 1.1 and also compares reasonably well with other large combined sewer systems that have used similar methodologies to allocate costs between sanitary and stormwater for the purposes of developing a stormwater authority.

#### **1.1.1.2 Debt Service Cost Allocation Factor**

To allocate the costs associated with the existing and future debt service of the combined sewer collection system, a comparison of existing infrastructure was established. An inch-foot analysis was used to determine the ratio of infrastructure within the collection system in relation to stormwater and sanitary.

The inch-foot analysis was conducted based on PWSA's existing collection system and included determining the "inch-foot" total for each pipe by taking the diameter (or representative diameter) of each pipe times the length of the pipe. The total length of the pipe was obtained from the PWSA GIS data provided by PWSA. As shown on Table 1.2, the total length of the pipe within the PWSA system is 6,379,951 linear feet.

**Table 1.2: Total Length of Pipe by Pipe Type**

<b>Pipe Type</b>	<b>Linear Feet</b>
Combined	4,791,216
Force Main	7,420
Overflow	65,377
Sanitary	909,478
Storm	599,770
Undefined	5,973
<b>Total</b>	<b>6,379,951</b>

Once an inch-foot value was determined for each pipe, the total inch-foot was summarized based on “Pipe Type”. The inch-foot of each main category of pipe type in the PWSA system is presented in Table 1.3.

**Table 1.3: Total Inch-Foot by Pipe Type**

Pipe Type	In-Ft
Combined	100,476,225
Force Main	61,882
Overflow	2,885,669
Sanitary	9,041,697
Storm	12,044,613
Undefined	97,224
<b>Total</b>	<b>124,607,310</b>

For the purposes of this evaluation, the pipe types relating to combined portions of the system were grouped together to form one combined category. These included combined, force main and overflow pipe types. These types were included based on the fact that force mains are primarily serving to pump combined flow from low areas back into the gravity system. Overflow pipes were also included based on their responsibility to convey combined flows to a designated outfall. Last, undefined pipes were not included in the assessment, given that their use was undefined. The results of this grouping are provided in Table 1.4 below.

**Table 1.4: Consolidated Total Inch-Foot by Pipe Type**

Pipe Type	In-Ft	%
Combined	103,423,776	83.0%
Sanitary	9,041,697	7.3%
Storm	12,044,613	9.7%
<b>Total</b>	<b>124,510,087</b>	<b>100.0%</b>

To assign the combined total to either sanitary or storm, the peak flow allocation factor described in Section 1.1.1.1 was used. This resulted in 70 percent of the combined total being allocated to storm (72,396,643 inch-foot [in-ft]), with the remaining 30 percent allocated to sanitary (31,027,133 in-ft). The resulting inch-foot allocation is provided in Table 1.5 below.

**Table 1.5: PWSA Sewer System Proposed Breakdown1**

Pipe Type	In-Ft	%
Sanitary (allocated from combined)	31,027,133	24.9%
Sanitary (known)	9,041,697	7.3%
<b>Sanitary (total)</b>	<b>40,068,830</b>	<b>32.2%</b>
Storm (known)	12,044,613	9.7%
Storm (allocated from combined)	72,396,643	58.1%
<b>Storm (total)</b>	<b>84,441,257</b>	<b>67.8%</b>
<b>Total</b>	<b>124,510,087</b>	<b>100.0%</b>

- 1) Assumes the 70/30 split between storm sewers and sanitary sewers for combined systems.

In summary, a 68/32 stormwater to sanitary ratio was determined to be reasonable to allocate the debt service of the conveyance system. The 68/32 ratio is supported by the results documented in Table 1.5 and also compares reasonably well with other large combined sewer systems that have used similar methodologies to allocate costs between sanitary and stormwater for the purposes of developing a stormwater authority.

#### ***1.1.1.3 Treatment Cost Allocation Factor***

Currently, ALCOSAN's charge for the treatment of wastewater is determined by water meter consumption. The ALCOSAN charge is currently a direct transfer through PWSA and is shown as a separate line item on the PWSA bill. As such, the stormwater authority would not include the cost associated with the treatment of wastewater; however, it should be noted that, while the ALCOSAN costs are currently determined by water consumption, there could be a shift in the future to base that charge on the actual flows to ALCOSAN. If that shift occurs in the future, the stormwater authority should consider reevaluating allocating a portion of the costs to the stormwater authority, given that reductions in stormwater contributions might reduce the overall cost of treatment.

#### ***1.1.1.4 Customer Service Allocation Factor***

To develop a customer service allocation factor, individual costs items are first allocated based on the revenues between water and wastewater services. Given that the wastewater does not required meter readings, the meter readings were removed from the total cost. The remaining costs were then divided on an equal basis between sanitary sewer and the stormwater authority.

#### ***1.1.1.5 General and Administrative Allocation Factor***

After all direct costs are allocated, the General and Administrative (G&A) costs are allocated proportionate to the allocation of all the direct (non-G&A) O&M costs.

Table 1.6 documents the allocation factors and the basis that was used for the development of the rate structure.



**Table 1.6 –Wastewater O&M Allocation Factors**

Allocation Factor/Cost Center	Allocation Basis	Sanitary Sewer Allocation	Stormwater Allocation
O&M Conveyance	Based on the ratio of estimated peak wet weather flow to peak dry weather flow volume.	30%	70%
Debt Service	Based on the inch-foot analysis.	32%	68%
Treatment	Treatment costs are allocated to Sanitary as it is assumed that these costs will continue to be borne by the Sanitary budget based on the rate established by ALCOSAN.	100%	0%
Customer Service	Individual cost items first allocated based on revenue between Water and Wastewater. Wastewater costs (except Meter costs) were then further allocated on an equal basis between sanitary and stormwater. The percentages reflect the overall resulting allocation.	63%	37%
General & Administrative	Based on the proportionate allocation of all the direct (Non-G&A) O&M costs.	94%	6%

### 1.1.2 O&M Cost Projections

The O&M cost projections typically include costs of existing operational activities, the costs currently expended by PWSA for stormwater management, and any anticipated increases in future operational activities.

For the six-year forecast period, the O&M costs are projected using PWSA's approved FY 2012 budget as the base year. Allocation factors discussed in Section 1.1.1 above were used to allocate the FY 2012 budget in terms of stormwater and sanitary costs. The O&M costs were developed using the multi-step process described below:

**Step 1:** PWSA's combined wastewater costs were first categorized in to functional costs. The four functional costs delineated are: Conveyance; Treatment; Customer Service; and G&A.

**Step 2:** Allocation factors were developed as noted in Section 1.1.1, to apportion each of the functional costs (except Treatment) between the sanitary sewer and stormwater budgets. Treatment costs are not allocated to stormwater as it is assumed that those costs will continue to be borne by the sanitary budget based on the rate established by ALCOSAN.

**Step 3:** Additional O&M costs for services currently provided by the City, for which the stormwater authority is expected to take responsibility for funding, were defined. It is assumed that the stormwater authority will take on these costs only from the Test Year and beyond. Hence, these costs are included only from FY 2014 onwards. Additional information pertaining to these costs is provided in Section 1.1.2.1 below.

**Step 4:** One-time stormwater authority implementation costs were estimated and included in the O&M cost projections. The total estimated implementation costs are assumed to occur over a two year period between FY 2014 and FY 2015.

The sum of all of the above costs provides the total estimated O&M costs. Recurring functional costs are projected using an escalation factor of 4.15 percent, which is an approximation of allowances for projected costs. Table 1.7 presents the six-year projections of O&M costs for the stormwater authority.

#### *1.1.2.1 Additional O&M Costs Currently Conducted by the City*

In addition to the FY 2012 PWSA budget, costs from the City DPW that were related to stormwater management were included in the O&M costs that are to be covered by the stormwater authority. These costs include DPW costs for labor and equipment for work orders that included stormwater repairs such as flood and storm damages, as well as inlet, manhole, gutter, and stream channel repairs. Those costs were projected to be a total of \$320,000 for FY 2012 and are presented in the table in Appendix A - Table A.1, Current Stormwater Responsibilities.

Given that the City currently provides engineering services which include zoning/development reviews pertaining to stormwater, as well as floodplain reviews, an additional engineer will be required for the stormwater authority in order to conduct those reviews. This engineer would also be responsible for reviewing and assisting with stormwater credit applications and appeals processing. To support with the inspection of private stormwater management facilities and verification of stormwater credit applications, an additional field inspector would be required. The field inspector would require a vehicle to conduct the inspections as well as the authority to enter private property, which is something that PWSA currently cannot do. In total, this equates to two additional staff with a combined cost of \$160,000 per year, which includes salary and benefits, as well as a vehicle estimated at \$10,000 per year to cover the lease of the vehicle, insurance, and fuel. As such, \$170,000 is added above the current PWSA budget to cover the additional staff required for the stormwater authority.

**Table 1.7 – Projected O&M Expenses**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<i>Annual Escalation Factor</i>		4.15%	4.15%	4.15%	4.15%	4.15%
<b>Existing O&amp;M Costs</b>						
Conveyance	\$3,516,000	\$3,662,000	\$3,814,000	\$3,972,000	\$4,138,000	\$4,309,000
Treatment	-	-	-	-	-	-
Customer Service	\$537,000	\$559,000	\$583,000	\$607,000	\$632,000	\$658,000
General & Administrative	\$602,000	\$627,000	\$653,000	\$680,000	\$708,000	\$738,000
<b>Additional Stormwater Related Costs</b>						
Current City Services <sup>(1)</sup>	-	-	\$532,000	\$554,000	\$577,000	\$601,000
Implementation Costs <sup>(2)</sup>	-	-	\$300,000	\$150,000	-	-
<b>Total Estimated O&amp;M Costs</b>	<b>\$4,655,000</b>	<b>\$4,848,000</b>	<b>\$5,882,000</b>	<b>\$5,963,000</b>	<b>\$6,055,000</b>	<b>\$6,306,000</b>

Notes:

- (1) Current City Services include the following City activities anticipated to be taken over by PWSA in FY 2014:
    - o Stormwater Reviews and Inspections (2 FTEs and a vehicle lease). Estimated FY 2012 cost of \$170,000.
    - o Stormwater Facility Maintenance costs. Estimated FY 2012 cost of \$285,000 based on information provided by the City.
    - o Stream Maintenance costs. Estimated FY 2012 cost of \$35,000 based on information provided by the City.
- Assumes a January 2014 launch of the stormwater authority.

The sum of all of the above costs provides the total estimated O&M costs. Recurring functional costs are projected using an escalation factor of 4.15%. Table 1.2 presents the six-year projections of O&M costs for the stormwater utility.

### 1.1.3 Capital Cost Projections and Financing

#### 1.1.3.1 Capital Cost Projections

The capital costs are projected based on the PWSA's CIP. PWSA's CIP was reviewed, and the wastewater related projects were identified. Appendix A - Table A.2, Capital Improvement Program Expenses, provides a summary of the wastewater-related projects included in PWSA's CIP.

#### 1.1.3.2 Capital Cost Financing

PWSA's existing outstanding debt service was first allocated between the water and wastewater departments. The wastewater outstanding debt service was subsequently allocated between sanitary sewer and stormwater based on the Debt Service Cost Allocation Factor discussed in Section 1.1.1.2 above. Appendix A - Table A.3, Existing Debt Service, provides a summary of the stormwater authority's allocation of existing debt service.

For initial planning and evaluation purposes, it is assumed that all other capital program costs presented in Appendix A - Table A.2 will be entirely bond financed. A financing plan for PWSA's wastewater-related CIP was developed to estimate the projected bond issues necessary to provide the funding for the wastewater-related CIP. The projected debt service for the projected bond issues was subsequently allocated between the sanitary sewer and stormwater authority using the same proportion as the existing debt service. Appendix A Table A.4, Projected Capital Funding Expenses, provides a summary of the estimated wastewater CIP financing plan and subsequent allocation of proposed debt service to the stormwater authority.

PWSA's existing revenue bond covenant requires PWSA to maintain a debt service coverage ratio of 1.20 (120 percent). For initial planning and evaluation purposes, it is assumed that the stormwater authority will establish the annual revenue requirements to maintain a debt service coverage ratio of 1.25 (125 percent). A slightly higher debt service coverage than required by the bond covenant is recommended as a contingency to account for any potential shortfalls in the stormwater authority's revenues when the stormwater authority is launched. Estimated additional revenues required to maintain the 1.25 (125 percent) debt service coverage are included as a revenue requirement.

#### 1.1.3.3 Routine Capital Outlay Costs

It is prudent and good financial practice to establish an annual capital budget for Routine Capital Outlays for minor unforeseen expenditures. To reflect this practice, an estimated additional budget has been defined for Routine Capital Outlays. This additional budget will provide an allowance for repairs to the system as well as cleaning and repairing structures such as roadway culverts which are not currently included within PWSA's maintenance contracts, but are a part of the overall stormwater management system with PWSA's service area.

For the purpose of this study, an annual budget estimate for Routine Capital Outlay is included

beginning FY 2014. The annual estimate is calculated as follows:

- Fifteen percent (15 percent) of the “conveyance” O&M costs allocated to stormwater for FY 2012, which equates to \$530,000 is estimated for minor repairs/cleaning for roadway culverts, inlets, etc.
- An additional \$320,000 is estimated for minor stormwater infrastructure repairs that the City typically performs.

The sum of the above two items which approximately equates to \$850,000 is defined as the baseline annual Routine Capital Outlay budget. For FY 2014, only 50 percent of this estimated baseline amount is included to reflect program initiation, and then the full baseline amount of \$850,000 is included in projection for FY 2015, and escalated using a nominal annual escalation factor of 4.15 percent for FY 2016 and FY 2017.

Table 1.8 presents the six-year projections of capital expenses including the allocation of existing outstanding bonds, proposed bonds, routine capital outlay, and debt service coverage requirement, needed to support the PWSA’s stormwater capital expenditure needs at the current level of service.

**Table 1.8 – Projected Annual Expenditures**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<b>Existing Debt Service</b>						
GO/Direct Debt	\$10,334,000	\$10,545,000	\$10,606,000	\$10,621,000	\$10,634,000	\$10,557,000
PennVest Loans	\$436,000	\$437,000	\$437,000	\$436,000	\$453,000	\$458,000
<b>Proposed Debt Service</b>						
Proposed Revenue Bonds	\$772,000	\$772,000	\$2,509,000	\$2,509,000	\$4,246,000	\$4,246,000
<b>Routine Capital Outlay<sup>(1)</sup></b>						
Routine Capital Outlay	-	-	\$425,000	\$850,000	\$885,000	\$922,000
<b>Debt Service Coverage</b>						
Debt Service Coverage	\$2,886,000	\$2,938,000	\$1,982,000	\$2,528,000	\$2,932,000	\$2,850,000
<b>Total Estimated Capital Costs</b>	<b>\$14,428,000</b>	<b>\$14,692,000</b>	<b>\$15,959,000</b>	<b>\$16,944,000</b>	<b>\$19,150,000</b>	<b>\$19,033,000</b>

Notes:

Routine Capital Outlay is funded within the revenues required to meet the 1.25 debt service coverage requirement

### 1.1.4 Operating Reserve Requirement

In addition to the projection of O&M costs and capital costs discussed above, the projection of revenue requirements for authority enterprise operations typically includes other operating and capital reserve requirements and cost adjustments for any anticipated user fee collections shortfall. These additional revenue requirement cost items are discussed below.

#### *Operating Reserve Requirement*

In projecting revenue requirements for an enterprise fund authority, it is prudent to include an estimate of annual operating reserve requirement to provide cash flow fluctuations during the fiscal year and to provide for any extraordinary unplanned for operational emergencies. The inclusion of working capital reserve requirement is consistent with PWSA's current bond covenants and PWSA's best practice financial management.

PWSA's existing revenue bond covenants requires PWSA to maintain an Operating Reserve Requirement of 60 days of annual O&M expenditures. As the stormwater authority is expected to be launched in FY 2014, the full 60-day operating reserve needed for that year is included. The incremental increase needed to meet the 60-day O&M reserve requirement is included in each subsequent year. The projected 60-day O&M reserve requirement for the study period is presented in Table 1.9.

#### *1.1.4.1 Capital Reserve Requirement*

PWSA's existing revenue bond covenants requires PWSA to maintain a Renewal and Replacement Fund in the amount designated by the PWSA's consulting engineer. For initial planning and evaluation purposes, it is assumed that no additional capital reserve requirements will be necessary during the study period.

#### *1.1.4.2 Collection Shortfall Adjustments*

Collection shortfalls, or bad debt amounts, are incurred when billed user fees become delinquent uncollectible amounts. Despite any collection shortfall, the stormwater authority still needs to generate sufficient revenues to meet all the annual expenditure obligations. Therefore, it is prudent financial practice to include an estimate of revenue requirement to offset any potential revenue collection shortfall. Collection shortfall revenue requirement adjustments are estimated as 5 percent of total billings. The projected Collection Shortfall Adjustments are presented in Table 1.9.

### 1.1.5 Net Revenue Requirement Projection

The net revenue requirement is defined as the revenues that need to be generated from user rates. Therefore, net revenue requirement is calculated as the total annual revenue requirement less any anticipated "miscellaneous revenues" that can offset some of the stormwater management costs. For initial planning and evaluation purposes, it is assumed that no miscellaneous revenues will be attributable to the stormwater authority during the study period. See Table 1.10 for the projected Net Revenue Services.

**Table 1.9 – Other Revenue Requirement Adjustments**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<b>Reserve Requirements</b>						
Operating Reserve Requirement	-	-	\$980,000	\$14,000	\$15,000	\$42,000
Capital Reserve Requirement	-	-	-	-	-	-
<b>Revenue Adjustments</b>						
Collection Shortfall Adjustments	\$954,000	\$977,000	\$1,141,000	\$1,146,000	\$1,261,000	\$1,269,000
<b>Total Other Revenue Requirement Adjustments</b>	<b>\$954,000</b>	<b>\$977,000</b>	<b>\$2,121,000</b>	<b>\$1,160,000</b>	<b>\$1,276,000</b>	<b>\$1,311,000</b>

**Table 1.10 – Net Revenue Requirements**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<b>O&amp;M Expenses</b>	\$4,655,000	\$4,848,000	\$5,882,000	\$5,963,000	\$6,055,000	\$6,306,000
<b>Capital Expenses</b>	\$14,428,000	\$14,692,000	\$15,959,000	\$16,944,000	\$19,150,000	\$19,033,000
<b>Reserve Requirements</b>	-	-	-	-	-	-
Operating Reserve Requirement	-	-	\$980,000	\$14,000	\$15,000	\$42,000
Capital Reserve	-	-	-	-	-	-
<b>Revenue Adjustments</b>	-	-	-	-	-	-
Collection Adjustments	\$954,000	\$977,000	\$1,141,000	\$1,146,000	\$1,261,000	\$1,269,000
Miscellaneous Revenue	-	-	-	-	-	-
<b>Total Net Revenue Requirements</b>	<b>\$20,037,000</b>	<b>\$20,517,000</b>	<b>\$23,962,000</b>	<b>\$24,067,000</b>	<b>\$26,481,000</b>	<b>\$26,650,000</b>



## APPENDIX

Table A.1 – DPW Current Stormwater Responsibilities

City of Pittsburgh Department of Public Works Stormwater Activities Cost Summary					
Program	Type of O&M	Total Cost			Projected Cost
		2009	2010	2011	2012
Flood/Storm Damage <i>- To be conducted by Stormwater Authority</i>	Labor	\$9,313	\$18,178	\$4,173	
	OT Labor	\$2,493	\$5,485	\$1,362	
	Materials	\$190	\$438	\$94	
	Equipment	\$8,062	\$8,504	\$2,985	
	<b>Total</b>	<b>\$20,058</b>	<b>\$32,604</b>	<b>\$8,614</b>	<b>\$35,000</b>
Catch Basin/Manhole/Gutters <i>- To be conducted by Stormwater Authority</i>	Labor	\$86,995	\$88,557	\$135,856	
	OT Labor	\$5,726	\$8,946	\$61	
	Materials	\$6,873	\$10,986	\$17,706	
	Equipment	\$48,799	\$60,932	\$105,755	
	<b>Total</b>	<b>\$148,392</b>	<b>\$169,422</b>	<b>\$259,378</b>	<b>\$285,000</b>
Street Sweeping <i>- To be conducted by the City</i>	Labor	\$704,279	\$404,132	\$232,735	
	OT Labor	\$9,078	\$5,383	\$6,445	
	Materials	\$29,282	\$178,675	\$159,945	
	Equipment	\$599,826	\$452,899	\$454,963	
	<b>Total</b>	<b>\$1,342,465</b>	<b>\$1,041,089</b>	<b>\$854,089</b>	<b>\$939,497</b>

Note: Data from City of Pittsburgh Department of Public Works

Table A.2 – Projected Capital Improvement Program Expenses

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<b>Existing Capital Program Costs</b>						
Try Street Relief Sewer		\$2,209,000				
Sewage Pump Station Upgrades	\$3,090,000					
Becks Run CSO Improvements			\$1,454,000			
Bells Run CSO Improvements				\$5,981,000	\$6,161,000	\$6,346,000
Easy Street CSO Improvements			\$2,295,000			
Little Saw Mill Run CSO Improvements				\$5,459,000	\$5,622,000	\$5,791,000
McCartney Run CSO Improvements			\$5,507,000			
Weymans Run CSO Improvements			\$1,530,000			
Brook Street Run CSO Improvements			\$2,295,000			
COA Compliance	\$1,030,000	\$1,061,000	\$1,093,000	\$1,126,000	\$1,159,000	\$1,194,000
Sewer System Improvements	\$2,060,000	\$2,122,000	\$2,185,000	\$2,251,000	\$2,319,000	\$2,388,000
<b>Total Estimated Capital Program Costs</b>	<b>\$6,180,000</b>	<b>\$5,392,000</b>	<b>\$16,359,000</b>	<b>\$14,817,000</b>	<b>\$15,261,000</b>	<b>\$15,719,000</b>

**Table A.2 – Projected Wastewater Related Capital Improvement Program Expenses**

<b>Annual Expenditures</b>	<b>Projected Year 1 (FY 2012)</b>	<b>Projected Year 2 (FY 2013)</b>	<b>Projected Year 3 (FY 2014)</b>	<b>Projected Year 4 (FY 2015)</b>	<b>Projected Year 5 (FY 2016)</b>	<b>Projected Year 6 (FY 2017)</b>
<b>Existing Capital Program Costs</b>						
Try Street Relief Sewer		\$2,209,000				
Sewage Pump Station Upgrades	\$3,090,000					
Becks Run CSO Improvements			\$1,454,000			
Bells Run CSO Improvements				\$5,981,000	\$6,161,000	\$6,346,000
Easy Street CSO Improvements			\$2,295,000			
Little Saw Mill Run CSO Improvements				\$5,459,000	\$5,622,000	\$5,791,000
McCartney Run CSO Improvements			\$5,507,000			
Weymans Run CSO Improvements			\$1,530,000			
Brook Street Run CSO Improvements			\$2,295,000			
COA Compliance	\$1,030,000	\$1,061,000	\$1,093,000	\$1,126,000	\$1,159,000	\$1,194,000
Sewer System Improvements	\$2,060,000	\$2,122,000	\$2,185,000	\$2,251,000	\$2,319,000	\$2,388,000
<b>Total Estimated Capital Program Costs</b>	<b>\$6,180,000</b>	<b>\$5,392,000</b>	<b>\$16,359,000</b>	<b>\$14,817,000</b>	<b>\$15,261,000</b>	<b>\$15,719,000</b>

Table A.3 – Existing Debt Service

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<i>Outstanding GO/Direct Debt</i>						
<b>Wastewater Utility</b>						
Series 1993 A	\$3,050,936	\$3,401,975	-	-	-	-
Series 1993 B	-	-	-	-	-	\$799,020
Series 2003	\$784,764	\$784,748	\$4,298,309	\$4,321,793	\$4,336,731	\$646,857
Series 2007 A	\$1,997,559	\$2,000,477	\$1,999,261	\$1,998,236	\$1,999,287	\$1,998,940
Series 2007 B 1	\$564,422	\$564,422	\$564,422	\$564,422	\$564,422	\$564,422
Series 2007 B 2	\$564,490	\$564,490	\$564,490	\$564,490	\$564,490	\$564,490
Series 2008 A	\$1,574,240	\$1,574,240	\$1,574,240	\$1,574,240	\$1,574,240	\$4,355,177
Series 2008 B 1	\$1,392,751	\$1,376,615	\$1,376,615	\$1,376,615	\$1,377,517	\$1,376,615
Series 2008 B 2	\$1,393,898	\$1,376,521	\$1,376,521	\$1,376,521	\$1,377,422	\$1,376,521
Series 2008 C1 A	\$208,382	\$208,382	\$208,382	\$208,382	\$208,528	\$208,382
Series 2008 C1 B	\$208,382	\$208,382	\$208,382	\$208,382	\$208,528	\$208,382
Series 2008 C1 C	\$100,798	\$99,956	\$99,956	\$99,956	\$100,017	\$99,956
Series 2008 C1 D	\$633,484	\$629,089	\$617,977	\$617,977	\$617,977	\$617,977
Series 2008 C2	\$974,916	\$971,923	\$960,946	\$960,946	\$961,553	\$960,946
Series 2008 D 1	\$424,375	\$424,375	\$424,375	\$424,375	\$424,375	\$424,375
Series 2008 D 2	\$1,323,255	\$1,322,490	\$1,322,490	\$1,322,490	\$1,323,255	\$1,322,490
<b>Total</b>	<b>\$15,196,650</b>	<b>\$15,508,087</b>	<b>\$15,596,366</b>	<b>\$15,618,826</b>	<b>\$15,638,343</b>	<b>\$15,524,550</b>
<b>Stormwater Utility Allocation</b>						
Percent Allocation	68%	68%	68%	68%	68%	68%
Allocated Debt Service	\$10,333,722	\$10,545,499	\$10,605,529	\$10,620,801	\$10,634,073	\$10,556,694

**Table A.3 - Existing Debt Service (Continued)**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<i>PennVest Loans</i>						
<b>Wastewater Utility</b>						
Note # 71362 (#3)	\$264,769	\$264,770	\$264,769	\$264,769	\$281,646	\$290,087
Note # 27772 (#4)	\$611,446	\$611,445	\$611,444	\$611,444	\$649,347	\$656,930
Note # 27784 (#5)	\$268,519	\$268,520	\$268,520	\$268,520	\$268,520	\$268,520
Note # 71191 (#6)	\$10,375	\$10,376	\$10,375	\$10,376	\$10,374	\$10,374
Note # 58066 (#7)	\$52,056	\$52,056	\$52,056	\$52,058	\$52,059	\$52,055
Note # 71217 (#11)	\$136,848	\$136,848	\$136,848	\$136,848	\$136,848	\$136,848
<b>Total</b>	<b>\$1,344,014</b>	<b>\$1,344,015</b>	<b>\$1,344,012</b>	<b>\$1,344,014</b>	<b>\$1,398,795</b>	<b>\$1,414,813</b>
<b>Stormwater Utility Allocation</b>						
Percent Allocation <sup>1</sup>	32.5%	32.5%	32.5%	32.5%	32.5%	30%
Allocated Debt Service	\$436,531	\$436,531	\$436,530	\$436,532	\$452,967	\$457,770
<i>Total</i>						
<b>Wastewater Utility</b>	\$16,540,664	\$16,852,102	\$16,940,378	\$16,962,840	\$17,037,137	\$16,939,363
<b>Stormwater Utility Allocation</b>						
Percent Allocation	65.1%	65.2%	65.2%	65.2%	65.1%	65.0%
Allocated Debt Service	\$10,770,253	\$10,982,030	\$11,042,059	\$11,057,333	\$11,087,040	\$11,014,464

Notes:

1. Wastewater Utility related PennVest Loans allocated 30% to Stormwater Utility with the exception of Note # 58066 (#7) which is allocated 100% to the Stormwater Utility.

**Table A.4 – Projected Capital Funding Expenses**

Annual Expenditures	Projected Year 1 (FY 2012)	Projected Year 2 (FY 2013)	Projected Year 3 (FY 2014)	Projected Year 4 (FY 2015)	Projected Year 5 (FY 2016)	Projected Year 6 (FY 2017)
<i>Revenue Bond Issue Terms</i>						
Interest Rate	5.0%	-	5.0%	-	5.0%	-
Term	25 years	-	25 years	-	25 years	-
Issuance Date	January 1	-	January 1	-	January 1	-
Bond Issue	\$16,000,000	-	\$36,000,000	-	\$36,000,000	-
Estimated Issuance Expense <sup>1</sup>	(\$240,000)	-	(\$540,000)	-	(\$540,000)	-
Debt Service Reserve Requirement <sup>2</sup>	(\$1,135,000)	-	(\$2,554,000)	-	(\$2,554,000)	-
Net Proceeds	\$14,625,000	-	\$32,906,000	-	\$32,906,000	-
<i>Construction Fund</i>						
Beginning Balance	\$0	\$8,572,000	\$3,239,000	\$20,093,000	\$5,403,000	\$23,381,000
Bond Proceeds	\$14,625,000	-	\$32,906,000	-	\$32,906,000	-
Capital Expenditures	(\$6,180,000)	(\$5,392,000)	(\$16,359,000)	(\$14,817,000)	(\$15,261,000)	(\$15,719,000)
Interest Income	\$127,000	\$59,000	\$307,000	\$127,000	\$333,000	\$156,000
Ending Balance	<b>\$8,572,000</b>	<b>\$3,239,000</b>	<b>\$20,093,000</b>	<b>\$5,403,000</b>	<b>\$23,381,000</b>	<b>\$7,818,000</b>
<i>Proposed Debt Service</i>						
Series 2012 Bonds	\$1,135,000	\$1,135,000	\$1,135,000	\$1,135,000	\$1,135,000	\$1,135,000
Series 2013 Bonds		-	-	-	-	-
Series 2014 Bonds			\$2,554,000	\$2,554,000	\$2,554,000	\$2,554,000
Series 2015 Bonds				-	-	-
Series 2016 Bonds					\$2,554,000	\$2,554,000
Series 2017 Bonds						-
<b>Total Proposed Bonds</b>	<b>\$1,135,000</b>	<b>\$1,135,000</b>	<b>\$3,689,000</b>	<b>\$3,689,000</b>	<b>\$6,243,000</b>	<b>\$6,243,000</b>
Stormwater Allocation	68%	68%	68%	68%	68%	68%
<b>Stormwater Debt Service</b>	<b>\$772,000</b>	<b>\$772,000</b>	<b>\$2,509,000</b>	<b>\$2,509,000</b>	<b>\$4,246,000</b>	<b>\$4,246,000</b>

Notes:

2. Bond Issuance costs estimated as 1.5% of bond issuance.
3. Estimated debt service reserve requirement based on level principal and interest payments.



~~2022~~ 2024

# Stormwater Fee Credit Manual



Pittsburgh Water and Sewer Authority

~~1/12/2022~~ 2/8/2024



**The Pittsburgh Water and Sewer Authority’s  
Stormwater Fee Credit Manual**

**SELECT ~~January 12, 2022~~ PROPOSED REVISIONS TO BE EFFECTIVE 2/8/2024**

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## **Overview**

Impervious surfaces, such as driveways and rooftops, prevent stormwater from infiltrating into the ground. Impervious surfaces increase runoff, transport pollutants into local bodies of water, and overload drainage systems, causing flooding and other issues.

The Pittsburgh Water and Sewer Authority (PWSA) has established a stormwater management service charge, also referenced throughout this document as the stormwater fee, to provide a dedicated source of revenue for the construction, operation, and maintenance of PWSA's stormwater infrastructure. All developed parcels with over 400 square feet of impervious area will be required to pay the fee, which is based on the amount of impervious surface on a property.

Addressing Pittsburgh's problem of excess stormwater is a community undertaking that requires the active participation of property owners to reduce the peak runoff rate, manage the total quantity of stormwater runoff, and improve its quality, as it enters Pittsburgh's sewer system or waterways. PWSA has developed a credit program that offers a discount on the stormwater fee to encourage property owners to take actions to reduce runoff from their property, thereby reducing stormwater service demand. The program seeks to minimize the administrative burden placed on customers who want to participate. Customers can also reduce their stormwater service charges by replacing impervious surfaces with green roofs or permeable pavement.

## **Disclaimer**

The property owner assumes all risks and responsibilities associated with stormwater drainage modifications, including obtaining the necessary permits and complying with applicable regulations. PWSA is not responsible for said modifications and disclaims liability for such actions.

PWSA is providing this Manual as an accompanying document to its Stormwater Tariff. The Stormwater Tariff is approved by the Pennsylvania Public Utility Commission (PUC) and is what will determine if stormwater credits are available to PWSA stormwater customers receiving stormwater service for properties within the PWSA stormwater service territory.

## **Definitions, as defined in the Stormwater Tariff**

**Best Management Practice (BMP):** Activities, facilities, designs, measures, practices, procedures, or a combination thereof determined to be the most effective and practicable used to manage stormwater runoff, control sediment, stabilize soil, reduce nonpoint source pollution and/or meet state water

quality requirements. Refer to the Pennsylvania Department of Environmental Protection’s suggested guidelines for stormwater quality, as defined in the current edition of the Pennsylvania Stormwater Best Management Practices Manual (<http://www.stormwaterpa.org/from-the-foreword.html>) .

Customer: Person or entity that is responsible for payment of storm water service charges. Customers are classified as either residential or non-residential. The property owner or, in the case of a non-residential property, a Guaranteed Lessee are the Customer.

Developed Property: A parcel altered from its natural state that contains an impervious area from manmade changes, including but not limited to, buildings, structures, gravel, and pavement equal to or greater than 400 square feet.

Equivalent Residential Unit (ERU): Unit of measurement that standardizes the amount of impervious area on a property to the typical amount of impervious area found on one residential parcel. PWSA equates 1 ERU to 1,650 square feet of impervious area.

Impervious Area or IA: A manmade surface resulting from parcel improvements which prevents or limits the infiltration of water into the ground, including compacted or covered semi-pervious surfaces such as compacted earth or clay, gravel that is installed and maintained for vehicle travel or parking, most conventionally hardscaped surfaces such as streets, driveways, roofs, sidewalks, parking lots, walkways, patio areas, attached and detached structures, and other similar surfaces.

Non-Residential Property: Any property that is not considered residential property.

Owner: The person having an interest as owner, or a person representing themselves to be the owner, whether legal or equitable, sole or partial, in any premises that are or are about to be supplied with water, wastewater conveyance, or stormwater service by PWSA.

Regional Efforts or “Enhanced Volume Control”: BMPs controlling at least 25% more runoff than what is required by the City of Pittsburgh 2019 stormwater standards for all impervious surfaces on the property.

Residential Property: Property used exclusively for residential purposes with at least one and no more than four dwelling units and which cannot be classified as a condominium property. Each residential property is considered to be a residential customer.

Runoff: Any water flow, resulting from either naturally occurring precipitation, snowmelt or human activity that does not immediately infiltrate the ground and travels along the ground surface potentially picking up pollutants until it has infiltrated, is collected, or reaches a receiving water body.

Stormwater Credit: A conditional reduction to the stormwater management service charge available to a customer for implementing certain eligible property conditions or controls and reducing a property’s demand for service.

Stormwater Management Service Charge: The service charge imposed by PWSA under its Stormwater Tariff, as amended from time to time, on each customer for their property’s use of the stormwater system and other stormwater services provided by PWSA.

**Stormwater Management Service Charges Calculation**

All customers are charged based on their property’s impervious area.

**Residential Customers**

Residential customers (owners of parcels with one to four dwelling units) are placed in one of three impervious area tiers, with all residential properties assigned either 0.5, 1, or 2 Equivalent Residential Units (or ERUs – see Definitions section, above) depending on their measured impervious area.

The ERU is the stormwater fee applied to each base billing unit (ERU). Refer to PWSA’s stormwater tariff for the rate currently in effect. In 2024<sup>2</sup>, the proposed monthly stormwater fees by residential tiers are as follows: rate will be \$5.96 /ERU per month, ~~and in 2023 the rate will be \$7.95/ERU per month.~~

<b>PWSA Proposed Monthly Stormwater Fees by Residential Tier</b>			
<b><u>Proposed Residential Stormwater Fee</u></b>	<b><u>Tier 1</u></b>	<b><u>Tier 2</u></b>	<b><u>Tier 3</u></b>
<b><u>2024</u></b>	<b><u>\$5.13</u></b>	<b><u>\$10.26</u></b>	<b><u>\$20.52</u></b>

The calculations for charges are below:

Stormwater Customer Category	Tier ERU
<b>Tier 1</b> - Impervious area of 400 square feet to less than 1,015 square feet	0.5
<b>Tier 2</b> - Impervious area of 1,015 square feet to less than 2,710 square feet	1
<b>Tier 3</b> - Impervious area greater than or equal to 2,710 square feet	2

$$Charge = Rate\ per\ (1)\ ERU \times Tier\ ERU$$

So, for example, a single-family residence having 2,236 square feet of impervious area is Category Tier 2 with 1 ERU. ~~In 2022 t~~For 2024, their monthly stormwater bill would be – ~~\$5.96~~10.26 X 1 ERU or ~~\$10.26~~5.96 per month.

### Non-Residential Customers

Non-residential properties are charged based on their total impervious area, measured in Equivalent Residential Units (ERUs). 1 ERU is equivalent to 1,650 square feet of impervious area, and a property’s charge is its impervious area in ERUs multiplied by the effective rate per ERUs, which in 2024 is \$10.26 per month.

	<u>Effective January 12, 2022</u>	<u>Effective January 1, 2023 <del>February 8,</del> 2024</u>
<b>Rate per (1) ERU</b>	<del>\$5.96</del>	<del>\$7.95</del> <b>\$10.26</b>

$$Charge = Rate\ per\ (1)\ ERU \times \frac{Total\ Impervious\ Area}{1,650\ sq\ ft\ per\ ERU} \text{ (round up to the nearest whole number)}$$

So, for example, consider a non-single-family residence having 148,672 square feet of impervious area. This equates to 91 ERUs (148,672 / 1,650, rounded up to the nearest whole number = 91). This property’s monthly stormwater fee is ~~\$933.66542.36~~ (91 ERUs x ~~\$10.25.96~~ = ~~\$933.66542.36~~).

To find your property’s Tier or Impervious Area, consult your stormwater bill, visit the PWSA Stormwater Fee Finder website -

<https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc>, call (412) 255-2423 (Press Option 5), or email info@pgh2o.com.

### Stormwater Fee Credits

PWSA has developed a system of stormwater fee credits for customers who take steps to reduce stormwater runoff leaving their property and entering PWSA’s stormwater management system and natural receiving waters such as Saw Mill Run and the Allegheny, Monongahela, and Ohio Rivers.

Residential and non-residential customers are eligible for different credits as detailed in the sections below.

#### Residential Customers

~~A residential stormwater credit reduces a customer’s stormwater charge by 50%.~~ Residential customers can receive a stormwater credit, reducing the stormwater charge by 50%, by controlling ¾ of an inch of runoff from their property’s impervious surfaces.

A residential customer in any part of the city can get a stormwater credit by installing (or documenting the performance of a previously installed) stormwater control measure such as those listed on Worksheet 5, “Structural BMP Volume Credits” in the Pennsylvania Stormwater Best Management Practices Manual ([Chapter 8, pg. 34](#)). The control measure must capture for 24 to 72 hours and slowly release at least ¾ of an inch of runoff from the impervious surfaces on their property.

The more impervious surface on a residential property, the more runoff a measure must control to qualify for the fee credit. To calculate the runoff volume that needs to be controlled on a residential property –

$$* \text{Runoff Volume to be Controlled on a Residential Property in Gallons} = \text{Impervious Area sf} \times 0.0625 \times 7.48$$

\*To find your property’s Impervious Area, consult your stormwater bill, or visit the PWSA Stormwater Fee Finder website -

<https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc>

$$* 0.0625 \text{ ft} = \frac{3}{4} \text{ inches} \times \frac{1 \text{ ft}}{12 \text{ inches}}$$

\*To convert the value from cubic feet to gallons, multiply by 7.48.

For example, to determine how much water a stormwater control measure would need to detain on a Tier 2 residential property with 2,000 square feet of impervious area to receive a credit-

$$935 \text{ Gallons} = 2,000 \text{ sf} \times 0.0625 \times 7.48$$

They would need a rain garden, for example, that holds 935 gallons of runoff for 24-72 hours.

Residential customers are also eligible for a one-time credit of \$40 if they can demonstrate the use of a rain barrel to capture and detain roof runoff. Customers must submit a photo of the rain barrel installed and in good working order.

### Non-Residential Customers

Non-residential customers can receive stormwater fee credit by **capturing and detaining runoff on-site through the use of structural BMPs that, meeting or exceeding recent development standards** in place in the City of Pittsburgh.

Non-residential customers who bring parts of their property up to the most stringent Stormwater Management standards, (the “2019 standards” <https://pittsburghpa.gov/dcp/stormwater> ) will receive a 60% credit on the part of the property that meets the standards. Those standards are:

- Keep 1” or more of water from running off the impervious surfaces on their property and from getting into rivers or streams.

Non-residential customers who bring parts of their property up to the second-most stringent Stormwater Management standards (the “2016 standards”), will receive a 45% credit on the part of the property that meets those standards. Note that the 2016 Stormwater Management Standards have been replaced by the 2019 Stormwater Management Standards, so the written 2016 standards are no longer available. However, the 2016 standards are:

- Keep ¾” of an inch or more of water from running off the impervious surfaces on their property and from getting to rivers or streams.

In both situations, only the portion of the property's impervious area that meets the requirement will be used to compute the credit. The rest of the property will have the same charge as before.

Non-Residential Customers will be eligible for a credit provided that an approved stormwater BMP has been installed and the owner can demonstrate that the BMP is functioning as intended. Customers who have completed a Stormwater Plan and have received a letter from the City attesting that their plan is adequate have met these requirements. The letter from the City must be submitted with a credit application and other required supporting documentation for a Non-Residential property. Customers who have implemented stormwater treatment outside of City requirements will not have this letter, thus will submit plans and calculations for PWSA review.

To calculate the runoff volume that needs to be controlled on a property in order to obtain a 60% credit, multiply the impervious area in square feet by 0.083 feet (the same as one inch). To calculate the runoff volume that needs to be controlled on a property in order to obtain a 45% credit, multiply the impervious area in square feet by 0.0625 feet (the same as 3/4 inch).

As an example, a non-residential customer with a property of 165,000 sq. ft or 100 ERUs of impervious area will receive a monthly bill of ~~\$1,026,596.00 in 2022~~. If the customer decides to redevelop 33,000 sq. ft. or 20% of the impervious area to meet the 2019 standards, they will receive a 60% credit on that 20%. The customer's new monthly bill will be reduced by 12% (60% discount x 20% of impervious area), for an updated monthly fee of ~~\$902,8524.48~~.

Non-residential customers can also earn a credit of between 75% and 100% of their stormwater fees, for "regional efforts - or "Enhanced Volume Control" for controlling at least 25% more runoff than what is required by the City of Pittsburgh 2019 stormwater standards.

Non-residential customers can also receive credit through passive management of stormwater via a property's green spaces. An engineer-stamped drainage analysis must demonstrate that green spaces are receiving and infiltrating runoff from adjacent impervious surfaces to an extent consistent with the standards described above. That is, impervious surfaces for which ¾ inch of runoff is infiltrated by green spaces will be eligible for 45% credit, and impervious surfaces for which 1 inch of runoff is infiltrated by green spaces will be eligible for 60% credit.

### **Credit Application and Approval Process**

The Stormwater Fee Credit Application and Approval process consists of the following steps:

1. The property owner (or an approved representative thereof) completes and submits a Stormwater Fee Credit Application form with all required documentation.
2. PWSA will evaluate the application within three days to determine if the action qualifies for a stormwater fee credit. Review times may be extended to up to 30 days, based on the number of applications received by PWSA.
3. The applicant will be notified by letter and/or email of the determination of the stormwater fee credit.

General questions regarding credits should be referred to PWSA's Customer Service at (412) 255-2423 (Press Option 5) or via email to [info@pgh2o.com](mailto:info@pgh2o.com). Stormwater fee credits are maintained on a property for as long as the stormwater facility receiving credit(s) is properly functioning in accordance with applicable codes, ordinances and the policies stated herein. The credit will continue for three (3) years for residential and non-residential properties from the date of approval of the credit, at which time the owner must submit a renewal form. Three months prior to expiration of the credit, PWSA will send a notification by letter or e-mail of the requirement for renewal.

### **Application Submission**

The stormwater fee credit application form is provided in Attachment A and is available on the PWSA Stormwater Fee website at [www.pgh2o.com/stormwater-fee](http://www.pgh2o.com/stormwater-fee). Electronic submission via the website is preferred. If this is not possible, the paper application and supporting documentation may be mailed to:

Pittsburgh Water and Sewer Authority  
Attn.: Department of Engineering and Construction, Stormwater Fee Credit Review  
Penn Liberty Plaza I  
1200 Penn Avenue  
Pittsburgh, PA 15222

PWSA will notify applicants if their applications are incomplete. If complete information is not provided, the application will expire one year from the date of the original submission. Once an application expires, the owner must submit a new credit application with all supporting documentation.

Questions can be directed to (412) 255-2423 (Press Option 5) or via email to [info@pgh2o.com](mailto:info@pgh2o.com).

### **Credit Approval**

PWSA will review the required documentation, and approval or denial of the stormwater fee credit application will be determined. If all requirements and conditions are met, the stormwater fee credit will be available upon successful completion of the stormwater fee credit application process and approval by PWSA for the stormwater fee credit, generally within 3 days. Review times may be extended to up to 30 days based on the number of applications received by PWSA. A PWSA representative will notify the applicant by letter and/or email of the approval or denial and the resulting credits (if applicable). If approved, the credit will be made to the customer's bill on the next billing cycle, and can be made retroactive to no earlier than January 12, 2022, based on date of installation.

### **Credit Termination**

PWSA may review and terminate approved credits at any time if the facilities associated with those credits are found to be improperly maintained and/or not adequately functioning and the owner fails to restore the BMP to good working order following notification by PWSA.

Failure to properly maintain the BMP may result in a public nuisance. If disconnection causes a public nuisance to neighboring property or public property, sidewalk, or roadway, corrective actions, which may include reconnection to the public sewer system, must be made within 30 days upon re-inspection and notification by Inspector(s) or credits will be terminated.



## **Answers to Some Common Questions About the Stormwater Fee**

### **What if I Have a Question About My Credit Determination?**

Questions can be directed to (412) 255-2423 (Press Option 5) or via email to [info@pgh2o.com](mailto:info@pgh2o.com). PWSA will review your question and account details with you.

### **What Are the Maintenance and Renewal Requirements?**

The facilities must be owned, operated, and maintained, either on-site or by record of agreement, by the applicant.

### **Does the Credit Have to Be Renewed?**

To continue to receive a credit, the property owner must submit a renewal form (see Attachment B) with a copy of a property owner's written inspection report of their BMP every three (3) years. The owner confirms that the BMP is performing as intended in properly managing stormwater with a current photograph.

### **Will PWSA Perform Site Inspections?**

After an owner submits a credit application or credit renewal application, PWSA may inspect the parcel(s) as needed to verify the information provided in the application and in the supporting documentation. It is the responsibility of the customer/owner to allow PWSA access to the parcel.

If at any time an Authority inspection determines that the facility is not being maintained, the credit can be suspended. PWSA may choose to withhold credit until the owner can demonstrate the facility has been restored to good working order and appropriate maintenance plans are in place.

## **Disputes**

If you are unsatisfied with any issue related to your stormwater fee, you may avail yourself of your rights in accordance with the Pennsylvania Public Utility Commission's Inquiry/Dispute/Informal Complaint/Formal Complaint processes at <https://www.pgh2o.com/residential-commercial-customers/account-billing-info/customer-rights>.

## **Attachments**

### **Attachment A – Stormwater Fee Credit Application Form**

The stormwater fee credit application form is available on the PWSA Stormwater Fee website at [www.pgh2o.com/stormwater-fee](http://www.pgh2o.com/stormwater-fee). It is also provided in Attachment A. Electronic submission via the



website is preferred. If this is not possible, the paper application and supporting documentation may be mailed to:

Pittsburgh Water and Sewer Authority  
Attn.: Department of Engineering and Construction, Stormwater Fee Credit Review  
Penn Liberty Plaza I  
1200 Penn Avenue  
Pittsburgh, PA 15222

Or email to: [stormwaterfee@pgh2o.com](mailto:stormwaterfee@pgh2o.com)

General questions can be directed to (412) 255-2423 (Press Option 5) or via email to [info@pgh2o.com](mailto:info@pgh2o.com). The application will be evaluated to determine if the action qualifies for a credit. The applicant will be notified by letter and/or email of the determination of the credit.

### **Stormwater Fee Credit Application – Pittsburgh Water and Sewer Authority**

**Date:**

#### **Property Owner Information**

Name:

E-mail:

Phone Number:

Mailing Address:

I attest that I have legal ownership and maintenance responsibility for the Best Management Practice(s) included in this application.

Signature:

#### **Parcel Information**

Address:

Allegheny County Parcel ID Number (Ex: 0123-A-00123-00000-00): \_\_\_\_\_

To find your parcel ID number, you can search for your property's address on the [Allegheny County Real Estate Portal \(https://www2.alleghenycounty.us/RealEstate/Search.aspx\)](https://www2.alleghenycounty.us/RealEstate/Search.aspx)

Parcel Impervious Area (in square feet): \_\_\_\_\_ sq. ft.

To find your parcel's impervious area in square feet, please check your most recent stormwater bill, visit the PWSA Stormwater Fee Finder page -

<https://pwsa.maps.arcgis.com/apps/webappviewer/index.html?id=df39e93b5a0e403f8a29889a42125edc>, or call Customer Service at [412-255-2423](tel:412-255-2423) (Press Option 5).

Does this property have one or more tenant-occupied residential dwelling units? \_\_\_ Yes \_\_\_ No.

**Type of Credit:**

Is your property... (choose one)

- A single-family home, duplex, triplex, or quadplex, and not a condominium (considered Residential for the fee)
- Any other type of property (considered Non-Residential for the fee)

Please choose the type of credit you are applying for. If your property is Residential, you may only choose the first two, Residential, options. If your property is Non-Residential, you may select all Non-Residential credit types that apply.

- Residential, Controlling at least 0.75 inches ( $\frac{3}{4}$ " of runoff)
  - Residential, Rain Barrel
- Non-Residential, 2019 Standards (Controlling at least 1 inch (1" of runoff)
- Non-Residential, 2016 Standards (Controlling at least 0.75 inches ( $\frac{3}{4}$ " of runoff)
- Non-Residential, Regional Efforts or "Enhanced Volume Control" controlling at least 1.25 inches (1  $\frac{1}{4}$ " of runoff

**Type of Best Management Practice:**

- Rain Garden (complete "Runoff Control Calculations" section below)
  - Rain Barrel
- Other Best Management Practice (Please specify, e.g. modular storage, cistern, dry well, green roof): \_\_\_\_\_ . Complete "Runoff Control Calculations" section below.
- Green Space (complete "Runoff Control Calculations" section below)

Date Best Management Practice was Implemented (Month/Year): \_\_\_\_\_

**Runoff Control Calculations** (Complete all that apply):

Residential Rain Garden:

To be eligible for this credit, you must keep  $\frac{3}{4}$ " of stormwater from running off your parcel's impervious area.

Storage Requirement: The amount of stormwater you must control is [your parcel's Impervious Area] \_\_\_\_\_ sq. ft. \* 0.0625 ft. = \_\_\_\_\_ cu. ft.

Is your rain garden rectangular or non-rectangular? Rectangular \_\_\_\_\_ Non-rectangular \_\_\_\_\_

*If rectangular* Rain Garden Length (in feet): \_\_\_\_\_ ft. Rain Garden Width (in feet): \_\_\_\_\_ ft.

Rain Garden Area (length x width, if rectangular): \_\_\_\_\_ sq. ft.

Depth from the surrounding area to the top of your rain garden bed's soil: \_\_\_\_\_ ft.

Depth of your rain garden bed's loose soil (in feet): \_\_\_\_\_ ft.

Storage Volume = Surface Storage + Soil Storage

Storage Volume = (Area x Depth) + (Area x Soil Depth x 10%)

Storage Volume = (\_\_\_\_ square feet x \_\_\_\_ feet) + (\_\_\_\_ square feet x \_\_\_\_ feet x 10%)

Storage Volume for Your Rain Garden = \_\_\_\_\_ cubic feet

Storage Requirement for Your Rain Garden = \_\_\_\_\_ cubic feet (calculated above)

Residential Other Best Management Practice:

To be eligible for this credit, you must keep ¾" of stormwater from running off your parcel's impervious area.

Storage Requirement: The amount of stormwater you must control is [your parcel's Impervious Area] \_\_\_\_\_ sq. ft. \* 0.0625 ft = \_\_\_\_\_ cu. ft.

How much runoff does your best management practice control? (in cubic feet) \_\_\_\_\_ cu. ft.

Non-Residential 2019 Standards (Controlling 1" of Runoff):

How much of your parcel's impervious area meets the 2019 Standards of controlling 1" of runoff? (in square feet): \_\_\_\_\_ sq. ft.

Parcel Impervious Area = ( \_\_\_\_\_ sq. ft. / 1,650 sq. ft. per ERU), *round up to the nearest whole number*) = \_\_\_\_\_ Equivalent Residential Units (ERU)

Impervious Area Meeting 2019 Standards = \_\_\_\_\_ square feet

Impervious Area Not Meeting 2019 Standards = \_\_\_\_\_ square feet (Parcel Impervious Area – Impervious Area Meeting 2019 Standards)

Runoff Volume Controlled = Impervious Area Meeting 2019 Standards x 1"

Runoff Volume Controlled = \_\_\_\_\_ square feet x 1"

**Runoff Volume Controlled = \_\_\_\_\_ cubic feet**

Credit on Impervious Area = 60% Credit x (Impervious Area Meeting 2019 Standards / Parcel Impervious Area)

Credit on Impervious Area = 60% x ( \_\_\_\_\_ square feet / \_\_\_\_\_ square feet)

**Credit on Impervious Area = \_\_\_\_\_%**

Non-Residential Runoff Controls, 2016 Standards (Controlling ¾" of Runoff):

How much of your parcel's impervious area meets the 2016 Standards of controlling ¾" of runoff? (in square feet): \_\_\_\_\_ sq. ft.

Parcel Impervious Area = ( \_\_\_\_\_ sq. ft. / 1,650 sq. ft. per ERU), *round up to the nearest whole number*) = \_\_\_\_\_ Equivalent Residential Units (ERU)

Impervious Area Meeting 2016 Standards = \_\_\_\_\_ square feet

Impervious Area Not Meeting 2016 Standards = \_\_\_\_\_ square feet (Parcel Impervious Area – Impervious Area Meeting 2016 Standards)

Runoff Volume Controlled = Impervious Area Meeting 2016 Standards x ¾"

Runoff Volume Controlled = \_\_\_\_\_ square feet x ¾"

Runoff Volume Controlled = \_\_\_\_\_ cubic feet

Credit on Impervious Area = 45% Credit x (Impervious Area Meeting 2016 Standards / Parcel Impervious Area)

Credit on Impervious Area = 45% x ( \_\_\_\_\_ square feet / \_\_\_\_\_ square feet)

**Credit on Impervious Area = \_\_\_\_\_%**

Reduction on Stormwater Bill = \$5.96 Rate per ERU x Parcel Impervious Area in ERU x Credit on Impervious Area

Reduction on Stormwater Bill = \$5.96 per ERU x \_\_\_\_\_ ERU x \_\_\_\_\_%

**Reduction on Stormwater Bill = \$ \_\_\_\_\_**

New Stormwater Bill Total, Non-Residential:

Original Stormwater Bill = \$5.96 Rate per ERU x Parcel Impervious Area in ERU

Original Stormwater Bill = \$5.96 per ERU x \_\_\_\_\_ ERU

Original Stormwater Bill = \$ \_\_\_\_\_

Total Reduction on Stormwater Bill = Reduction for 2019 Standards + Reduction for 2016 Standards

Total Reduction on Stormwater Bill = \$ \_\_\_\_\_ + \$ \_\_\_\_\_

Total Reduction on Stormwater Bill = \$ \_\_\_\_\_

New Stormwater Bill = Original Stormwater Bill - Total Reduction on Stormwater Bill

New Stormwater Bill = \$ \_\_\_\_\_ - \$ \_\_\_\_\_

New Stormwater Bill = \$ \_\_\_\_\_

Non-Residential Runoff Controls, Regional Efforts or "Enhanced Volume Control"

Please summarize your plan for Regional Efforts. PWSA staff will contact you to review together.

## Supporting Documentation

### For Residential Credits

Rain Gardens: Please upload a site plan or design drawing that shows the dimensions (including a profile and cross section) and location of the rain garden, and the area of the parcel that drains to it. The site plan or design drawing should list the property's impervious area in square feet, the area that drains to the rain garden in square feet, the elevation or vertical distance of the surrounding area compared to the top of the garden bed in feet, and the depth of the rain garden bed's loose soil in feet.

Please also include at least two photographs of the rain garden, either as part of the site plan or as separate files.

For Other BMP's: Please upload a brief description of the best management practice, including a report by a professional engineer as well as as-built plans. Also include a calculation from [Worksheet 5](#) in the Pennsylvania Stormwater Best Management Practices Manual ([Chapter 8, pg. 34](#)), assuming a non-structural volume credit of 0 cubic feet, and a required control volume equivalent to the storage requirement for your best management practice.

For all Non-Residential Credits: Please submit Stormwater Plans and as-builts signed and sealed by a professional engineer, showing the change in impervious area and the total volume of runoff managed. A copy of a letter from the City of Pittsburgh that attests that the property's Stormwater Plan has been found to be adequate should also be submitted, if available. Letters received before 2019 will be proof of meeting the 2016 standards, and letters received after 2019 will be proof of meeting the 2019 standards. These documents will be reviewed by PWSA."

**Attachment B – Stormwater Fee Credit Renewal Form**

A Stormwater Fee Credit Renewal Form, including the property owner's written inspection report of their BMP must be submitted to PWSA every three (3) years (based on the date that the credit was first approved) to be considered for the credit. The written report should be a confirmation that the BMP is performing as intended in properly managing stormwater with a current photograph.

Please submit the completed renewal form and supporting documentation to:

Pittsburgh Water and Sewer Authority  
Attn.: Department of Engineering and Construction, Stormwater Fee Credit Review  
Penn Liberty Plaza I  
1200 Penn Avenue  
Pittsburgh, PA 15222

Or email to: [stormwaterfee@pgh2o.com](mailto:stormwaterfee@pgh2o.com)

General questions can be directed to (412) 255-2423 (Press Option 5), or via email to [info@pgh2o.com](mailto:info@pgh2o.com). The application will be evaluated to determine if the action qualifies for a credit. The applicant will be notified by letter and email of the determination of the credit renewal.

**Pittsburgh Water and Sewer Authority - Stormwater Fee Credit Renewal Form**

**Date:**

**Property Owner Information**

Name:

E-mail:

Phone Number:

Mailing Address:

The BMP is performing as intended in properly managing stormwater. Attached is a current photograph (dated \_\_\_\_\_). I attest that I have legal ownership and maintenance responsibility for the Best Management Practice(s) included in this application.

Signature:

**Parcel Information**

Address:

Allegheny County Parcel ID Number:

Parcel Impervious Area (Found on Fee Finder Website):





BEFORE THE  
PENNSYLVANIA PUBLIC UTILITY COMMISSION

TESTIMONY OF

**CHRISTINE M. FAY**

ON BEHALF OF  
THE PITTSBURGH WATER  
AND SEWER AUTHORITY

Docket Nos.

R-2023-3039920 (Water)  
R-2023-3039921 (Wastewater)  
R-2023-3039919 (Stormwater)

Topics:

Support for Proposed Rate Increase  
Financial Policies and Goals  
Capital Markets and Rating Consideration  
Peer Review of Financial Metrics

May 9, 2023

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**TABLE OF EXHIBITS**

Appendix A	Information regarding PRAG’s Experience in Water and Sewer Financing and Representative Client List
CF-1	Summary of the Authority’s Rate Covenant and Flow of Funds Provisions
CF-2	Peer Ratings and Comparative Financial Information
CF-3	Moody’s Investors Service, Sector Profile 26 May 2022: Water and Sewer Utilities – US. Medians – Liquidity and Debt Service Coverage Remained Strong in Fiscal 2020
CF-4	Moody’s Investors Service, 6 December 2022: Local Government 2023 Outlook: Stable With Reliable Revenue Sources and Robust Reserves
CF-5	S&P Global Ratings, January 12, 2023: Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising
CF-6	Moody’s Investors Service, April 13, 2022: US Municipal Utility Revenue Debt Methodology
CF-7	S&P Global Ratings, April 14, 2022: U.S. Municipal Water, Sewer and Solid Waste Utilities: Methodology and Assumptions
CF-8	Moody’s Investors Service, report on Pittsburgh Water and Sewer Authority dated October 22, 2022.
CF-9	S&P Global Ratings, report on Pittsburgh Water and Sewer Authority dated March 15, 2023.

1 **I. INTRODUCTION**

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

3 A. Christine M. Fay. I am a Senior Managing Director and Partner with Public Resources  
4 Advisory Group, Inc. (“PRAG”). The business address is 39 Broadway, Suite 1210, New  
5 York, New York, 10006.

6 **Q. PLEASE DESCRIBE PRAG.**

7 A. PRAG is a national independent financial advisory firm, wholly-owned and managed by  
8 its employees that provides independent and in-depth financial capital markets advice to  
9 state and local governments, authorities and their agencies and has continuously served  
10 governments that access the municipal finance market for the past thirty-eight 38 years.  
11 PRAG is a Municipal Advisor, registered with the Municipal Securities Rulemaking Board  
12 (“MSRB”) (MSRB ID K0133) and the Securities and Exchange Commission (“SEC”)  
13 (Municipal Advisor Registration Number 867-00146) and an Investment Adviser registered  
14 with the State of New York, with additional registrations in the states of California and  
15 Florida, Maryland, the District of Columbia (“District”) and the Commonwealth of  
16 Pennsylvania (“Pennsylvania”) (CRD# 113338). PRAG provides independent financial  
17 advice to public sector clients with respect to issuance of municipal bonds, credit rating  
18 strategy, capital planning, debt portfolio management, debt capacity analysis, swaps and  
19 derivative instruments, financing options, refunding approaches and techniques, bond  
20 structure and pricing, and bond proceeds investment strategies. PRAG is one of the  
21 leading municipal advisors in the country and has been ranked by Thomson Reuters as  
22 either the top one, two or three firm by volume over the past 20 years. Our water and  
23 wastewater experience includes some of the most active issuers in the country, including

1 The Metropolitan Water District of Southern California, Miami Dade County Water and  
2 Sewer Department and the City of Los Angeles Wastewater System.

3 **Q. SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS AND**  
4 **EXPERIENCE.**

5 A. I joined PRAG’s Media, Pennsylvania office in 2008 and was promoted to Senior  
6 Managing Director in 2018 and Partner in 2019. At PRAG, I work with my colleagues  
7 and manage financial advisory engagements, working with a broad range of municipal  
8 clients located throughout the East and Midwest regions of the U.S.

9 My background includes 20 years as an independent financial advisor and as a municipal  
10 finance executive. Since joining PRAG, I have worked with similar water and sewer  
11 clients over the years, including The Bethlehem Authority (PA), Capital Region Water  
12 (formerly The Harrisburg Authority; PA), Miami-Dade County Water and Sewer  
13 Department (FL), the City of Orlando (FL) and the West Virginia Water Development  
14 Authority. I have served as a financial advisor to The Pittsburgh Water & Sewer  
15 Authority (“PWSA” or “Authority”) since 2019.

16 **Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.**

17 A. I graduated Cum Laude from the University of Pennsylvania with a Bachelor of Arts  
18 degree in Economics and an MBA from UCLA Anderson School of Business. I am a  
19 registered Municipal Advisor Representative with a Series 50.

20 **Q. HAVE YOU EVER TESTIFIED BEFORE ANY REGULATORY AGENCIES OR**  
21 **IN LEGAL PROCEEDINGS?**

22 A. No. However, I have assisted in the drafting and development of the Direct,  
23 Supplemental Direct and Rebuttal testimony in support of PWSA’s most recent base rate  
24 case at Docket Numbers R-2021-3024773 (water) and R-2021-3024774 (wastewater) and  
25 R-2021-3024779 (Stormwater) and prior base rate case at Docket Numbers R-2020-

1 3017951 (water) and R-2020-3017970 (wastewater). In addition, I have assisted in the  
2 preparation of various securities certificates related to issuance of PWSA debt for the  
3 Pennsylvania Utility Commission (“PUC”)’s consideration.

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

5 A. The purpose of my testimony is to:

- 6 1) Provide expert witness testimony with respect to the credit rating agencies’  
7 criteria for evaluating public water and sewer entities including PWSA, the rating  
8 agencies’ outlooks for the water and wastewater sector especially given  
9 inflationary pressures and higher borrowing rates, and the implications for the  
10 Authority’s credit ratings both with and without the proposed rate increases;
- 11 2) Provide expert witness testimony with respect to the importance of PWSA’s  
12 credit ratings in the context of current capital market conditions, borrowing rates,  
13 and PWSA’s ability to access the capital markets to advance its capital  
14 improvement plan;
- 15 3) Discuss the Authority’s credit profile and key financial metrics compared to  
16 PWSA’s peer group of large urban mid-Atlantic and Midwestern water and  
17 wastewater public utilities; and
- 18 4) Emphasize the importance of the proposed rate increases to the Authority’s  
19 ability to secure additional financing to complete its substantial capital  
20 improvement plan, especially with respect to meeting its Additional Bonds Test,  
21 and the immediate and severe implications for its credit ratings, finances and  
22 operations if it is unable to do so.

23

1           This testimony will focus on setting rates at a level in which PWSA can  
2 successfully access the capital market and achieve efficient financings at a reasonable  
3 cost of capital to fund its capital plan and maintain its existing bond ratings. This  
4 objective has become increasingly more challenging since the Authority's prior base rate  
5 case since municipal market borrowing costs have precipitously increased following  
6 aggressive action of the Federal Reserve to control inflationary levels and changing  
7 investor preferences. Also, the rating agencies are increasingly more concerned about the  
8 economy and recessionary pressures and municipal utilities' ability to fund critical capital  
9 programs amid rising costs spurred by inflation and exacerbated by increased costs of  
10 borrowing. In 2022, the Authority needed to scale back its planned 2022 bond issuance  
11 from \$100 million to \$45 million due to affordability concerns stemming from rising  
12 borrowing costs and operating costs. All of the rating agencies consider access to capital  
13 markets and ability to fund capital as critical components of their rating assessment.  
14 PWSA has a complex debt profile which includes several bank and swap agreements  
15 with rating-related cost increases and termination triggers which would result in  
16 significantly escalated borrowing costs in the event of rating downgrades. It is necessary  
17 for the Authority to receive its requested rate increase to meet its annual Rate Covenant  
18 and its Additional Bonds Test and demonstrate to the rating agencies capacity to fund its  
19 capital needs and avoid rating downgrades which would result in additional costs to the  
20 rate payers.

21           Further, the financial metrics based on the PWSA's proposed rates will be  
22 discussed in comparison to peer utility systems and water and sewer industry type rating  
23 criteria. I will discuss the importance of the financial metrics and the need for the

1 requested rate increase in order to maintain these metrics in the FY 2024 (“FPFTY”) and  
2 FY 2025 and 2026 (the “Forecast Period”) at levels that will allow PWSA to maintain its  
3 current credit profile. PWSA’s current financial metrics are on the low side of peer  
4 utility systems and industry standards and need to be bolstered to be more in line with its  
5 peer utility systems in order to reduce its financial risks as described later in this  
6 testimony.

7 In this testimony, I have relied on my professional experience in working with  
8 similar issuers and credits entering the capital markets, as well as the experience of  
9 PRAG’s other utility advisory professionals. I have also examined materials, documents,  
10 and information produced in this matter, including the testimony of other PWSA  
11 witnesses, PWSA bond disclosure statements, PWSA financial statements, PWSA bank  
12 and swap agreements and rating agency publications related to PWSA, as well as industry  
13 and peer-related rating reports.

14 **Q. ARE YOU SPONSORING ANY EXHIBITS?**

15 A. Yes. I am sponsoring the following exhibits:

- 16 • **Exh. CF-1:** Exhibit CF-1 contains a summary of PWSA’s Rate Covenant and  
17 Flow of Funds from the Amended and Restated Indenture.
- 18 • **Exh. CF-2:** Exhibit CF-2 contains Peer Ratings and Comparative Financial  
19 Information
- 20 • **Exh. CF-3:** Exhibit CF-3 contains Moody’s Investors Service, May 26, 2022:  
21 Water and Sewer Utilities – US Medians – Liquidity and Debt Service Coverage  
22 Remained Strong in Fiscal 2020
- 23 • **Exh. CF-4:** Exhibit CF-4 contains Moody’s Investors Service, 6 December 2022:  
24 Local Government 2023 Outlook: Stable With Reliable Revenue Sources and  
25 Robust Reserves
- 26 • **Exh. CF-5:** Exhibit CF-5 contains S&P Global Ratings, January 12, 2023:  
27 Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising
- 28 • **Exh. CF-6:** Exhibit CF-6 contains Moody’s Investors Service, April 13, 2022: US  
29 Municipal Utility Revenue Debt Methodology

- 1 • **Exh. CF-7:** Exhibit CF-7 contains S&P Global Ratings, April 14, 2022: U.S.  
2 Municipal Water, Sewer and Solid Waste Utilities: Methodology and  
3 Assumptions
- 4 • **Exh. CF-8:** Exhibit CF-8 contains Moody’s Investors Service, report on  
5 Pittsburgh Water and Sewer Authority dated October 22, 2022.
- 6 • **Exh. CF-9:** Exhibit CF-9 contains S&P Global Ratings, report on Pittsburgh  
7 Water and Sewer Authority dated March 15, 2023.  
8

## 9 **II. FINANCIAL POLICIES AND GOALS**

### 10 **Q. PLEASE SUMMARIZE THE CREDIT AGENCIES’ VIEW OF THE** 11 **AUTHORITY’S DEBT STRUCTURE.**

12 **I.** The Authority’s debt structure is complex, consisting of a significant amount of variable  
13 rate bonds and interest rate swaps. In March 2023, S&P wrote: “Approximately 30% of  
14 PWSA’s debt is variable rate, most of which is synthetically fixed-rate by way of interest  
15 rate swaps. We view the contingent liquidity risk as remote, as the most prominent  
16 termination event would be if the ratings on PWSA were to be lowered to below  
17 investment grade. Although the current positions of the interest-rate swaps remain  
18 materially unfavorable, PWSA has not had to post collateral to its counterparts.” See  
19 PWSA Exhibit CF-8 & CF-9 for the most recent ratings reports from the two rating  
20 agencies that rate PWSA’s Revenue Bonds.

21 In addition to the complicated nature of the debt portfolio, PWSA is also highly  
22 leveraged compared to other systems. As stated in Moody’s most recent rating report  
23 dated October 22, 2022, “The authority’s total debt is equal to 99% of fixed assets as of  
24 2021 year end, well above similarly sized peers. The outstanding debt amortizes slowly,  
25 with only 36% of the principal scheduled to be repaid in the next 10 years.” This is a  
26 result of many years of structuring bond financings with deferred principal in order to  
27 minimize then current year rate increases. The slow principal amortization combined  
28 with the structure of PWSA’s currently outstanding debt (ascending through FPPTY and



1 generally level thereafter through FY 2040) will mean an increase of annual debt service  
 2 each year as the Authority issues additional debt for capital projects.

3 **Q. PLEASE DESCRIBE THE KEY FINANCIAL METRICS THAT WILL DRIVE**  
 4 **THE REVENUE REQUIREMENT AND THE RESULTING IMPACT ON THE**  
 5 **AUTHORITY'S CREDIT RATINGS.**

6 **I.** Currently, the Authority's senior debt is rated "A3" by Moody's with a "Stable" outlook.  
 7 Moody's downgraded the Authority's previous "A2" rating and changed the Rating  
 8 Outlook to "Negative" on October 15, 2018 due to PWSA's "narrow cash position, well  
 9 below average for similarly sized peers" and due to the Authority being "pressured by the  
 10 need for major capital funding." In the most recent Moody's report for the Authority  
 11 Exhibit CF-8, the agency specifically mentions that "high leverage will be a continued  
 12 headwind for the Authority going forward. The Authority's current debt burden is  
 13 significant, and material additional debt is expected as the Authority progresses on its  
 14 capital improvement plan." With the Authority's requested rate increase, we are hoping  
 15 to mitigate these concerns by demonstrating an ability to access the capital markets and  
 16 maintain debt service coverage given the ascending nature of the Authority's existing  
 17 debt service and need to issue additional debt.

18 The Authority's senior debt was upgraded from "A" to "A+" by S&P Global  
 19 Ratings ("S&P") with a "stable" outlook and subordinate debt was upgraded from "A-"  
 20 to "A" on October 12, 2022; of particular relevance in the context of this testimony, S&P  
 21 directly cited the importance of the PUC's last rate increase to this upgrade, stating "the  
 22 upgrade reflects the management team's continued maturation and conservative  
 23 budgeting practices as it works through a \$1.4 billion capital improvement plan (CIP)  
 24 from 2022-2026, *along with seeing continued successful rate cases with the*  
 25 *Pennsylvania Public Utility Commission (PaPUC) (emphasis added).*" S&P also

1 mentioned the complex nature of the Authority's debt and makes it clear that contingent  
2 risks are mitigated in part by the assumption of continued improvement in management,  
3 decreased exposure to interest rate risks and maintaining certain financial metrics, such as  
4 debt service coverage and strong liquidity. S&P also notes PWSA's large capital  
5 improvement plan and the need for significant amount of debt to fund the plan in addition  
6 to what they view as an already highly leveraged system.

7 Critical to the revenue requirement is the Authority's Financial Management  
8 Policy, which is provided as PWSA Exhibit EB-5, and was established in 2018 and most  
9 recently updated in 2019. The Financial Management Policy provides a framework to  
10 maintain the PWSA's financial integrity, while serving the long-term interests of its  
11 customers and other constituencies. The Financial Management Policy applies to all  
12 financial practices within PWSA and provides guidance to policy makers, staff and  
13 stakeholders as PWSA seeks to maintain and improve its financial position. The scope of  
14 the guidance includes many of the key metrics that the rating agencies and other credit  
15 analysts use to evaluate PWSA's creditworthiness, including minimum targeted debt  
16 service coverage levels, minimum and targeted levels of liquidity and reserve funds as  
17 measured by days cash on hand, and the ability to manage future debt capacity by  
18 funding a portion of the capital program with internally generated funds or "pay-go" and  
19 asset preservation. Both Moody's and S&P reference certain financial metrics that are  
20 key in order to maintain PWSA's current credit profile.

21 **Debt Service Coverage Ratio**

22 The first important metric is the debt service coverage ratio (Net Revenue to Annual Debt  
23 Service) as it is the primary metric considered by the rating agencies. As discussed in Mr.

1 Barca's testimony; PWSA's Amended and Restated Trust Indenture includes a Rate  
2 Covenant with the Authority's bondholders that requires PWSA to maintain an annual  
3 debt service coverage ratio at 1.25 times Senior Lien debt service and 1.10 times for total  
4 debt service. The Authority has covenanted with its bondholders that it will establish  
5 rates for each fiscal year to at least achieve these levels. See Exhibit CF-1 for a summary  
6 of the Authority's Rate Covenant and Flow of Funds provisions.

7 The Authority's Financial Management Policy is more stringent than the legal rate  
8 covenant and states that if the five year average senior lien debt service coverage is to be  
9 less than 1.35 times or less than 1.15 times on total debt service coverage basis, the Board  
10 will implement a plan which could include increasing rates, reducing expenses or other  
11 means to achieve a 1.35 times senior debt service coverage level and 1.15 times total debt  
12 service coverage level, "taking into consideration approved and pending rate increases  
13 with the Pennsylvania Public Utilit[y] Commission." It is important to note that while  
14 PWSA's financial management debt service coverages are higher than the legal  
15 requirements, the overall municipal water and sewer utility sector wide debt service  
16 coverage is closer to 2.4 times (using Moody's most recent median report, dated May 26,  
17 2022, which is included as Exhibit CF-3) for combined water and sewer governmental  
18 systems. While peer and rating comparisons will be discussed later in this testimony, it is  
19 clear that PWSA's debt service coverage ratio target is still significantly below industry  
20 standards. Therefore, the 1.35 times level should not be viewed as a goal, but a  
21 minimum. It is also important to note that if PWSA is able to increase its debt service  
22 coverage over time, PWSA will be able to grow its financial resources to fund targeted  
23 pay-go capital levels with less reliance on using debt. Without increased coverage levels,

1 PWSA will have to continue its over reliance on debt, further leveraging an already over-  
2 leveraged system. In addition to providing pay-go resources, adequate debt service  
3 coverage creates critical financial resources that are needed to address potential economic  
4 and operational challenges without dipping into the Authority's modest reserves. Lastly,  
5 PWSA has annual obligation payments to the City of Pittsburgh pursuant to a  
6 Cooperation Agreement that are subordinate to the Senior Lien and Subordinate Lien,  
7 which are also funded from internally generated funds (debt service coverage monies).  
8 It is extremely important to establish rates that also generate coverage at a level to protect  
9 against any unforeseen additional expenses or decreases in expected revenues. Setting  
10 coverage at just the minimum legal requirement puts the Authority at significant risk of  
11 violating the covenant and risking adverse action from the rating agencies. Furthermore,  
12 the ability to issue additional debt under the bond documents requires the Authority to  
13 pass an Additional Bonds Test, remain in compliance with the rate covenant and have  
14 sufficient revenues to comply with the covenant taking into account the additional debt  
15 service. In the absence of a rate increase, the Authority will not be able to pass its  
16 Additional Bonds Test and be precluded from accessing the capital markets which will  
17 result in rating downgrades and deferring the funding of its Capital Plan which will  
18 escalate future costs, as later discussed in my testimony.

19 Although the Authority did have a rate increase for FY 2022-2023, the agreed to  
20 rate increase was less than the amount requested and was largely absorbed by escalating  
21 operational costs spurred by increased inflation. Thus the requested rate increase is  
22 critical to avoid breaching rate covenants debt service coverage requirements and  
23 meeting the Additional Bonds Test. Provided below is a summary table of debt service

1 coverage levels based on existing rates. Budgeted FY 2023 figures of net revenue 1.45  
 2 times over senior lien debt service and 1.13 times over total debt service are just  
 3 marginally above the Authority’s Financial Management and projected debt service for  
 4 FY 2024 (FPFTY) and the FY 2025 and 2026 Forecast Years are at levels that would  
 5 violate the Authority’s rate covenant.

	<i>FY 2023</i>	<i>FY 2024</i> <i>(FPFTY)</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Senior Debt Service Coverage Ratio</i>	<i>1.45x</i>	<i>1.00x</i>	<i>0.76x</i>	<i>0.50x</i>
<i>Total Debt Service Coverage</i>	<i>1.13x</i>	<i>0.73x</i>	<i>0.51x</i>	<i>0.35x</i>

6  
 7 As described in PWSA Exhibit EB-2, after accounting for the \$146.1 million proposed  
 8 rate increase, the FPFTY (FY 2024) projected debt service coverage and FY 2025 and  
 9 2026 Forecast Years exceeds the minimum coverage requirements set forth in PWSA’s  
 10 bond covenants, and are improvements on the coverage levels compared to the budgeted  
 11 FY 2023 figures.

	<i>FY 2023</i>	<i>FY 2024</i> <i>(FPFTY)</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Senior Debt Service Coverage Ratio</i>	<i>1.45x</i>	<i>1.65x</i>	<i>1.87x</i>	<i>2.02x</i>
<i>Total Debt Service Coverage</i>	<i>1.13x</i>	<i>1.21x</i>	<i>1.26x</i>	<i>1.40x</i>

12  
 13 While the requested rate increase results in debt service coverage results marginally  
 14 higher than the Authority’s Financial Management Policy for both the senior lien debt  
 15 and total debt, the Authority must continue to improve financially to anticipate changes in

1 capital needs and operations and meet its Additional Bonds Test (as discussed later in my  
2 testimony) and achieve metrics that are required for entities with similar bond ratings

3 **Reserves and Liquidity**

4 The second critical metric is cash reserves and liquidity, often measured as days cash on  
5 hand, which is calculated by taking unrestricted cash and investments times 365 divided  
6 by total annual operating and maintenance expenses. This statistic is used by both  
7 Moody's and S&P to measure liquid financial resources available for a utility to survive  
8 temporary revenue disruptions and unexpected expenses. This metric is fundamental in  
9 analyzing the financial strength of a municipal utility. Moody's has commented on the  
10 Authority's liquidity in its most recent rating report. Moody's report asserts that "the  
11 Authority's liquidity is satisfactory, at 137 days unrestricted cash on hand as of fiscal year  
12 end 2021, equating to about \$76 million. However, PWSA's cash position is considerably  
13 weaker than national water and sewer system median days cash of 450 days as of 2021."  
14 Although Moody's has recognized the Authority's liquidity improvement, the credit  
15 agency still states that the PWSA has a cash position that is "narrow, though improved,  
16 liquidity versus similarly sized peers" and sees this as a "credit challenge." In a debrief  
17 with the Moody's rating analyst following the Authority's most recent rating review in  
18 2022, the analysts explained that the Authority's depressed DCOH as compared to peer  
19 utilities is one of the primary drivers preventing the rating agency from upgrading the  
20 Authority's credit rating. Without improvement in the Authority's DCOH the Authority  
21 will continue to be rated A3 and pay higher borrowing costs.

22 The Authority's Financial Management Policy is to "[m]aintain cash reserves,  
23 including the operating reserves, rate stabilization fund, and revenue fund at a level of 100

1 days cash on hand with the goal of increasing to over 300 days over the next five (5)  
 2 years.” This goal has been communicated to the rating agencies and the agencies annually  
 3 request an update on progress made towards meeting these goals.

4 As described in Mr. Barca’s testimony, the Authority’s DCOH based on existing  
 5 rates is projected to drop off significantly from budgeted FY 2023 levels to 70.9 in  
 6 FPFTY (FY 2024) and negative levels for FY 2025 and 2026, as summarized in the table  
 7 below which will cause significant concerns with the rating agencies and result in rating  
 8 downgrades.

	<i>FY2023</i>	<i>FY 2024</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Days Cash on Hand (“DCOH”)</i>	<i>1605.5 DCOH</i>	<i>70.9 DCOH</i>	<i>(60.5) DCOH</i>	<i>(230.0) DCOH</i>

9  
 10 It is important to know that the Capital Line of Credit is a tax-exempt facility and  
 11 therefore, it is not available for operating liquidity support.

12 As shown in PWSA Exhibit EB-2, after accounting for the requested rate  
 13 increase, the days cash on hand is projected to be 145 for FPFTY (FY 2024), 143 for FY  
 14 2025 and 153 for FY 2026 which is still lower than PWSA’s Financial Policy target,  
 15 rating agencies medians (as discussed previously), the majority of peer utilities (as  
 16 discussed later in my testimony).

	<i>FY2023</i>	<i>FY 2024</i>	<i>FY 2025</i>	<i>FY 2026</i>
<i>Days Cash on Hand (“DCOH”)</i>	<i>1605.5 DCOH</i>	<i>145 DCOH</i>	<i>143 DCOH</i>	<i>153 DCOH</i>

17  
 18 **Q. PLEASE DESCRIBE HOW THE CREDIT RATING AGENCIES VIEW**  
 19 **INFLATIONARY PRESSURES IN RELATION TO WATER AND SEWER**

1 **UTILITIES AND HOW HAS IT HAS AFFECTED THEIR VIEW OF THE**  
2 **AUTHORITY.**

- 3 A. Credit rating agencies have been monitoring the public finance industry, which includes  
4 water and/or sewer utilities, for inflationary impacts including higher prices generally,  
5 increased labor and materials costs, and higher borrowing costs owing to the Federal  
6 Reserve's increases to the Federal Funds Rate commencing in March of 2022.

7 At the end of 2022 and beginning of 2023, Moody's and S&P published their  
8 respective annual outlook reports for municipal governments and the water and/or sewer  
9 sector (provided as Exhibit CF-4 and Exhibit CF-5). Moody's specifically identified  
10 water and sewer enterprises as being susceptible to higher costs, stating "inflation will  
11 increase employee wages and drive higher construction costs. Higher capital costs will be  
12 difficult for some water and sewer enterprises amid a need to address aging  
13 infrastructure." Moody's additionally states that "for water and sewer enterprises, the cost  
14 increases come at a time when the utilities are confronted with greater needs associated  
15 with aging infrastructure, including adverse effects tied to the increase in the frequency  
16 and severity of extreme weather events, and regulatory requirements to replace lead  
17 service lines and remediate PFAS (per- and polyfluoroalkyl substances). A recent  
18 infusion of federal dollars will help address some of the needs. Longer term, though,  
19 without continued and consistent increases in federal dollars, the burden of investing in  
20 water and sewer infrastructure will fall largely on ratepayers."

21 S&P similarly raised concerns about persistent inflation, stating "Construction cost  
22 inflation is reaching levels we have not seen in decades. The Producer Price Index figure  
23 for building materials and supplies increased 38% between November 2021 and



1 November 2022. In addition to increased project costs, we expect construction cost  
2 inflation will result in higher bids from contractors, larger contingencies in new contracts  
3 along with wider cost escalation ranges for materials, and a shift away from fixed-price  
4 contracts. While materials costs may begin to stabilize as supply chain issues subside, the  
5 shortage of skilled labor may be more enduring given the systemic shortage of new  
6 workers entering the construction trades, which will keep labor costs elevated.”

7 In regard to the Authority, S&P’s most recent rating report (included as Exhibit CF-9)  
8 addresses the potential risk of inflationary pressures to PWSA’s outlook, stating “should  
9 inflationary and supply-chain issues significantly drive up the cost of the CIP, which is  
10 expected to be mostly debt funded, and thereby causing additional debt which pressures  
11 financial metrics, the rating could be lowered.”

12 **Q. PLEASE DESCRIBE HOW THE CREDIT RATING AGENCIES VIEW THE**  
13 **AUTHORITY’S PROPOSED INFRASTRUCTURE SURCHARGE.**

14 A. I believe the credit rating agencies would view a dedicated reconcilable charge, in this  
15 case to finance the cost of PENNVEST and WIFIA loans, as a credit positive. To date,  
16 the rating agencies have viewed the PUC and PWSA relationship as positive to neutral to  
17 the Authority’s credit rating and this view has been predicated on the agencies  
18 understanding of the PUC approving rates sufficient for the Authority to fund operations  
19 and continue to finance its capital plan. The PUC granting approval to the Authority to  
20 implement a reconcilable charge to pass through the costs of opportunities of securing  
21 low-cost PENNVEST and WIFIA loans over the next three year period without the need  
22 to file rate cases will be further demonstration to the rating agencies of the PUC  
23 supporting the Authority’s pursuits in funding its capital plan. S&P in its most recent  
24 reports states “The stable outlook reflects our expectation that when PWSA does need to

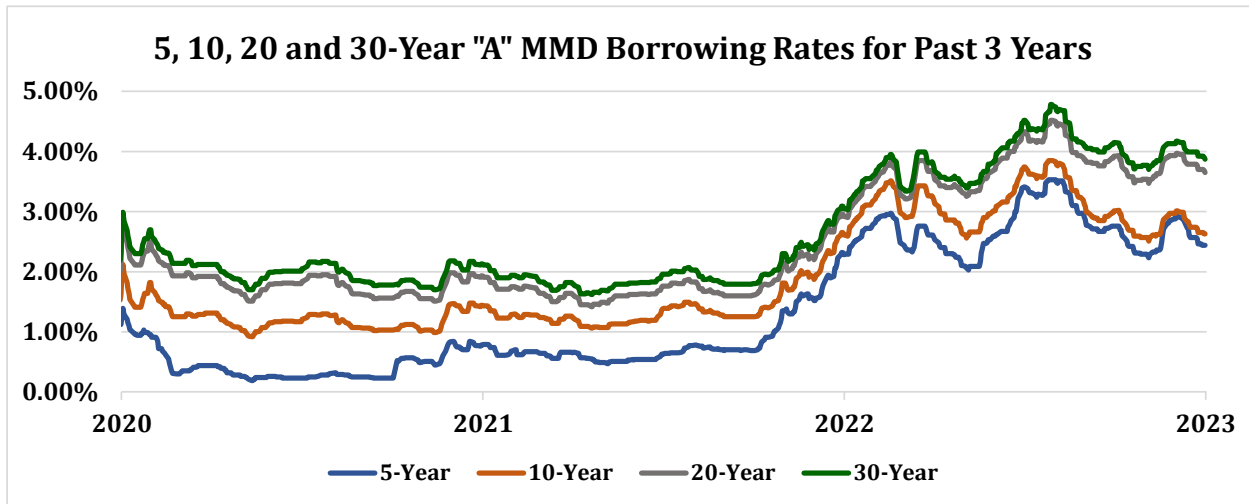
1 propose a rate case to the PaPUC, there will generally be a credit-supportive relationship,  
 2 observed by both the timing and magnitude of rate adjustments that PWSA is likely to  
 3 request, versus what the PaPUC ultimately grants.” The proposed Infrastructure  
 4 Improvement Charge is consistent with what is important to S&P--this type of  
 5 reconcilable cost recovery mechanism that can be used to pass through actual costs  
 6 without filing a rate case is both timely and consistent with debt service expense. In  
 7 addition, the proposed dedicated surcharge is consistent with the rating agencies positive  
 8 view of preapproved rate increases (as discussed later in this testimony). S&P’s criteria  
 9 states that “compelling factors that would likely preserve credit quality include  
 10 *preapproved rate adjustments multiple years into the future* (emphasis added), or an  
 11 existing debt service schedule that allows for the new debt to be layered on in a manner  
 12 that we believe is unlikely to worsen financial performance.”

13 **III. CAPITAL MARKETS CONSIDERATION**

14 **Q. WHAT IS THE IMPACT ON THE AUTHORITY OF INCREASED**  
 15 **BORROWING COSTS.**

16 A. Since the prior base rate case, municipal market borrowing costs which are indexed to the  
 17 Municipal Market Data (“MMD”) have risen sharply since the beginning of 2022 with  
 18 the 5, 10, 20 and 30-year borrowing rates for “A” rated municipal issuers, such as the  
 19 Authority, increasing approximately 174 basis points (“bps”), 137 bps, 201 bps and 206  
 20 bps, respectively, which has more than doubled the Authority’s borrowing costs since the  
 21 beginning of 2022 and contributed to the Authority downsizing its 2022 bond issue from  
 22 \$100 million to \$45 million due to affordability concerns. While municipal borrowing  
 23 rates are slightly down from the highs of 2022 they are still significantly higher than the

1 municipal borrowing rates in 2021 and will contribute to higher borrowing costs for the  
 2 Authority's planned 2023 bond issuance.



3  
 4  
 5 \*Municipal Market Data (MMD) is the standard index for municipal bonds. MMD publishes various yield  
 6 curves (1 to 30 years) for different credits/rating categories.  
 7

8 **Q. PLEASE EXPLAIN THE IMMEDIATE CONSEQUENCES IF THE PROPOSED**  
 9 **RATES ARE NOT APPROVED.**

10 A. As outlined in PWSA Exhibit EB-1, which is a part of Mr. Barca's testimony, if the  
 11 current rates remain in place, the Authority will immediately violate its covenant with  
 12 bondholders, and it will be unable to meet its Additional Bonds Test, which will halt its  
 13 capital improvement plan starting in FY 2024 due to lack of financing.

14 As described previously, in order to comply with its legally required bond covenants, the  
 15 Authority must generate net revenues in an amount that exceeds senior debt service of at  
 16 least 1.25 times and total debt service of at least 1.1 times and is adequate to pay all  
 17 financial obligations. Without a rate increase, the debt service coverage in FPFTY (FY  
 18 2024) is projected to be 1.00 times for senior debt service (1.25 times is the legal  
 19 covenant for senior debt) and 0.73 times for total debt service (1.10 times is the legal  
 20 covenant). Furthermore, without a rate increase, the debt service coverage in FY 2025

1 and FY 2026 is projected to be 0.76 and 0.50 times for senior debt service (1.25 times is  
2 the legal covenant) and 0.51 and 0.35 times for total debt service (1.10 times is the legal  
3 covenant). This would cause the Authority to be in non-compliance with its rate  
4 covenant in FY 2024, 2025 and 2026 as well as having insufficient funds to pay its debt  
5 service obligations in all three years.

6 If the Authority fails to comply with the rate covenant, the Authority is legally required to  
7 engage a consultant to prepare a report to remedy the failure and to make  
8 recommendations. The Authority has 180 days after the tested fiscal year to revise rates,  
9 fees and charges or to petition the PUC to establish the necessary rates, fees and charges  
10 to address the rate covenant failure. If, after this time period, the Authority continues to  
11 fail the rate covenant, then an Event of Default under the Trust Agreement will have  
12 occurred. An event of default results in certain remedies available to bond holders,  
13 including acceleration of principal. An event of default would likely result in an  
14 emergency request to the PUC to allow PWSA to raise rates and would likely lead to a  
15 downgrade of the Authority's credit ratings, making future borrowing more problematic  
16 and costly and requiring increased rate revenue to cover the Authority's higher cost of  
17 borrowing. In terms of days cash on hand, without a rate increase, days cash on hand  
18 falls to 71 days cash on hand in FPFTY (FY 2024). Days cash on hand is projected to be  
19 negative in FY 2025 and FY 2026, (60.5) and (230.0), respectively.

20 As explained in Mr. Barca's testimony, prior to issuing additional senior or subordinate  
21 lien debt under the Indenture the Authority needs to pass an Additional Bonds Test  
22 ("ABT") which is a three-part test of senior lien coverage at 1.25x, subordinate coverage  
23 at 1.1x and total coverage at 1x. As Financial Advisor to the Authority, and a third party

1 consultant as required by the Indenture, PRAG is tasked with preparing the ABT test  
2 prior to closing on the Authority's senior and subordinate bond issuance. For purposes of  
3 providing this certification we need to provide analysis demonstrating that there are  
4 sufficient revenues (including rate increases previously authorized by the Authority  
5 Board and approved by the PUC) to fund operations, make debt service payments and  
6 satisfy legal debt service coverage requirements on the existing and proposed debt.  
7 Failure to pass ABT would preclude the Authority from securing additional financing and  
8 halt its capital improvement plan. As included in Exhibits EB-7 and EB-8 and  
9 summarized in the table below, without the requested rate increase the Authority is  
10 failing the second prong of the ABT on the subordinate lien by almost \$46 million in FY  
11 2024 and the deficiency grows to as much as \$104.1 million by FY 2026 on the  
12 subordinate lien. The subordinate lien test is the determining factor for purposes of the  
13 Authority's ABT given the significant amount of subordinate PENNVEST and WIFIA  
14 debt service that is not included in the senior test. With the requested rate increase the  
15 Authority narrowly passes its ABT on the subordinate lien in FY 2024, modest capacity  
16 in FY 2025 and adequate capacity in FY 2026. I cannot emphasize enough the  
17 importance of the Authority receiving a substantial amount of the requested rate increase  
18 to be in a position to pass its ABT to issue bonds to fund its critical capital projects.  
19 Without a rate increase in FPFTY (FY 2024) the Authority's ability to finance its capital  
20 plan will halt due to an inability to access the capital markets, and correspondingly be  
21 unable to maintain and improve its assets or comply with consent decrees would be of  
22 immediate and serious concern to the rating agencies, and likely result in either or both

multiple ratings downgrades and/or withdrawal or suspension of ratings, only further increasing PWSA's potential cost of financing and exacerbating its operating challenges.

<b>Additional Bonds Test Surplus/(Deficit) Forecasts</b>			
<b>PWSA's Projected Additional Bonds Test Coverage with Rate Increase</b>			
	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
First Lien Net Surplus/(Deficit)	\$29.5M	\$58.6M	\$92.3M
Subordinate Lien Net Surplus/(Deficit)	\$0.7M	\$7.5M	\$38.4M
Total Surplus/(Deficit)	\$21.0M	\$32.1M	\$66.3M
<b>PWSA's Projected Additional Bonds Test Coverage without Rate Increase</b>			
	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
First Lien Net Surplus/(Deficit)	-\$16.9M	-\$31.3M	-\$50.2M
Subordinate Lien Net Surplus/(Deficit)	-\$45.7M	-\$82.4M	-\$104.1M
Total Surplus/(Deficit)	-\$25.4M	-\$57.8M	-\$76.3M

**Q. WHAT ARE THE LIKELY CONSEQUENCES IF PWSA FAILS TO MEET ITS BOND COVERAGE TARGETS OR FAILS TO MAINTAIN ADEQUATE CASH ON HAND?**

A. The failure to maintain adequate debt service coverage levels and/or a notable deterioration in days of cash on hand would likely cause a downgrade in PWSA's credit ratings. Credit ratings are an important component in determining the cost of debt as the ratings signal PWSA's ability and willingness to meet financial obligations in full and on time. A downgrade of the credit ratings for PWSA would result in an increase in PWSA's borrowing costs and necessitate higher rate increases over time.

There are also the consequences for failure to comply with the debt service coverage requirement (rate covenant). As I explained, if there is an event of default, there are certain remedies available to bond holders, including acceleration of principal. The Authority would have to use its cash reserves to pay its FPFTY (FY 2024) debt service and other long-term financial obligations. This would create an obligation that PWSA could not possibly meet without extraordinary rate relief or an infusion of cash from some other sources. Additional information is provided later in my testimony regarding

1 risks of the PUC not approving a substantial amount of the requested rate increase,  
2 including rating downgrades and the possible collateral consequences.

3 Failure to maintain sufficient available cash could result in a rating downgrade, and thus,  
4 increase the Authority's borrowing costs. If sufficient revenue is not generated to cover  
5 all the PWSA's costs and obligations, as well as not having sufficient reserves to have the  
6 cash to fully cover operating expenses, debt service and other could result in financial  
7 failure. Additionally, the Authority could experience bondholder lawsuits related to its  
8 failure to raise sufficient rates to meet its rate covenant. With the requested rate increase,  
9 the Authority will have higher annual coverages and relatively stable days cash on hand,  
10 each year, for four years in a row (FY 2023 through FY 2026). Without the request, the  
11 Authority will not be able to reach minimum coverages on Senior or Total Debt Service.  
12 If provided the proposed rate increase, the Authority can better manage its obligations  
13 and perhaps even receive a rating upgrade. Thus, I strongly believe that the Authority  
14 should be granted a substantial amount of the proposed rate adjustment in order to permit  
15 the PWSA to reach total coverage closer to the median of other single-A rated municipal  
16 water utilities. The Authority's historical and projected debt service coverage and days  
17 cash on hand with and without the proposed rate increase is provided in the table below.  
18 The Authority's Rate Covenant Requirement for coverages and the Authority's Financial  
19

1 Management Policy related to debt service coverages and Liquidity (measured in days  
 2 cash on hand) are provided below:

<b>PWSA’s Historical and Projected Financial Metrics with Rate Increase</b>					
	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
Senior Debt Service Coverage	1.53	1.45	1.65	1.87	2.02
Total Debt Service Coverage	1.25	1.13	1.21	1.26	1.40
Days Cash on Hand	141	161	145	143	153
<b>PWSA’s Historical and Projected Financial Metrics without Rate Increase</b>					
	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
Senior Debt Service Coverage	1.53	1.45	1.00	0.76	0.50
Total Debt Service Coverage	1.25	1.13	0.73	0.51	0.35
Days Cash on Hand	141	161	71	(61)	(230)
<b>Bond Indenture -- Rate Covenant Coverage Requirement</b>					
	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
Senior Debt Service Coverage	1.25	1.25	1.25	1.25	1.25
Total Debt Service Coverage	1.10	1.10	1.10	1.10	1.10
<b>PWSA’s Financial Management Policy</b>					
	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>
Senior Debt Service Coverage	1.35	1.35	1.35	1.35	1.35
Total Debt Service Coverage	1.15	1.15	1.15	1.15	1.15
Days Cash on Hand	100-300	100-300	100-300	100-300	100-300

3  
 4 As shown in table above, with the proposed rate increase, the metrics improve year over  
 5 year from FY 2024 to FY 2026 putting the Authority on more stable ground. The  
 6 proposed rates will permit PWSA to have the funds it needs throughout the Forecast  
 7 Period to satisfy all of its financial obligations. Projected Total Debt Service coverage in  
 8 FY 2023 is 1.13, just above the legal, required coverage is 1.10 times, with rate increases  
 9 the Authority moves coverages positively away from the legal limit.



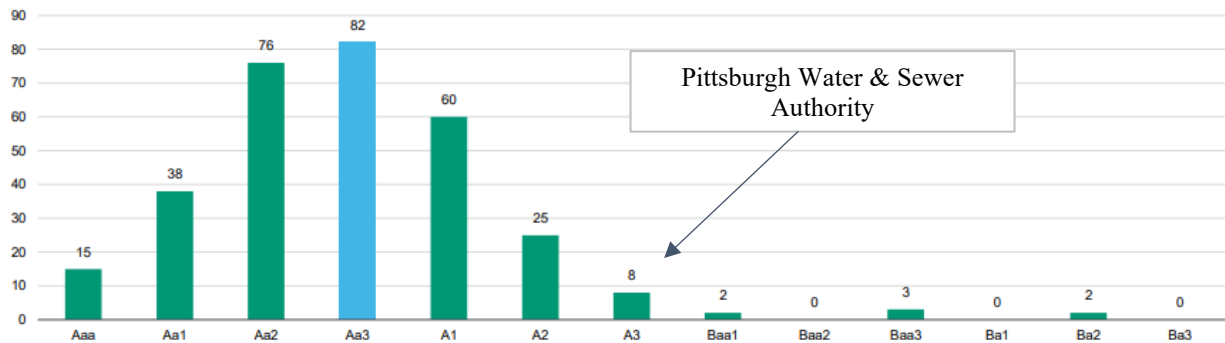
1 **IV. PEER REVIEW OF FINANCIAL METRICS**

2 **Q. DISCUSS THE AUTHORITY’S CREDIT PROFILE IN COMPARISON TO**  
 3 **OTHER PEER UTILITIES.**

4 A. The Authority’s senior lien credit ratings are “A3” and “A+”, from Moody’s and S&P  
 5 respectively. As can be seen within Exhibit CF-3, as well as in the graphic below, in  
 6 terms of other US municipal water and sewer systems, PWSA, with its A3 rating, is in  
 7 the bottom 5% percent of all governmental water and sewer utilities that are rated by  
 8 Moody’s.

9 **Distribution of Moody’s Ratings for Combined Municipal Water and Sewer Issuers**

10 *(Median is Shown in Dark Blue)*



11 Highlighted bar represents median rating  
 Source: Moody's Investors Service

11

12 US municipal water and sewer credits are generally well received by the investor  
 13 community with rating agencies viewing the industry overall with a stable outlook. It is  
 14 expected that the industry outlook will remain stable with increasing rates as necessary  
 15 while still balancing affordability concerns. Rating agencies have been reviewing and  
 16 updating methodologies with a view towards transparency and a more quantitative  
 17 approach. Both Moody’s and S&P have published credit scorecards which identify  
 18 certain rating factors, as well as assigning certain factor weighting. Both credit  
 19 scorecards include some level of qualitative analysis, as well as above and below-the-line

1 notching. While the approach is slightly different, the factors considered both include  
 2 debt service coverage and liquidity measures as critical components of any credit review.  
 3 **Moody’s** – Moody’s identifies broad factors for consideration and further provides sub-  
 4 factors in the scorecard. The broad categories include system characteristics (asset  
 5 condition, service area and system size), financial strength (debt service coverage, days  
 6 cash on hand, debt to operating revenues), management (rate management, regulatory  
 7 compliance and capital plans) and legal provisions (rate covenant, debt service reserve  
 8 requirements). In general, Moody’s reports that the median coverage for all Moody’s  
 9 rated credits (using 2020 data) is 2.4x for combined water and sewer systems, 2.3x for  
 10 water systems and 2.1x for sewer systems. The Moody’s median for days cash on hand  
 11 are 451 days for combined systems, 454 days cash on hand for water systems and 650  
 12 days cash on hand for sewer systems.

13 Below are PWSA’s key ratios from the most recent Moody’s Median report dated May  
 14 26, 2022 (which uses 2020 data) included as Exhibit CF-3 compared to median peers for  
 15 the “Aa,” “A” and “Baa” rating categories that illustrates that the Authority is below each  
 16 median indicator. Increasing rates to provide cash flow available to fund an increasing  
 17 amount of projects on a pay-go basis will help mitigate PWSA’s relative position.



Moody’s Key Indicators	PWSA (2022)*	Aa Rated Medians	A Rated Medians	Baa Rated Medians
Debt Service Coverage	1.25x	2.5x	2.0x	1.5x
Days Cash on Hand	141	521	359	148

18 Source: Moody’s Water and Sewer Median Report dated May 26, 2022  
 19 \*Moody’s calculations. PWSA metrics based on FY 2022 audited financials.

20  
 21 **Standard & Poor’s** – S&P has also developed a credit scorecard to provide a qualitative  
 22 analysis of a systems credit profile. S&P measures credit through an enterprise risk  
 23 profile (economic fundamentals, industry risk, market position and operational

1 management assessment) and a financial risk profile (“all in” coverage, liquidity and  
 2 reserves, debt and liabilities and financial management assessment). They also provide  
 3 notch adjustments for certain factors. When reviewing assessment scores for “A+” rated  
 4 water and sewer credits, debt service coverage averaged 1.8 times for S&P A-rated  
 5 systems and liquidity measures averaged approximately 459 days cash on hand.

6 Below is a summary of the Authority’s most recent rating recent reports, full reports are  
 7 included in CF-8 and CF-9, outlining the strengths, challenges and viewpoints of the  
 8 credit agencies.

 <b>A3 (Stable)</b>	 <b>A+ (Stable)</b>
<b>Credit Strengths</b>	
<ul style="list-style-type: none"> <li>■ Diverse, urban service area, supported by strong “eds &amp; meds” presence</li> <li>■ Considerable size</li> <li>■ Significant rate increase implemented recently</li> <li>■ Rate increase boost revenues</li> <li>■ PUC oversight should bring improvements and controls.</li> </ul>	<ul style="list-style-type: none"> <li>■ Employment base that has reinvented itself from previously relying on manufacturing and industrial jobs</li> <li>■ View operational management assessment (OMA) as “good”</li> <li>■ Strong on-balance sheet liquidity</li> </ul>
<b>Credit Challenges</b>	
<ul style="list-style-type: none"> <li>■ Substantial debt burden</li> <li>■ Narrow, though improved, liquidity versus similarly sized peers</li> <li>■ Projected \$1.4 billion in capital needs over next five years to be primarily funded with debt</li> <li>■ Consent decree to remediate sewer overflows not yet finalized</li> </ul>	<ul style="list-style-type: none"> <li>■ Extremely high leverage with \$1.4 billion in capital commitments</li> <li>■ Exposure to large regional consent decree through Allegheny County Sanitary Sewer Authority</li> <li>■ Best practices for financial management not as comprehensive as utilities with strong financial management</li> </ul>

9 **Regulatory Oversight:** Moody’s views PUC oversight as a credit positive while S&P  
 10 views it more as a credit neutral, however, both agencies have stated in recent reports that  
 11 PUC oversight has contributed to their stable outlooks for PWSA. Moody’s noted that the  
 12 PUC oversight “brings improvement and controls,” and that “the PUC has helped to  
 13 ensure timely system maintenance and routine capital investment, in line with broad  
 14 industry standards.” S&P notes “our stable outlook reflects our expectation that when

1 PWSA does need to propose a rate case to PaPUC, there will generally be a credit-  
2 supportive relationship.”

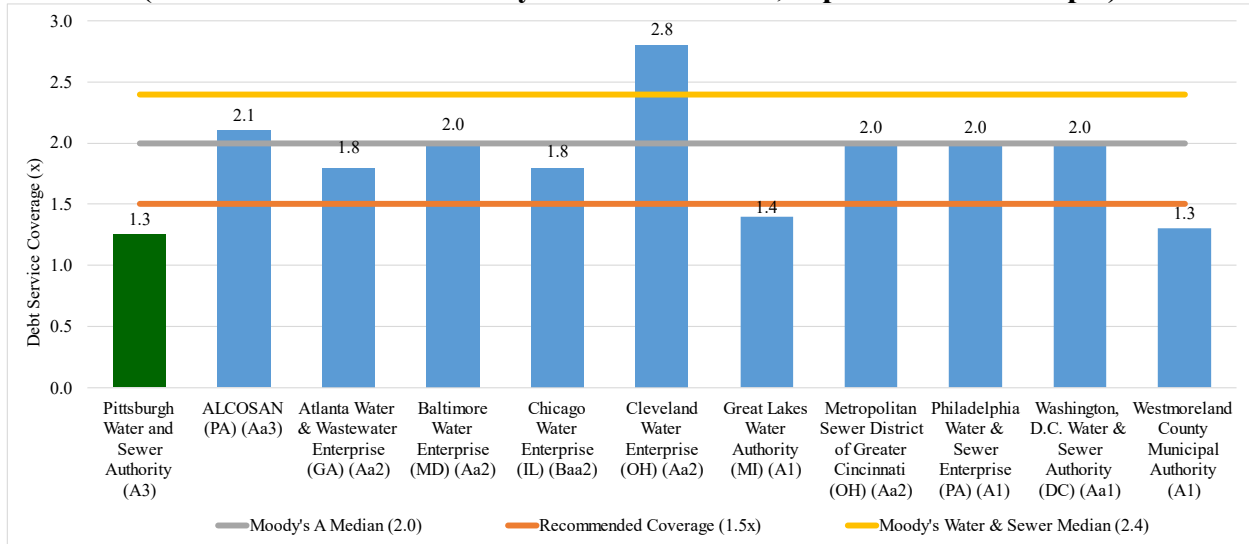
3 **Peer Utilities:** PWSA has selected certain large city municipal peer systems to provide  
4 important benchmarking critical to organizational best practices. While systems have their  
5 own characteristics based on regions, size, and service area, the selected peers are of similar  
6 size, service areas of industrial urban centers and are located largely in the mid-Atlantic  
7 and Midwestern regions of the country. Peer comparisons and benchmarking performance  
8 indicators are a component of best practices and have been incorporated into the  
9 Authority’s financial policies. Data gathered on peer systems is provided by recent  
10 Moody’s Credit Opinion reports for each respective peer.

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

16 Provided below is a peer comparison chart of debt service coverage levels that compares  
17 PWSA to other large city water and sewer entities. Higher debt service coverage levels  
18 are looked upon more favorably by the rating agencies because it indicates a better ability  
19 to pay debt service and issue further debt while maintaining a strong financial position.  
20 PWSA’s 2021 debt service coverage levels are among the lowest of its peer utilities and  
21 also compared unfavorably to Moody’s overall and “A” and “Aa” rated utility medians.  
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**DEBT SERVICE COVERAGE\***  
**(2021 net revenue divided by 2021 debt service, expressed as a multiple)**

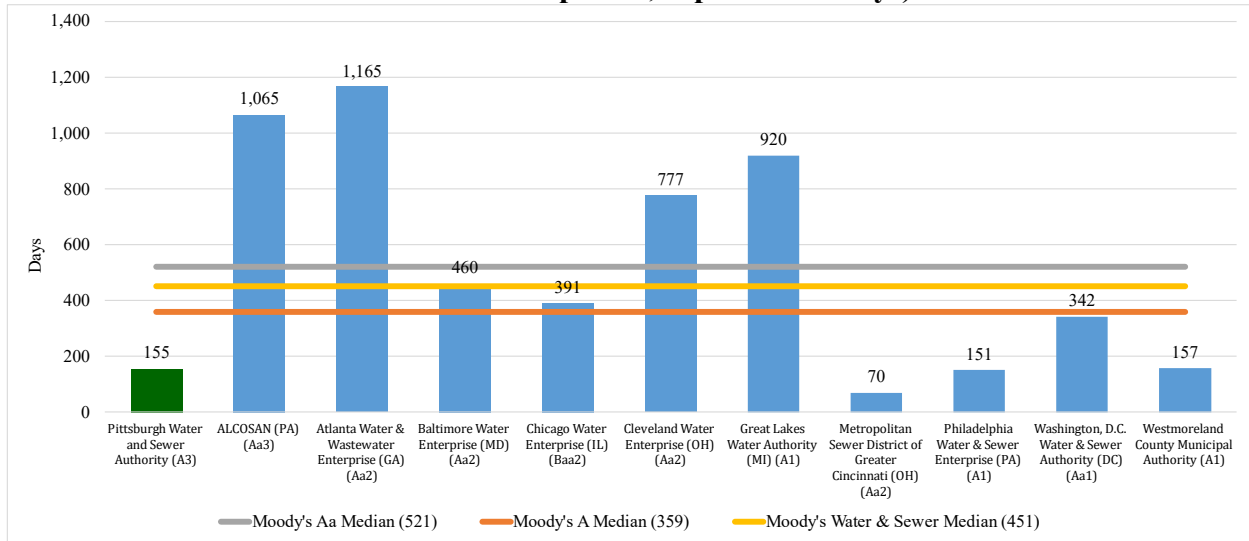


\* Chicago, Washington DC and Westmoreland County debt service coverage is based on 2020 data.

Sources: Moody’s Investor Service: Water and Sewer Utilities Medians – Liquidity and Debt Service Coverage Remained Strong in Fiscal 2020, May 26, 2022 (2020 data) and Moody’s Investor Service latest rating reports for each entity (2020 and 2021 data).

Provided below is a peer comparison chart of days cash on hand that compares PWSA to other large city water and sewer entities. The rating agencies like to see more days cash on hand because it shows a better liquidity position and therefore, more financial flexibility. As previously mentioned in this testimony, the Moody’s rating analyst cited the Authority’s weak DCOH as compared to its peers as one of the primary reasons the Authority has not been upgraded and continues to be rated “A3.” In 2021, PWSA had 155 days cash on hand which ranked the Authority as the third lowest liquidity of its peer utilities and also compared very unfavorably to Moody’s overall and “A” and “Aa” rated utility medians.

**DAYS CASH ON HAND\***  
**(2021 unrestricted cash and liquid investments times 365 divided by 2021 operating and maintenance expenses, expressed in days)**



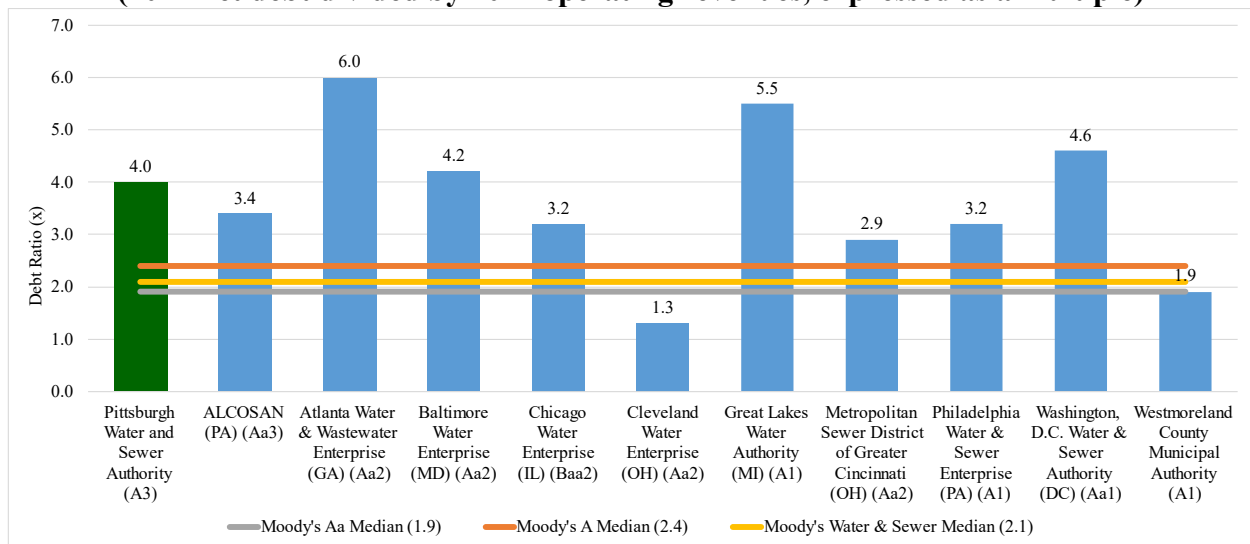
\* Chicago, Washington DC and Westmoreland County debt service coverage is based on 2020 data.

Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Liquidity and Debt Service Coverage Remained Strong in Fiscal 2020, May 26, 2022 (2020 data) and Moody's Investor Service latest rating reports for each entity (2020 and 2021 data).

Provided below is a peer comparison chart of debt ratios that compares PWSA to other large city water and sewer entities. The rating agencies would like to see a low debt ratio since that would indicate that the entity is not overextended in debt obligations. In 2021, PWSA ranked in the bottom half of utilities for its debt ratio compared to its peer utilities and also compared unfavorably to Moody's overall and "A" and "Aa" rated utility medians.

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**DEBT RATIO**  
(2021 net debt divided by 2021 operating revenues, expressed as a multiple)



\* Chicago, Washington DC and Westmoreland County debt service coverage is based on 2020 data.

Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Liquidity and Debt Service Coverage Remained Strong in Fiscal 2020, May 26, 2022 (2020 data) and Moody's Investor Service latest rating reports for each entity (2020 and 2021 data).

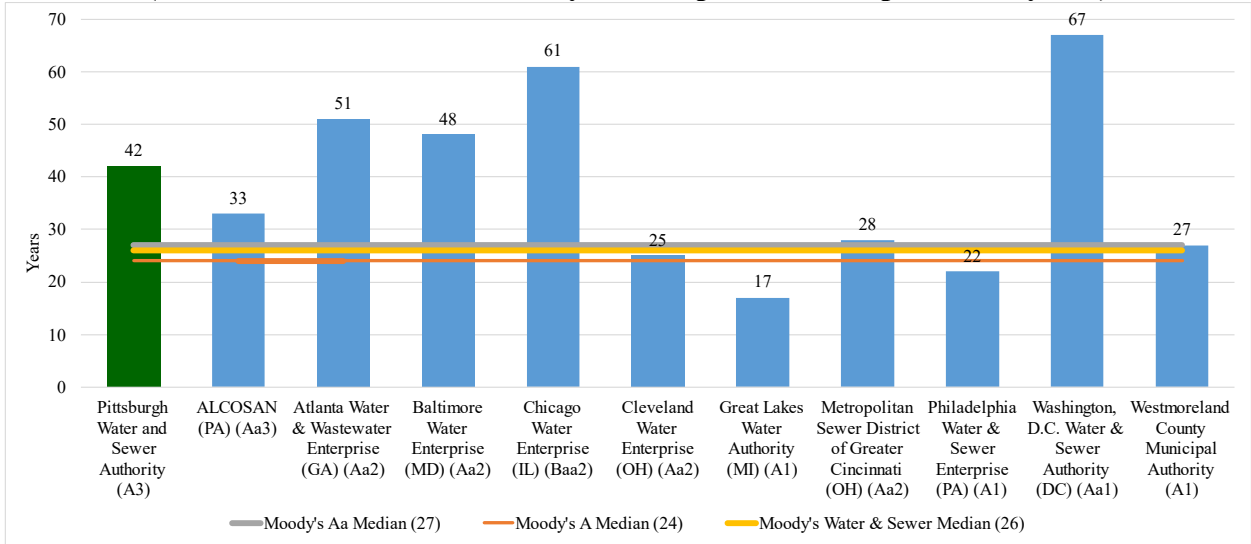
Provided below is a peer comparison chart of asset condition in years that compares PWSA to other large city water and sewer entities. A low number indicates that the assets of an entity are nearing their end of useful life and can indicate that large maintenance and/or replacement costs are on the horizon. In 2021, PWSA compared favorably to its peer utilities in Asset Condition and also compared favorably to Moody's overall and "A" and "Aa" rated utility medians.

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**ASSET CONDITION**  
**(2021 net fixed assets divided by 2021 depreciation, expressed in years)**



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\* Chicago, Washington DC and Westmoreland County debt service coverage is based on 2020 data.

\*\* Washington DC 's asset condition is based on 2017 data.

Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Liquidity and Debt Service Coverage Remained Strong in Fiscal 2020, May 26, 2022 (2020 data) and Moody's Investor Service latest rating reports for each entity (2020 and 2021 data).

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14

**Q. DISCUSS THE AUTHORITY'S CAPITAL IMPROVEMENT PLAN IN COMPARISON TO OTHER PEER UTILITIES.**

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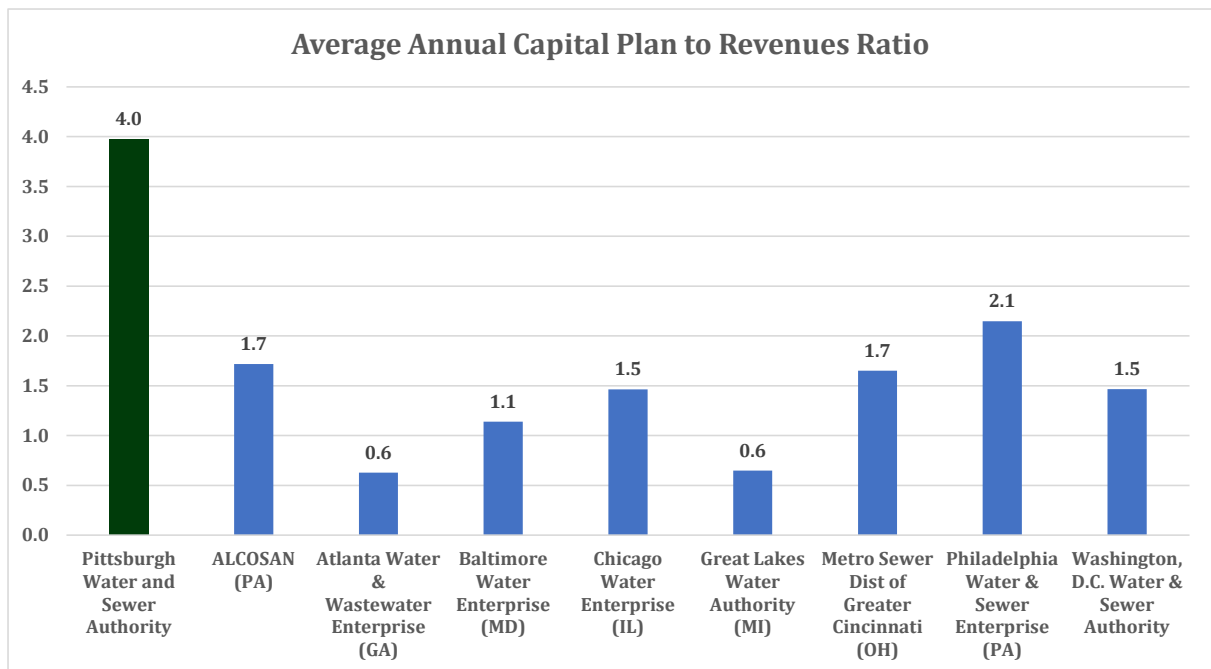
A. The Authority's capital improvement plan (CIP) of approximately \$1.8 billion over the five years from FY 2023 to FY 2027 is among the largest and most intensive of its peers when adjusted for both PWSA's relative size and its financial capacity to meet this plan.



	Capital Plan (in \$ 000s)	Capital Plan (# of Years)	Net Revenues (in \$ 000s)	Average Annual Capital Plan to Revenues Ratio
<b>Pittsburgh Water and Sewer Authority</b>	<b>1,800,000</b>	<b>5</b>	<b>90,592</b>	<b>4.0</b>
ALCOSAN (PA)	3,900,000	20	113,493	1.7
Atlanta Water & Wastewater Enterprise (GA)	1,260,000	5	401,549	0.6
Baltimore Water Enterprise (MD)	989,000	6	144,855	1.1
Chicago Water Enterprise (IL)	2,625,000	5	358,764	1.5
Great Lakes Water Authority (MI)	1,780,000	5	550,492	0.6
Metro Sewer Dist of Greater Cincinnati (OH)	1,400,000	5	169,588	1.7
Philadelphia Water & Sewer Enterprise (PA)	3,975,000	6	308,602	2.1
Washington, D.C. Water & Sewer Authority	6,400,000	10	437,000	1.5

Source: Moody’s rating reports for entities’ capital plan dollar amounts and length in years, and net revenues

While the Authority’s CIP is not the largest of its peers, when considering the CIP’s relatively short 5-year timeframe and PWSA’s relatively constrained net revenues, the CIP is significantly more intensive than that of its peers. To quantify this intensity, the below chart shows the ratio of average annual capital plan (dollar amount divided by years) divided by net revenues. By this measure, PWSA’s CIP is between two and seven times as intensive as those of its peer entities.



1 **Q. DESCRIBE THE RISKS OF NOT APPROVING THE REQUESTED REVENUE**  
 2 **INCREASE.**

3 A. There are several risks that occur if the PUC does not approve a substantial portion of the  
 4 requested rate increase. Previously, I described the repercussions if a rate increase was  
 5 not approved in relation to the debt service coverage and liquidity, the violations of the  
 6 Authority’s Rate Covenant and inability to pass its ABT and issue additional debt to  
 7 finance its capital program. In addition to those risks, there are several other risks that  
 8 correlate if there is no revenue increase for the Authority.

9 **Existing Debt Service.** It should be noted that even in the absence of additional  
 10 borrowing, the Authority’s loans with PENNVEST have ascending debt service in future  
 11 years. Thus, with no rate increase, the Authority may be unable to meet its rate covenants  
 12 with the bondholders.

13 **Operations.** The Authority has put off investing in improvements of infrastructure in the  
 14 past, which has led to cost inefficiencies and a deteriorated system. The Authority’s new  
 15 management has prioritized addressing the system infrastructure and put forth capital  
 16 requirements in updating its water pumping and storage and water distribution, among  
 17 others. In order to cover costs and expenses for these projects, revenue has to be  
 18 adequate. The total system revenues would accumulate to \$255.3 million in FPFTY (FY  
 19 2024) if the rate were to be approved by the PUC and cover the necessary costs and  
 20 expenses. However, if rates were not increased, total system revenues would only be  
 21 \$208.9 million, and the Authority runs the risk of having a deficit in fulfilling their debt  
 22 service obligations and creating an event of default. As mentioned in Mr. Barca’s  
 23 testimony, there is \$87 million of increased debt service cost is associated with both  
 24 existing debt service new debt service to fund capital improvements. The ability to fund

1 the necessary capital improvements would cease and harm the ratepayers if the PUC did  
2 not approve a substantial portion of the rate increase request.

3 **Rating Downgrade.** Rating downgrade(s) could lead to a myriad of issues for the  
4 Authority. Specifically, the cost of fixed-rate borrowing for infrastructure would  
5 increase, as well as rates/costs impacts to the Authority for their current line(s) of credit  
6 and outstanding swaps. In addition, the Authority could see a lack of options for the  
7 required regular refinancing of its existing variable bonds, which would likely lead to  
8 higher interest and support costs. Also, as the Authority experienced in the past with its  
9 Moody's downgrade in 2018, once a ratings agency downgrades a credit rating it is  
10 reluctant to increase a credit rating for a period of time until it is assured that the factors  
11 that led to the downgrade do not persist anymore. If the Authority was to get downgraded  
12 because it did not receive a rate increase sufficient to make its debt service requirements  
13 and required bond covenants and/or meet its ABT test the rating agencies would begin to  
14 see the PUC oversight as a credit negative and would likely downgrade the Authority's  
15 rating and be a factor that would prevent rating upgrades in the future.

16 **Cost of Capital.** In addition to ensuring that rate increases provide the necessary cash  
17 flow for liquidity and pay-go, the Authority's rating has a direct impact on the cost of  
18 capital. This has an impact on the cost of annual debt service, as well as the cost to  
19 PWSA of alternative financing options, such as capital lines of credit, bank loans, and  
20 implementing a commercial paper program. Higher rated credits enjoy a range of options  
21 in financing increasing Capital Improvement Programs and these short term, variable rate  
22 options can be even more advantageous in a rising rate environment. A higher credit-  
23 driven cost of capital only compounds the challenges arising from a higher interest rate

1 environment generally which we have experience since the end of 2021. Below is a  
 2 historical representation of the range in interest rates for “A” and “Baa” rated credits  
 3 provided by MMD. Based on data from the last five years, the average between “A” and  
 4 “Baa” rates of yield curves ranged from 0.33% to 0.53% in the 5-year, 10-year, 20-year  
 5 and 30-year timeframes.

Time Period	5-Year Rate			10-Year Rate			20-Year Rate			30-Year Rate		
	"A" MMD	"Baa" MMD	Rate Difference	"A" MMD	"Baa" MMD	Rate Difference	"A" MMD	"Baa" MMD	Rate Difference	"A" MMD	"Baa" MMD	Rate Difference
March 31, 2023	2.44%	2.81%	0.37%	2.63%	3.17%	0.54%	3.65%	4.09%	0.44%	3.87%	4.31%	0.44%
Prior 5 Year Average	1.56%	2.01%	0.45%	2.08%	2.55%	0.47%	2.62%	3.06%	0.44%	2.80%	3.24%	0.44%
Prior 5 Year Minimum	0.19%	0.72%	0.53%	0.92%	1.43%	0.51%	1.42%	1.75%	0.33%	1.62%	1.95%	0.33%
Prior 5 Year Maximum	3.53%	3.88%	0.35%	3.85%	4.37%	0.52%	4.52%	4.96%	0.44%	4.78%	5.22%	0.44%

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9 Source: Municipal Market Data.

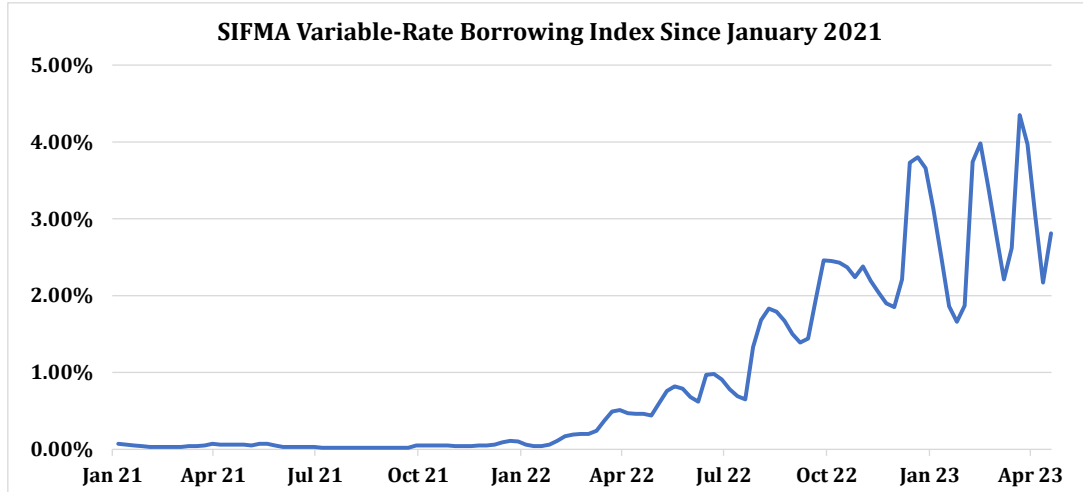
10 Over the next five years, the Authority expects to issue \$1.8 billion in additional revenue  
 11 bond debt. For every 0.45% increase, which is approximately the difference between the  
 12 prior five-year interest rate average between an A credit and Baa rates, PWSA and  
 13 ultimately rate payers could expect to pay an additional \$3.6 million in annual debt  
 14 service or more than \$108.3 million over the life of the bond issue. This increase adds up  
 15 and can place additional stress on debt service coverage requirements.

16 **Costs of Revolving Capital Line of Credit.** The revolving capital line of credit  
 17 agreement that the Authority executed with PNC Bank, NA in June 2022 has legal  
 18 language that sets the applicable spread regarding the cost of the line of credit based upon  
 19 several factors, including both the number and level of PWSA’s current credit ratings as  
 20 follows:

<u>Level</u>	<u>Borrower Rating Moody's/S&amp;P/Fitch</u>	<u>Revolving Credit SIFMA Spread (Applicable Margin)</u>
<b>I</b>	A3/A-/A- or above	0.39%
<b>II</b>	Baa1/BBB+/BBB+	0.46%
<b>III</b>	Baa2/BBB/BBB	0.56%
<b>IV</b>	Baa3/BB-/BB- or below	Default Rate

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The Authority is currently paying the SIFMA variable-rate municipal bond index + 0.39%, based on the lower of PWSA’s current ratings of A3 from Moody’s. However, if the Authority were to be downgraded in the future to Baa1 or BBB+ by Moody’s or S&P, respectively, then the Authority would be paying a spread to SIFMA of 0.46%, and to Baa2 or BBB a spread of 0.56%. Should the Authority be downgraded further, or maintain only one or no credit ratings, then the Authority would pay a Default Rate, which is the greater of the Overnight Bank Funding Rate (OBFR) plus 0.5% or the Prime Rate, plus 3.00%. For reference, as of March 31 the OBFR was 4.82% and the Prime Rate was 8.00%, so the Default Rate would have been 11.00%. Importantly, the SIFMA index has increased significantly over the past several years, more than doubling the Authority’s borrowing cost since the facility was executed:



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**Swap Agreements.** The Authority’s amended swap agreements for the outstanding 2017C Bonds do not have variable rate or fixed rate triggers related to credit ratings downgrades. Nevertheless, there is legal language relating to an Authority’s credit rating in regards to downgrades constituting an additional termination event if the Authority’s credit rating should be downgraded to Baa3 or BBB- by Moody’s and/or S&P, respectively. As of January 31, 2023, the swap termination net present value for the swaps related to the 2017C Bonds was negative \$37,430,806, which is quite substantial.

**Q. DISCUSS THE SIGNIFICANCE OF THE ADDITIONAL BONDS TEST AS IT RELATES TO THE CAPITAL LINE OF CREDIT.**

A. As discussed previously, if the Authority’s rate revenue is insufficient to meet its ABT, then it cannot issue new debt. One of the consequences of being unable to issue new debt is the inability to refinance the revolving line of credit upon its Expiration Date of June 23, 2025. In this event, the Authority would need to enter into a Term Loan that is effectively at the above-mentioned Default Rate, less 1.00%, or 10.00% as of March 31. This is more than triple the Authority’s current borrowing rate under the Capital Line of Credit, and would result in an unacceptably high cost of debt service associated with this financing mechanism.

1 V. **IMPACT OF MULTI-YEAR RATE ADJUSTMENT AND FUTURE RATE**  
 2 **INCREASES**

3 Q. **HOW WILL THE AUTHORITY'S CREDIT PROFILE BE IMPACTED IF THE**  
 4 **PUC APPROVES A MULTI-YEAR RATE ADJUSTMENT?**

5 A. I believe that the Rating Agencies will react positively.

6 Moody's scorecard has a rate management sub-factor under the management factor that is  
 7 worth 10% of the overall score. According to Moody's methodology, since rates are  
 8 typically the primary mechanism to pay for a utility's operations, ideally their rate would  
 9 increase steadily. Management's track record at setting rates appropriately and  
 10 increasing them when necessary drives this score. Moody's also takes into account the  
 11 length of time required to implement a rate increase, especially when the utility must seek  
 12 approval from the state. In the case of PWSA, Moody's has noted that an inability to  
 13 raise rates sufficiently to meet debt service coverage covenants while also funding  
 14 significant deferred capital improvements could lead to a downgrade.

15 S&P uses a scorecard approach for their water and sewer ratings. There are four factors  
 16 that go into the Operational Management Assessment score. "Rate Setting Practices,"  
 17 which represents 40% of the Operational Management Assessment score, is the largest  
 18 factor within the Operational Management Assessment score.

- 19 • *Strong Rate Setting Practices* occur when rate increases have been needed, the  
 20 decision-making body has been supportive and timely, even to the extent that  
 21 multiyear, preapproved rate increases are common, if not standard. Financial  
 22 decisions are prudent, in our view, rather than simply politically expedient and  
 23 that could possibly be to the detriment of the utility's near-term financial health.  
 24 Periodic rate studies (internal or external) are common.

1 Specifically, as mentioned previously, S&P has noted in the past that their stable outlook  
2 for PWSA reflects an expectation that both the timing and magnitude of rate adjustments  
3 that PWSA requests, versus what the PUC ultimately grants, will generally prove to be  
4 aligned. S&P assumes that PUC oversight will be a supportive relationship of credit  
5 quality observed by both the timing and magnitude of rate adjustments that the Authority  
6 requests versus what the PUC grant. S&P also noted in the past that should rate increases  
7 be insufficient to support strong finances, they could lower the rating. Therefore, it is  
8 imperative the PUC the requested rate adjustments “align” in what the PUC approves.

9 In addition, multi-year planning and rate adjustments contribute to municipal  
10 utilities’ stable financial performance. The table below summarizes the historical debt  
11 service coverages and days cash on hand for PWSA and peer utilities. The peer agencies  
12 generally have stable financial metrics. In cases where metrics have deteriorated sharply  
13 for respective peers, such as the City of Baltimore in FY 2016 and PWSA in 2017, bond  
14 ratings have been lowered following the reported results. On the contrary, when metrics  
15 increase for peers, such as Allegheny County Sanitary Sewer Authority (“ALCOSAN”)  
16 or the Great Lakes Water Authority, bond ratings have been upgraded. The absence of  
17 annual rate increases has caused substantial volatility in the Authority’s financial metrics  
18 in the past and it is imperative that annual rate increases occur with an appropriate  
19 adjustment to keep or increase the financial metrics of the Authority. Neither bond  
20 investors, nor the rating agencies will look favorably on consistently deteriorating  
21 financial metrics or the variability of sporadic rate increases and/or inadequate  
22 adjustments, as these characteristics are inconsistent with highly rated municipal utilities.

23



Historical and Project Financial Metrics of PWSA Compared to Historical Financial Metrics of Peers											
Debt Service Coverage*											
	Pittsburgh Water and Sewer Authority (A3)	ALCOSAN (PA) (Aa3) <sup>1</sup>	Atlanta Water & Wastewater Enterprise (GA) (Aa2)	Baltimore Water Enterprise (MD) (Aa2)	Chicago Water Enterprise (IL) (Baa1)	Cleveland Water Enterprise (OH) (Aa2)	Great Lakes Water Authority (MI) (A1) <sup>2</sup>	Metropolitan Sewer District of Greater Cincinnati (OH) (Aa2)	Philadelphia Water & Sewer Enterprise (PA) (A1)	Washington, D.C. Water & Sewer Authority (DC) (Aa1)	Westmoreland County Municipal Authority (A1)
2015	1.1	1.6	2.1	1.8	2.5	2.2	1.3	1.5	1.5	1.8	1.2
2016	0.9	1.6	1.8	1.1	2.6	2.0	1.6	1.7	1.4	2.0	1.0
2017	0.8	2.2	1.9	0.9	2.3	1.7	1.6	1.5	1.7	2.1	1.5
2018	1.4	2.1	2.0	1.4	2.2	1.9	1.6	2.0	1.5	2.1	1.6
2019	1.3	2.0	2.6	1.4	1.8	2.0	1.5	1.9	1.8	2.0	1.3
2020	1.5	2.0	1.8	1.2	1.8	2.3	1.5	1.9	1.5	2.1	1.1
2021	1.5	2.1		2.0		2.8	1.4	2.0	2.0	2.0	
2022	1.5										
2023	1.4										
2024											
2025											
2026											

Days' Cash on Hand*											
	Pittsburgh Water and Sewer Authority (A3)	ALCOSAN (PA) (Aa3) <sup>1</sup>	Atlanta Water & Wastewater Enterprise (GA) (Aa2)	Baltimore Water Enterprise (MD) (Aa2)	Chicago Water Enterprise (IL) (Baa1)	Cleveland Water Enterprise (OH) (Aa2)	Great Lakes Water Authority (MI) (A1) <sup>2</sup>	Metropolitan Sewer District of Greater Cincinnati (OH) (Aa2)	Philadelphia Water & Sewer Enterprise (PA) (A1)	Washington, D.C. Water & Sewer Authority (DC) (Aa1)	Westmoreland County Municipal Authority (A1)
2015	78	424	1,313	205	462	469	266	448	78	244	90
2016	53	450	1,243	113	591	781	391	564	79	268	75
2017	26	620	1,364	58	598	848	670	32	88	250	98
2018	112	684	1,232	258	480	796	912	64	88	261	115
2019	155	830	1,357	199	417	759	937	60	92	281	157
2020	229	960	1,165	233	391	781	956	68	104	349	162
2021	195	1065		460		777	920	70**	151	342	
2022	175										
2023	152										
2024											
2025											
2026											

1

2 \*Sources: Moody’s Investors Service Reports for years 2015 through 2021.

3 <sup>1</sup>Chicago Water was upgraded to Baa1 from Baa2 in 2022. The debt statistics are shaded green in 2020 as this is

4 the most recent financial metric data.

5 Notes: Yellow shaded cells represent rating Moody’s downgrades. Green shaded cells represent rating Moody’s

6 upgrade. Orange shaded cells represent years when PWSA rate adjustment is scheduled.

7

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

9 A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate.

# Appendix A

**Firm Overview.** PRAG is an independent financial advisory firm organized as a subchapter S corporation wholly-owned and managed by its employees. The firm was founded in 1985 to provide in-depth financing, investment and derivative advice to state and local governments, authorities and agencies and has continuously served governmental entities for the nearly 38 years that our firm has been in business. PRAG’s only business is providing independent financial and investment advisory services to municipal clients. Today, PRAG has five offices around the country, including our New York City headquarters, and in suburban Philadelphia, Los Angeles, Oakland and St. Petersburg, Florida.

### National Experience.

PRAG has been consistently ranked among the top three financial advisors in the nation over the last decade for all long-term municipal issuance, as illustrated in the table to the right. Our success is built on a history of providing comprehensive, high-quality, and independent advice to public sector issuers with respect to capital planning, debt portfolio

PRAG's Financial Advisory Rankings (2013-2022)						
Year	Long-Term Municipal Issuance Rankings		Competitive Sale Rankings		Negotiated Sale Rankings	
	Total Amount*	Rank	Total Amount*	Rank	Total Amount*	Rank
2022	\$35.2	2	\$10.5	2	\$24.7	2
2021	\$44.5	2	\$17.1	1	\$27.3	2
2020	\$43.4	2	\$13.5	1	\$29.9	2
2019	\$40.6	2	\$19.4	1	\$21.2	3
2018	\$36.1	2	\$17.4	1	\$18.7	2
2017	\$52.4	2	\$20.2	1	\$32.2	2
2016	\$33.4	3	\$12.6	2	\$20.8	3
2015	\$30.9	3	\$12.4	2	\$18.5	3
2014	\$27.9	2	\$11.4	1	\$16.4	3
2013	\$31.0	2	\$9.9	2	\$21.1	2

\*\$'s in billions.

Source: Refinitiv.

management, debt capacity, swaps and derivative instruments, financing options, refunding approaches and techniques, bond structure and pricing, and bond proceeds investment strategies.

**Water and Wastewater Experience.** Since 2000, PRAG has advised water and wastewater authorities and agencies on their complex needs, including over \$42.0 billion in financings. . Our water and wastewater transactions include fixed and variable rate bonds, negotiated transactions, public sales and private placements, new money and refundings. In addition to our water and wastewater transaction experience, we also have ample experience with general financial advisory services, such as review of feasibility studies, credit rating strategies, long-term financial plans, debt affordability studies, advising in an IRMA role, monitoring legislation and more. Provided below is a list of selected water and wastewater clients. PRAG has also advised a number of its water and wastewater clients on executing WIFIA loans.

PRAG advised the Pittsburgh Water and Sewer Authority (“PWSA”) on its bond transactions in 2019, 2020 and 2022: \$109,855,000 Water and Sewer System First Lien Revenue Bonds, Series A of 2019; \$104,290,000 Water and Sewer System Subordinate Revenue Refunding Bonds, Series B of 2019; \$92,410,000 Water and Sewer First Lien Revenue Bonds Series A of 2020 (Taxable) and Series B of 2020 and the remarketing of the \$218,805,000 Water and Sewer System First Lien Revenue Refunding Bonds, Series C of 2017.

Most recently, PRAG acted as financial advisor for PWSA’s \$44.55 million Water and Sewer System First Lien Revenue Bonds, Series A of 2022, the proceeds of which paid down the \$50 million balance on its capital line of credit note and is currently advising the Authority on its 2023 bond issuance which is intended to repay \$110 million on its capital line of credit, currently refund approximately \$80 million in outstanding 2013 A and B bonds for interest rate savings, and the remarketing and refunding of the

Authority; s variable rate Series C of 2017 bonds which have a mandatory put on December 1, 2023 but are callable as early as June 1, 2023.

PRAG is also currently assisting PWSA in negotiating and executing a \$50 million WIFIA loan related to its \$165 million clearwell replacement and improvement project that is expected to close in May 2023.

Provided below is a list of select water and wastewater clients.

Summary of PRAG's Water and Wastewater Experience	Bond Issuance	Innovative Debt Products	Structuring & Restructuring	Long-Term Financial Plan	Investments	Swaps & Derivatives	Credit Rating Strategy	Special Studies & Reports	Financial Policies	Inter-Agency Agreements	WIFIA Loan
Miami-Dade County Water & Sewer	✓		✓	✓		✓	✓		✓	✓	✓
Orange County Sanitation District	✓	✓	✓	✓	✓	✓	✓	✓			
Jefferson County, Alabama	✓		✓	✓			✓	✓	✓		
San Francisco Public Utilities Commission	✓		✓	✓			✓				
Santa Clara Valley Water District	✓	✓	✓	✓	✓	✓	✓	✓			✓
West Virginia Water Development Authority	✓						✓				
LA Department of Water & Power	✓	✓	✓		✓	✓	✓	✓		✓	
City of Los Angeles	✓	✓	✓	✓	✓	✓	✓		✓		✓
Hillsborough County	✓						✓		✓		
Baltimore County	✓		✓	✓			✓	✓	✓		
Anne Arundel County	✓		✓	✓			✓		✓		
City of Virginia Beach	✓		✓	✓			✓				
Bethlehem Authority	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Capital Region Water (Harrisburg)	✓		✓	✓	✓		✓	✓	✓	✓	
Pittsburgh Water and Sewer Authority	✓		✓			✓	✓				✓

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**Christine Fay**  
**Senior Managing Director**  
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Ms. Fay brings over twenty years of municipal finance experience to the engagement. Ms. Fay provides overall project management and quantitative analysis for various state and local issuers, including several municipalities and water and sewer issuers. She has served as the Project Manager for the Pittsburgh Water and Sewer Authority, as well as the states of Illinois, Minnesota, Vermont and West Virginia and the City of

Detroit. Her role includes advising clients on structuring debt consistent with statute and long-term objectives of clients, the debt issuance process on both competitive and negotiated transactions, document drafting and review, rating agency strategy and credit support, market outreach and research, evaluations of various requests for proposals and overall day to day project management.

Ms. Fay has worked with a variety of PRAG clients on water, sewer and storm water financings including serving as Project Manager to Pittsburgh Water and Sewer Authority on its 2019, 2020 and 2022 Bonds and is currently assisting the Authority on the issuance of its 2023 bonds. Additionally, Ms. Fay has also worked with the Bethlehem Authority, Capital Regional Water (formerly The Harrisburg Authority), the Metropolitan Council (MN), Miami-Dade County, New Castle County (DE), and the West Virginia Water Development Authority. In addition to her water and sewer clients, as previously noted, Ms. Fay serves as the day-to-day Project Manager for the states of West Virginia, Minnesota, Vermont and Illinois. Ms. Fay has worked with the State of West Virginia since 2009. She has advised on the issuance of general obligation bonds, lease revenues bonds, lottery backed revenue bonds, moral obligation bonds, revenue bonds, and GARVEE notes. Ms. Fay has been advising the State of Illinois since 2009. She has worked on both competitive and negotiated transactions, bidding escrow securities for a refunding transaction, advised on credit approach, structuring and marketing the bonds and assisted in preparing investor materials. In addition, Ms. Fay advised the State of Illinois on its \$6 billion of general obligation bonds to reduce the State's backlog of unpaid bills. Ms. Fay has worked on all bond issuances that PRAG has advised the State of Minnesota on since 2009. She has sized the State's Various Purpose, Trunk Highway and Refunding bonds consistent with the State's constitution and capital guidelines and was involved in all aspects of the financings.

Prior to joining PRAG, Ms. Fay served as the Debt Finance Manager at the County of San Diego, where she oversaw a \$2.4 billion debt portfolio, managed the County's debt issuance process, was on the capital planning committee, and served as the point of contact to the rating agencies. As the Debt Finance Manager at the County of San Diego, Ms. Fay successfully managed lease revenue transactions, conduit financings, formed the County's first special tax district, and was instrumental in the County getting upgraded to AAA by Standard and Poor's.

Ms. Fay received her MBA from UCLA Anderson School of Business and a Bachelor of Arts degree in Economics from the University of Pennsylvania. *Certifications/Licenses: Series 50, Municipal Advisor Representative.*



**PUBLIC RESOURCES ADVISORY GROUP**

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# Exhibit CF-1

Rate Covenant

The Rate Covenant in the Amended and Restated Indenture that the Authority made with bondholders requires the Authority 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.

It should be noted that the City's Cooperation Payment is specifically not included as an operating expense for purposes of calculating the rate covenant.

Flow of Funds

1. Revenue Fund - All revenues received by the Authority must be deposited into Revenue Fund.
2. Operating Fund - The Authority shall transfer from the Revenue Fund to the Operating Fund from time to time amounts needed to pay Current Expenses.
3. Debt Service Fund - On the 20<sup>th</sup> day of each month before debt service is due, the Authority shall transfer to: (1) senior debt service fund (including periodic payments of swap agreements); (2) the senior debt service reserve fund, if needed; (3) the subordinated debt service fund (including periodic payments of swap agreements); the subordinated debt service reserve fund, if needed; (5) any payments owed to swap providers other than periodic payments.
4. Operating Reserve Fund - Amounts necessary to restore the operating reserve requirement of 116th of current expenses of the most recent annual audited financial statements. Such amounts shall be restored if drawn upon within 24 months of the withdrawal by depositing 1/24 of the operating reserve requirement monthly.
5. City Cooperation Agreement - Amounts owed to the City pursuant to the Agreement.
6. Any funds remaining in the Revenue Fund after all of the previous required payments have been made can be transferred to the Rate Stabilization Fund; the Debt Service Fund; the Operating Fund to pay for construction or capital projects.



# Exhibit CF-2

<b>Peer Ratings and Comparative Financial Information</b>											
	<b>Pittsburgh Water and Sewer Authority</b>	<b>Atlanta Water &amp; Wastewater Enterprise (GA)</b>	<b>Baltimore Water Enterprise (MD)</b>	<b>Chicago Water Enterprise (IL)</b>	<b>Cleveland Water Enterprise (OH)</b>	<b>Great Lakes Water Authority (MI)</b>	<b>Metropolitan Sewer District of Greater Cincinnati (OH)</b>	<b>Philadelphia Water &amp; Sewer Enterprise (PA)</b>	<b>Washington, D.C. Water &amp; Sewer Authority (DC)</b>	<b>Westmoreland County Municipal Authority</b>	
<b>Year</b>	2021	2022	2022	2022	2021	2021	2022	2021	2022	2022	2022
<b>Current Senior Most Rating</b>	A3	Aa3	Aa2	Aa2	Baa1	Aa2	A1	Aa2	A1	Aa1	A1
<b>Total Current Cash, Cash Equivalents and Investments (\$000)</b>	76,422	311,516	869,042	212,893	470,209	410,903	238,691	19,918	171,445	315,241	36,150
<b>Total Revenue Bonds (\$000)</b>	N/A	906,390	2,635,630	1,341,508	N/A	369,765	N/A	N/A	2,435,116	N/A	N/A
<b>Total Long Term Debt (\$000)</b>	1,070,782	906,390	2,947,648	1,341,508	2,341,421	455,348	2,756,005	813,187	2,435,116	3,726,934	469,010
<b>Total Operating Revenues (\$000)</b>	269,121	211,517	482,084	278,280	775,725	325,793	344,958	266,026	766,367	832,210	109,477
<b>Total O&amp;M Expenses (\$000)</b>	179,900	99,272	245,739	130,471	407,265	192,917	143,639	103,822	458,450	337,384	69,619
<b>Net Revenues (\$000)</b>	90,592	128,590	448,754	161,515	372,231	141,823	240,064	169,558	302,494	499,284	41,841
<b>Total Annual Senior Lien Debt Service (\$000)</b>	57,195	N/A	209,233	42,798	N/A	41,550	124,310	53,528	182,061	76,947	40,306
<b>Total Annual Debt Service (\$000)</b>	67,796	57,158	235,362	71,600	198,482	50,828	175,743	83,824	182,061	219,090	40,306
<b>Operating Ratio (%)</b>	66.8	46.9	51.0	46.9	52.5	59.2	41.6	39.0	59.8	40.5	63.6
<b>Debt Ratio (%)</b>	98.8	59.1	41.5	47.3	41.0	19.3	120.9	33.6	57.5	55.2	68.5
<b>Total Annual Senior Lien DSC (x)</b>	1.6	N/A	2.1	3.8	N/A	3.4	1.9	3.2	1.7	6.5	1.0
<b>Total Annual Debt Service Coverage (x)</b>	1.3	2.2	1.9	2.3	1.9	2.8	1.4	2.0	1.7	2.3	1.0

Sources: Moody's rating reports for each issuer.

# Exhibit CF-3

## SECTOR PROFILE

26 May 2022



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## Water and Sewer Utilities – US

# Medians - Liquidity and debt service coverage remained strong in fiscal 2020

Municipal water and sewer utilities benefited from increased liquidity and debt service coverage on a sectorwide basis in fiscal 2020, according to our medians data. The improvements and mostly steady financial performance came despite the fiscal year partly coinciding with the pandemic. The sector, which includes water, sewer and combined utilities, was helped by utilities' willingness and ability to raise rates and the essentiality of their services. While asset conditions continued to signal underinvestment in infrastructure, massive federal aid stands to help fund improvements and manage risks posed by inflation and supply-chain disruption. Most of the water and sewer utilities we rate are enterprises of a city or county. The credit quality of these utilities and their parent governments are closely connected. Other water and sewer systems are standalone authorities.

- » **Revenue was stable in fiscal 2020, owing in part to independent rate-setting ability and essentiality of services.** Sectorwide median revenue increased about 1.0% in fiscal 2020. Most utilities proceeded with planned rate hikes, though some modified plans in fiscal 2021 due to the pandemic.
- » **Operating and maintenance (O&M) expenses increased.** Sectorwide, median O&M expenses increased 4.4% versus the prior year as some systems continued to expand and add customers, which can boost costs.
- » **Net revenue improved sectorwide, indicating continued financial strength and flexibility.** Median net revenue rose 3.7% in fiscal 2020 versus the prior year, which will help systems afford capital improvements or manage unforeseen expenses.
- » **Sectorwide liquidity increased markedly.** The median days cash on hand rose in fiscal 2020 to 506 days from 476 in the prior year.
- » **Leverage declined modestly again in fiscal 2020.** With growth in revenue, the sectorwide median debt-to-operating revenue ratio fell 4.5% to 2.0x.
- » **Debt service coverage remained healthy.** Median sectorwide coverage again grew modestly to 2.3x, indicating capacity to absorb swings in revenues or expenses.
- » **Asset condition remained stable, raising the prospect the utilities will need to increase capital investments.** Project deferrals resulted in a modest decline in the sectorwide median remaining useful life of assets as depreciation outpaced investment.
- » **Asset condition varied by region.** Water and sewer systems in the West had the highest median remaining useful life by a wide margin.

## Revenue

Exhibit 1

### Revenue improved across the sector in fiscal 2021

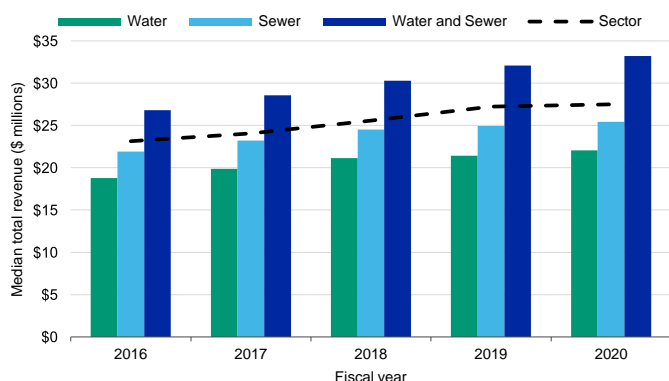


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

Source: Moody's Investors Service

### Revenue improved, helped by independent rate-raising authority and essentiality of services

- » Median sectorwide revenue increased about 1.0% in fiscal 2020 versus the prior year. Most utilities enacted planned rate hikes, though some pulled back in fiscal 2021 due to the pandemic. Utilities also benefit from services that are essential.
- » System growth and revenue diversity reduce the need for large rate increases, allowing systems to implement smaller increases spread across more customers to pay debt or address capital needs.

## Expenses

Exhibit 2

### Operations and maintenance expenses grew across the sector

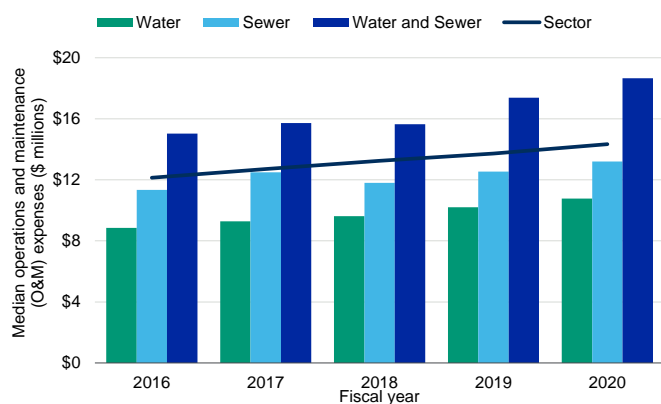


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

Source: Moody's Investors Service

### O&M expenditure growth increased as some utilities expanded and added customers

- » Sectorwide, the median operations and maintenance (O&M) expense increased 4.4% in fiscal 2020 compared with the prior year. Water, sewer and combined systems also each saw a median O&M expense increase in fiscal 2020.
- » Some utilities' O&M expenses increased because of customer growth, including [Austin \(City of\) TX Water and Wastewater System \(Aa2 stable\)](#), which has grown by an annual average of 6.5% over the past five years. Customer growth has paralleled the city's expansion, necessitating increased O&M expense.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moodys.com> for the most updated credit rating action information and rating history.

## Net revenue

Exhibit 3

Net revenue at the sectorwide level improved as revenue outpaced expenditures

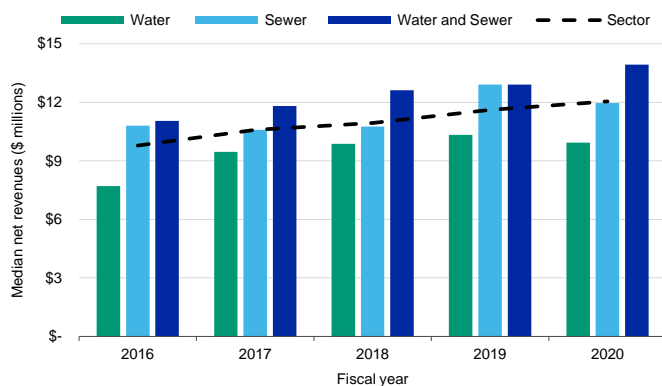


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

Source: Moody's Investors Service

### Improving net revenues indicated continued financial strength and flexibility

- » Sectorwide median net revenue rose 3.7% in fiscal 2020 versus the prior year. Combined water and sewer utilities' median net revenue increased for the eighth year in a row, providing a strong basis for paying debt and building up liquidity to further address capital needs. Median net revenue for both water and sewer systems modestly decreased in 2020 following moderate growth in 2019.
- » Increasing net revenue highlights the benefits of the sector's independent rate-raising ability.

## Liquidity

Exhibit 4

Liquidity remained strong across the sector with the three system types maintaining more than a year of operating cash

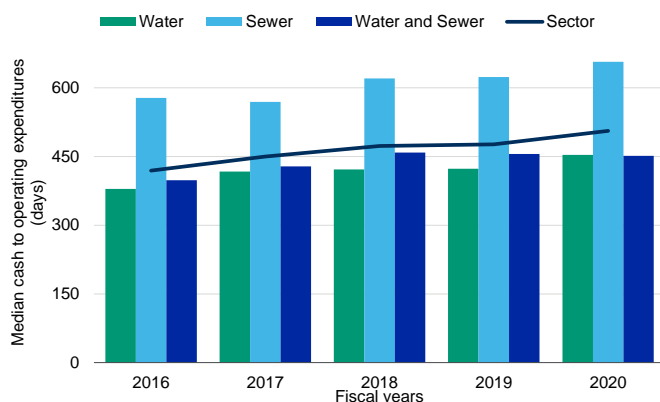


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three).

Source: Moody's Investors Service

### Improvement in liquidity significantly benefited sector

- » The median days cash on hand sectorwide rose in fiscal 2020 to 506 days from 476 in the prior year. Both water and sewer utilities had median increases of at least 30 days following a fairly flat 2019. Combined water and sewer systems, however, fell by a median five days.
- » All system types have materially improved liquidity over at least the past five years by over 50 additional days.
- » [Atlanta \(City of\) GA Water and Wastewater Enterprise \(Aa2 stable\)](#) serves as an example of a system maintaining very strong liquidity — exceeding 1,000 days cash on hand in at least each of the past five years — while addressing significant capital needs.

## Leverage

Exhibit 5

Leverage at the sectorwide level declined for the second year in a row in fiscal 2020

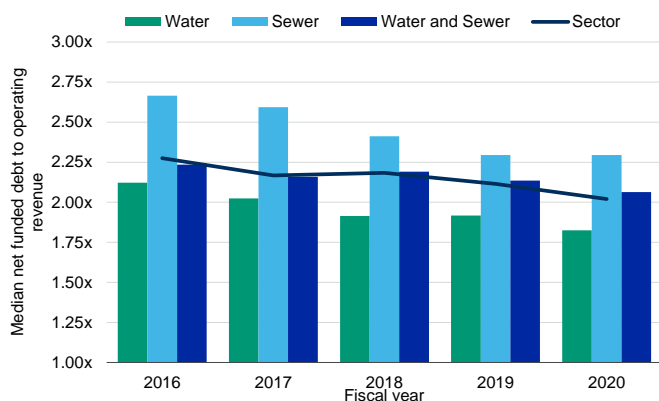


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

Source: Moody's Investors Service

### Leverage levels remained healthy as revenue increased

- » With an increase in revenue, the sectorwide median debt-to-operating revenue ratio dropped 4.5% to 2.0x in fiscal 2020. Median leverage remained the same for sewer entities but fell for water and combined systems versus fiscal 2019.
- » [Sussex \(Village of\) WI Water Enterprise \(Aa3\)](#) serves as an example of a utility that borrowed in part for environmental remediation, increasing the debt-to-operating ratio to 5.1x in fiscal 2018. Since then, leverage has dropped, reaching 3.8x in fiscal 2020 thanks to a new large customer and general rate increases.

Exhibit 6

Debt service coverage continued to top 2.0x across the sector

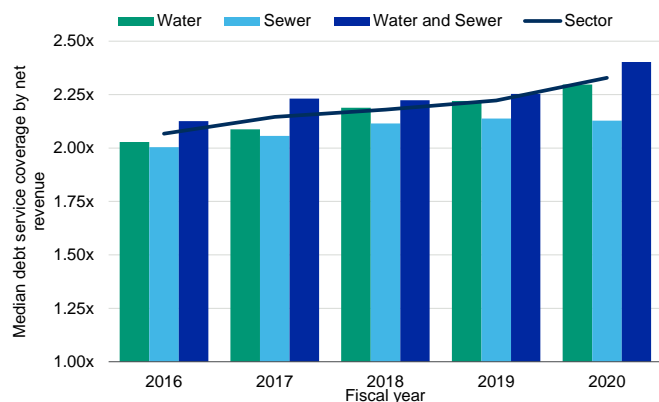


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

Source: Moody's Investors Service

### Debt service coverage remained stable across all system types

- » Sectorwide debt service coverage — annual net revenue divided by annual debt service — increased to 2.3x from 2.2x in fiscal 2020. Coverage remained well in excess of standard rate covenants that are usually between 1.0x and 1.5x annual debt service.
- » Median coverage increased slightly to 2.3x in fiscal 2020 for water systems versus the prior year but was flat at 2.1x for sewer entities. Median coverage increased slightly for combined systems to 2.4x coverage from 2.3x in the prior year.
- » Very strong debt service coverage and liquidity provide utilities with substantial ability to withstand shocks. While actual results show that revenue modestly increased in 2020, we [previously reported](#) that even under a stress scenario of a 10% decline in revenue, the median debt service coverage ratio for water and sewer utilities we rate would remain strong at 1.7x.

## Asset condition

Exhibit 7

Remaining useful life of assets remained largely stable in fiscal 2020

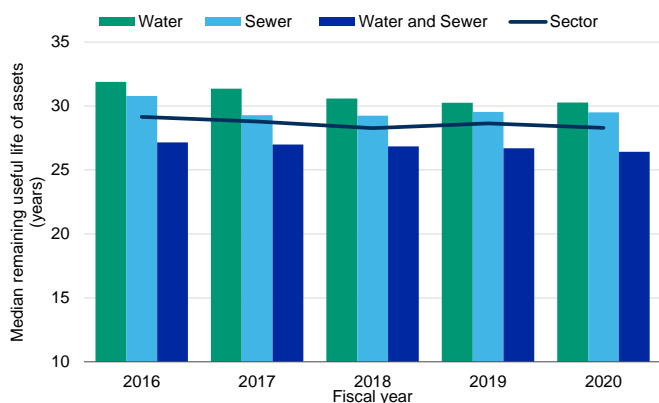


Exhibit includes median data points for water, sewer and combined water and sewer systems, and sectorwide (all three types).

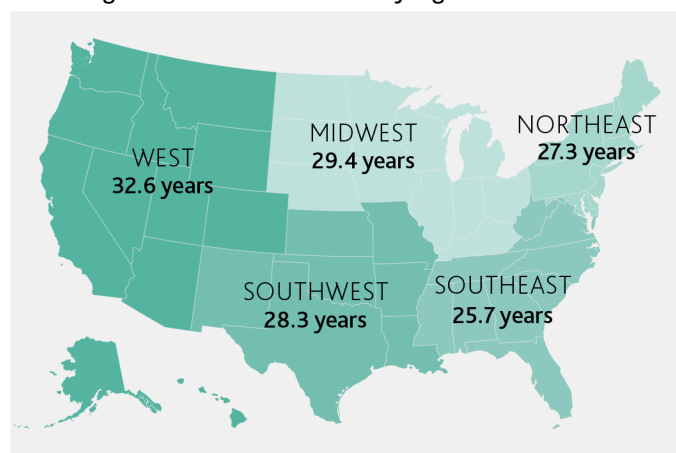
Source: Moody's Investors Service

### Asset condition remained stable, indicating greater investment in infrastructure will be needed

- » Median sectorwide asset condition — net fixed assets divided by depreciation expense — remained stable at a healthy 28 years, giving systems time to address capital needs.
- » The median asset conditions for water systems and sewer systems remained stable at 30 years, but decreased slightly to 26 for combined water and sewer systems.
- » Most utilities continued with necessary capital projects during the pandemic, though some were postponed for budget savings.

Exhibit 8

Remaining useful life of assets varied by region in fiscal 2020



Source: Moody's Investors Service

### Western US asset conditions topped other regions

- » Sectorwide median asset condition — remaining useful life of assets — varied by region in fiscal 2020, with the Southeast having the shortest and the West having the longest.
- » Population growth and newer infrastructure generally benefit water and sewer systems in the West.



### Basis for medians

This report conforms to our [US Municipal Utility Revenue Debt Methodology](#) published in April 2022. As such, the medians presented here are based on the key metrics outlined in the methodology and the associated scorecard. The appendix of this report provides additional metrics broken out by sector and rating category.

We use data from a variety of sources to calculate the medians, some of which have differing reporting schedules. The median family income data (see below) was derived from the 2020 US Census American Community Survey.

Medians for some rating levels, namely Aaa- and Baa-rated issuers (see below), are based on relatively small sample sizes. These medians may therefore be subject to substantial year-over-year variation.

Our ratings reflect our forward-looking opinion derived partly from forecasts of financial performance and qualitative factors, as opposed to strictly historical quantitative data. Our expectation of future performance, combined with the relative importance of certain metrics on individual utility ratings, account for the range of values that can be found within each rating category.

### Key ratios

- » Net revenue: total operating revenue minus operating expenditures
- » Debt service coverage: annual net revenue (including connection or impact fees) divided by annual debt service
- » Liquidity: unrestricted cash and liquid investments multiplied by 365 and divided by operating and maintenance expenses (net of depreciation), expressed in days
- » Days cash on hand: Unrestricted cash and liquid investments divided by operating and maintenance expenses and multiplied by 365, expressed in days
- » Debt to operating revenue: net long-term debt less debt service reserve funds divided by most recent year's operating revenues
- » Asset condition: net fixed assets divided by depreciation expense, expressed in years

## Appendix A: Water, sewer and combined water and sewer utilities

Exhibit 9

### Medians for US water utilities

Selected Indicators	2016	2017	2018	2019	2020
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	98.8%	99.0%	98.2%	99.2%	100.1%
Asset Condition: (Remaining Useful Life)	32	31	31	30	30
Debt to Operating Revenues	2.1	0.0	1.9	1.9	1.8
Annual Debt Service Coverage	2.0	2.1	2.2	2.2	2.3
Days Cash on Hand	379	417	422	423	454
System Size: (O&M, \$000)	8,852	9,457	10,018	10,937	10,891
Debt Service (\$000)	3,682	3,946	3,904	4,086	4,073
Net Revenues (\$000)	7,703	9,468	9,866	10,328	9,942
Net Funded Debt (\$000)	37,043	36,623	36,400	36,729	37,840
Total Revenues (\$000)	18,796	19,877	21,157	21,433	22,040

Source: Moody's Investors Service

Exhibit 10

### Medians for US sewer utilities

Selected Indicators	2016	2017	2018	2019	2020
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	99.1%	100.3%	100.6%	100.2%	100.6%
Asset Condition: (Remaining Useful Life)	31	29	29	30	30
Debt to Operating Revenues	2.7	2.6	2.4	2.3	2.3
Annual Debt Service Coverage	2.0	2.1	2.1	2.1	2.1
Days Cash on Hand	578	569	620	623	657
System Size: (O&M, \$000)	11,691	11,896	12,007	12,385	13,032
Debt Service (\$000)	4,236	4,093	4,676	4,392	4,472
Net Revenues (\$000)	10,808	10,590	10,760	12,904	11,961
Net Funded Debt (\$000)	44,764	43,719	44,365	44,685	45,336
Total Revenues (\$000)	21,929	23,210	24,534	24,958	25,448

Source: Moody's Investors Service

Exhibit 11

### Medians US combined water and sewer utilities

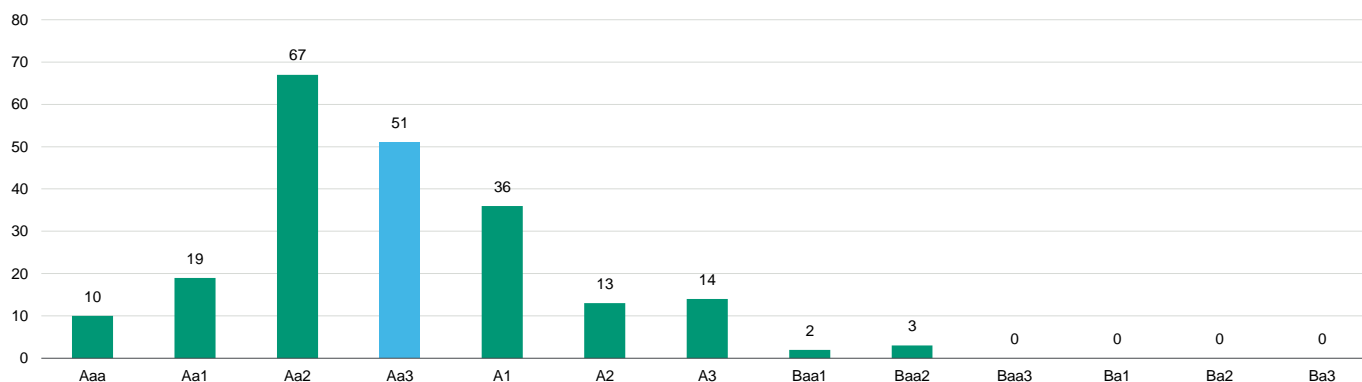
Selected Indicators	2016	2017	2018	2019	2020
Moody's Median Senior Revenue Rating					Aa3
Median Family Income (% of US Median)	91.3%	91.0%	92.4%	92.9%	92.8%
Asset Condition: (Remaining Useful Life)	27	27	27	27	26
Debt to Operating Revenues	2.2	2.2	2.2	2.1	2.1
Annual Debt Service Coverage	2.1	2.2	2.2	2.3	2.4
Days Cash on Hand	398	429	458	456	451
System Size: (O&M, \$000)	14,840	15,493	15,973	16,995	17,479
Debt Service (\$000)	5,276	5,153	5,387	5,493	5,151
Net Revenues (\$000)	11,047	11,809	12,615	12,913	13,932
Net Funded Debt (\$000)	50,547	52,055	55,234	56,156	54,944
Total Revenues (\$000)	26,794	28,554	30,282	32,079	33,200

Source: Moody's Investors Service

## Appendix B: Water utilities

Exhibit 12

### Rating distribution for US water utilities



Highlighted bar represents median rating

Source: Moody's Investors Service

Exhibit 13

### 2020 medians for US water utilities

Selected Indicators	2020
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	100.1%
Asset Condition: (Remaining Useful Life)	30
Debt to Operating Revenues	1.8
Annual Debt Service Coverage	2.3
Days Cash on Hand	454
System Size: (O&M, \$000)	10,891
Debt Service (\$000)	4,073
Net Revenues (\$000)	9,942
Net Funded Debt (\$000)	37,840
Total Revenues (\$000)	22,040

Source: Moody's Investors Service

Exhibit 14

### 2020 medians for US water utilities by rating category

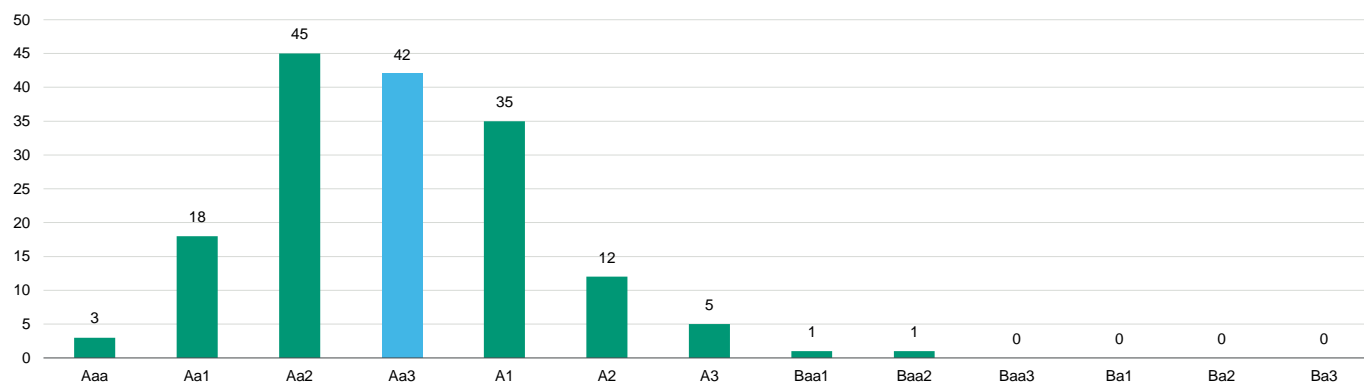
Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	120%	104%	89%	73%	N/A
Asset Condition: (Remaining Useful Life)	34	32	26	32	N/A
Debt to Operating Revenues	2.1	1.8	1.8	1.8	N/A
Annual Debt Service Coverage	2.93	2.44	1.9	1.8	N/A
Days Cash on Hand	555	486	410	391	N/A
System Size: (O&M, \$000)	94,013	16,949	3,418	3,752	N/A
Debt Service (\$000)	40,563	5,830	1,614	1,322	N/A
Net Revenues (\$000)	104,897	14,955	2,920	2,435	N/A
Net Funded Debt (\$000)	417,926	50,057	14,173	8,803	N/A
Total Revenues (\$000)	197,537	35,323	6,787	5,872	N/A

Source: Moody's Investors Service

## Appendix C: Sewer utilities

Exhibit 15

### Rating distribution for US sewer utilities



Highlighted bar represents median rating

Source: Moody's Investors Service

Exhibit 16

### 2020 US sewer medians

Selected Indicators	2020
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	100.6%
Asset Condition: (Remaining Useful Life)	30
Debt to Operating Revenues	2.3
Annual Debt Service Coverage	2.1
Days Cash on Hand	657
System Size: (O&M, \$000)	13,032
Debt Service (\$000)	4,472
Net Revenues (\$000)	11,961
Net Funded Debt (\$000)	45,336
Total Revenues (\$000)	25,448

Source: Moody's Investors Service

Exhibit 17

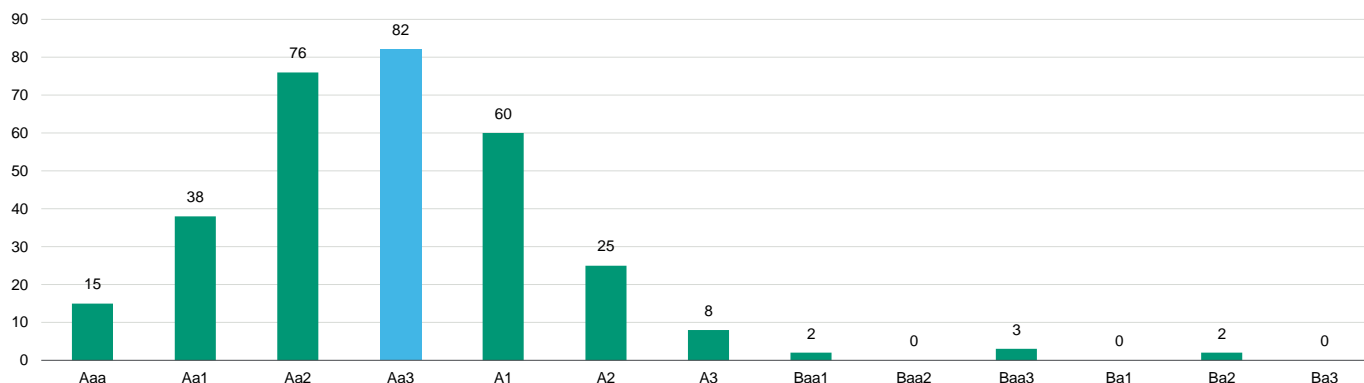
### 2020 medians US sewer utilities by rating category

Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	133%	105%	89%	89%	N/A
Asset Condition: (Remaining Useful Life)	26	30	28	42	N/A
Debt to Operating Revenues	2.5	2.2	2.5	3.4	N/A
Annual Debt Service Coverage	2.83	2.41	1.7	2.4	N/A
Days Cash on Hand	1567	658	689	385	N/A
System Size: (O&M, \$000)	105,293	21,736	6,344	83,378	N/A
Debt Service (\$000)	48,688	7,978	2,995	76,217	N/A
Net Revenues (\$000)	137,601	16,843	4,397	95,033	N/A
Net Funded Debt (\$000)	516,173	75,350	22,957	959,580	N/A
Total Revenues (\$000)	242,894	40,088	11,399	178,411	N/A

Source: Moody's Investors Service

## Appendix D: Combined water and sewer utilities

Exhibit 18



Highlighted bar represents median rating

Source: Moody's Investors Service

Exhibit 19

### 2020 US combined water and sewer utilities

Selected Indicators	2020
Moody's Median Senior Revenue Rating	Aa3
Median Family Income (% of US Median)	92.8%
Asset Condition: (Remaining Useful Life)	26
Debt to Operating Revenues	2.1
Annual Debt Service Coverage	2.4
Days Cash on Hand	451
System Size: (O&M, \$000)	17,479
Debt Service (\$000)	5,151
Net Revenues (\$000)	13,932
Net Funded Debt (\$000)	54,944
Total Revenues (\$000)	33,200

Source: Moody's Investors Service

Exhibit 20

### 2020 medians US combined water and sewer utilities by rating category

Selected Indicators	Aaa	Aa	A	Baa	Ba
Median Family Income (% of US Median)	111%	95%	83%	94%	N/A
Asset Condition: (Remaining Useful Life)	26	27	24	29	N/A
Debt to Operating Revenues	1.9	1.9	2.4	5.5	N/A
Annual Debt Service Coverage	3.29	2.52	2.0	1.5	N/A
Days Cash on Hand	827	521	359	148	N/A
System Size: (O&M, \$000)	98,404	25,513	7,533	666	N/A
Debt Service (\$000)	22,492	7,498	2,353	1,969	N/A
Net Revenues (\$000)	85,347	20,352	4,609	4,876	N/A
Net Funded Debt (\$000)	261,193	71,604	24,803	9,128	N/A
Total Revenues (\$000)	181,675	43,221	13,278	10,840	N/A

Source: Moody's Investors Service

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REPORT NUMBER 1327644

# Exhibit CF-4

## OUTLOOK

6 December 2022



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## Local Government – US

# 2023 Outlook – Stable with reliable revenue sources and robust reserves

### Summary

The outlook for US local governments — cities and counties, K-12 school districts and water and sewer enterprises — remains stable for 2023 as traditionally reliable revenue sources and healthy reserves will blunt the effects of a slower economy and high inflation. Management will also remain largely a sector strength with a track record of maintaining credit quality amid adverse economic conditions. Financial challenges from inflation will linger, including rising employee wages and construction costs. Adjusted pension liabilities will fall with higher interest rates, though 2023 pension contributions will remain relatively steady.

» **Revenue growth will slow, but key revenue sources will provide stability.**

Aggregate revenue for cities and counties, schools and utilities will increase by 3% to 4% in 2023, or about half the growth rate expected in 2022. Property tax revenues will benefit from a typical lag between changes in market values and assessed values for tax purposes. The state funding environment for schools remains strong, while water and sewer enterprises will benefit from reliable rate increases, albeit at a slower pace.

» **Reserves will provide financial flexibility.** Helped by federal pandemic aid, increased liquidity will provide cities, counties and school districts with a buffer against the effects of inflation and a weaker economy. Water and sewer enterprises also have robust cash on hand, providing flexibility to manage escalating costs.

» **Strong governance will help issuers manage the economic downturn.** Local government management is typically strong with a history of adapting to budgetary flux, signaling an ability to avoid credit deterioration in 2023. Combatting cyber risks, an increasing expense, will remain a challenge.

» **Rising construction costs and employee compensation will remain budgetary challenges, though pension liabilities will lessen.** Inflation will increase employee wages and drive higher construction costs. Higher capital costs will be difficult for some water and sewer enterprises amid a need to address aging infrastructure. Unfunded pension and retiree health obligations will remain substantial, but higher interest rates will cause adjusted liabilities to fall.

» **What could change the outlook.** Revenue growth comfortably above the rate of inflation could lead to a positive outlook, while a material revenue decline could contribute to a revision to negative. An inability of local governments to contain rising costs or increase revenue as expenses rise could also play a role in a change to negative.



### Outlook definition

The stable outlook reflects our view of credit fundamentals in the US local government sector over the next 12 months. Sector outlooks are distinct from rating outlooks, which, in addition to sector dynamics, also reflect issuers' specific characteristics and actions.

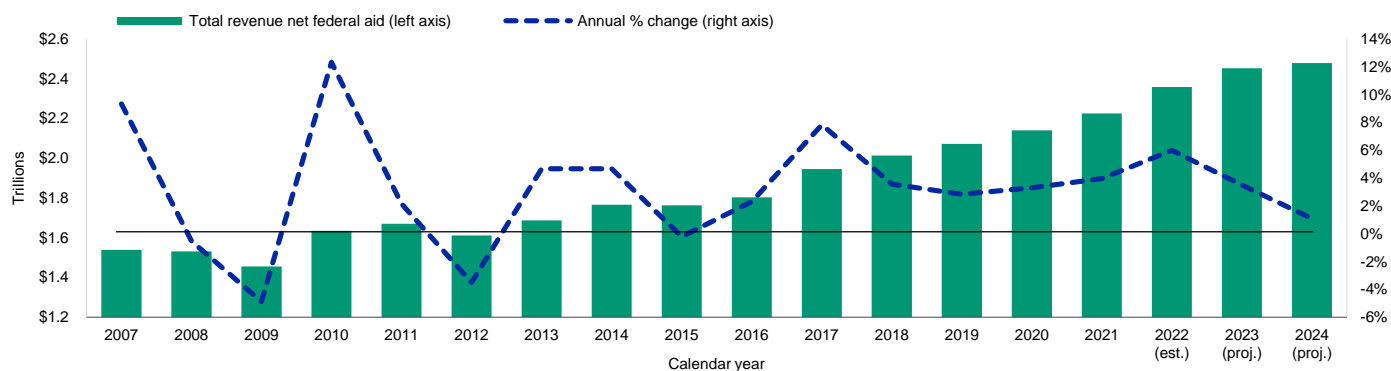
A sector outlook does not represent a sum of upgrades, downgrades or ratings under review, or an average of rating outlooks.

## Revenue growth will slow, but key revenue sources will provide stability

Total revenue for local governments — cities and counties, K-12 school districts and water and sewer enterprises — will grow by about 3% to 4% in 2023 (see Exhibit 1), which is less than half the estimated growth rate in 2022 and below increases in recent years. Still, revenue growth in 2023 would represent eight consecutive years of revenue growth, reflecting the strong credit fundamentals of the sector. Our stable outlook is underpinned by the continued flow of traditionally reliable revenue streams: property taxes for cities and counties; state funding for schools; and rate increases for water and sewer utilities, albeit at a slower pace than immediately before the pandemic.

Exhibit 1

### Total local government revenue will increase in 2023 and 2024



Total revenue includes governmental and enterprise revenue.

Sources: US Census Bureau and Moody's Investors Service

Slowing revenue growth reflects a variety of macroeconomic challenges, including restrictive monetary policy to address inflation that both weakens demand for housing as mortgage rates rise and potentially decreases sales and income tax revenue if personal and business spending ease. However, municipal entities benefit from a partial hedge against inflation if increased prices translate into a lift in sales tax revenue.

Our stable outlook could move to positive if sector wide revenue growth comfortably exceeds inflation, while it could drop to negative if revenue materially decreases. An inability of municipal entities to manage rising costs or increase revenue to combat rising expenses could also contribute to a negative outlook.

### Property tax revenue will serve as source of stability

Property tax revenue, which, in aggregate, accounts for the largest single source of local government revenue at 28% of all revenue, will remain a credit strength as any major falloff lags adverse changes in macroeconomic conditions (see Exhibit 2). Property taxes are based on property values, which generally are adjusted annually or at longer intervals, and any widespread declines in values may take two years or longer to have a material effect on finances. Depending on geography, median home values will remain flat or decline, in

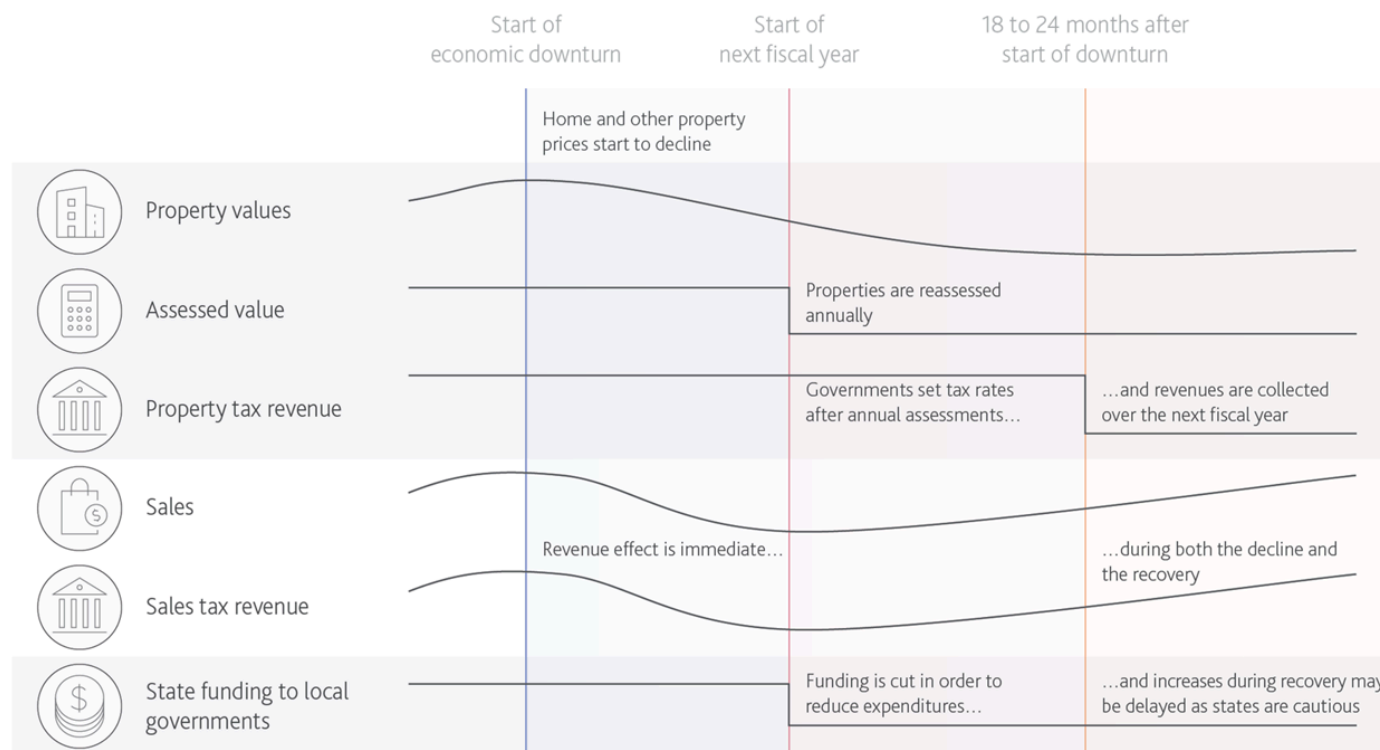
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some cases by up to 10% in 2023, according to Moody's Analytics. But the lag between a decline in valuation and actual revenue effect means local government finances are at least partially insulated from the immediate effects of an economic slowdown.

Exhibit 2

### Timing of an economic downturn's impact varies by revenue source

Typical lag time from beginning of downturn to effect on major revenue sources



Source: Moody's Investors Service

Individual states' legal restrictions<sup>1</sup> on raising property taxes will affect the magnitude of property tax fluctuations and the ability to keep revenues level during the economic slowdown. Tax caps can apply to the tax rate, tax levy or both. Local governments that operate under property tax rate caps, such as in Oregon and Florida, are more vulnerable to declines in assessed, or taxable, values because they may not have enough capacity to raise the rate to fully offset valuation declines.

Local governments that have caps on the levy amount rather than the tax rate, such as in Minnesota and New York, are more insulated from declines in assessed values. In states with levy caps, local governments determine the levy dollar amount, and the tax rate is then set based on the taxable values. Therefore, when values decline, there is no impact on receipts because rates automatically increase to yield the levy amount. Still, there are political and practical barriers to tax increases, particularly in places where property values are stagnant or declining.

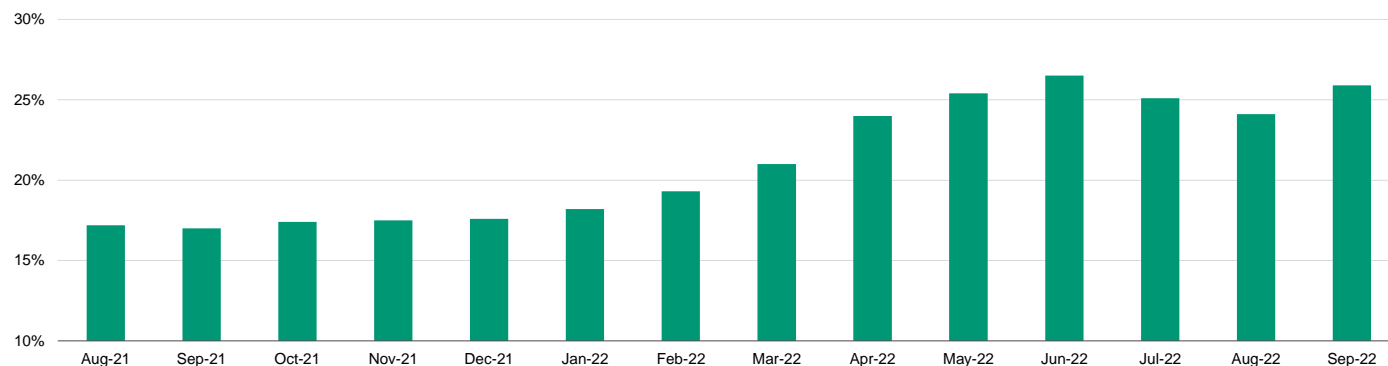
Other important revenue sources, such as sales taxes and state aid, are affected more quickly by changing market conditions in a downturn. Sales tax revenue is affected by changing consumption patterns and, with recent widespread layoffs and the weaker economy, consumer demand stands to lessen and negatively affect tax collections. However, the unemployment rate remains near a 30-year low, providing some protection against a mass falloff in nominal sales tax and income tax revenue, which can be key sources of revenue for some local governments. While the amount of state aid to local governments can be hurt by a slump in state revenue, we don't expect a slowdown in state revenue in 2023 to lead to cuts in state aid, partly due to states' robust reserves.

Housing affordability remains a concern for local governments. In extreme cases, unaffordable housing will force people out of towns and cities to other, more affordable communities, resulting in lower populations, lower tax revenue, and a smaller tax base. The National Association of Realtors' Housing Affordability Index compares the mortgage payment on the median priced home in

the country against median family income (MFI). The index spiked in June 2022 (see Exhibit 3) when median principal and interest payments represented 27% of MFI, up from 15% in 2020. Following the June 2022 peak, mortgage payments relative to incomes decreased, before ticking up again in September 2022. Based on our expectations of slowing inflation in 2023, housing will become slightly more affordable as we expect MFI to grow modestly while mortgage rates stabilize.

Exhibit 3

### National Association of Realtors Housing Affordability Index hit a peak in June 2022



The National Association of Realtors' index reflects the median principal and interest payment for the median priced home in the country divided by median family income. As an example, in June 2022, the median mortgage payment represented 27% of median family income. In August 2021, mortgage payments represented a significantly lower 17% of income.

Source: National Association of Realtors

### K-12 districts will benefit from a strong state funding environment

Many K-12 school districts face tighter budgets and erosion of reserves amid declining enrollment, rising wages, staff shortages and learning loss from the pandemic. Yet state funding, a leading revenue source along with property taxes, is robust. For example, year-over-year increases for fiscal 2023 top 7% in states such as New York and Pennsylvania and 15% in Michigan (see Exhibit 4).

Exhibit 4

### Many states have continued to increase K-12 spending in fiscal 2023

#### The 10 states with the highest number of Moody's-rated school districts

State	Fiscal 2023 increase	Budget notes
California	2.9%	To support fiscal stability for districts with declining enrollment, local control funding will be determined by the greater of each district's prior-year or current-year average daily attendance or an average of the three prior years.
Illinois	4.6%	The fiscal 2023 budget includes a \$598.1 million increase in early childhood education grants and state tax holidays for groceries and gas.
Michigan	15.2%	The state's education budget includes a per-pupil funding increase to a record high \$9,150 as well as an additional \$408 million for a weighted funding model for higher-need students, \$1.7 billion for educator retention and \$600 million for recruitment to address teacher shortages.
Minnesota	5.1%**	The biennial budget increases per-pupil funding to \$6,800, the highest ever.
New York	7.1%	The fiscal 2023 budget includes an 8.1% increase in Foundation Aid and a guarantee to increase every district's Foundation Aid by a minimum of 3%.
Ohio	7.1%*	The biennial budget marks the first phase of a Fair School Funding Plan, which includes an equalizing mechanism for districts with higher poverty. Average per-pupil funding has increased to about \$7,200 from about \$6,020.
Pennsylvania	7.7%	The budget includes \$225 million for "Level Up" funding for economically distressed districts and a \$100 million increase for special education.
Texas	5.6%*	The biennial budget includes a \$1.5 billion increase in Foundation Aid and increasing contribution rates to the Teacher Retirement System (7.75% in fiscal 2022 and 8.0% in fiscal 2023).
Washington	11.9%*	The biennial budget includes \$27.8 million to offset reductions in state aid linked to enrollment declines and includes increased funding for special education and teacher retention to combat declining enrollment.
Wisconsin	3.5%*	The biennial budget eliminates delayed general aid payments, distributing 100% of general aid during the applicable school year. Revenue limits remain flat, so state increases shift the composition of school districts' revenue away from local sources, such as property taxes, but does not increase the amount of operating revenue available.

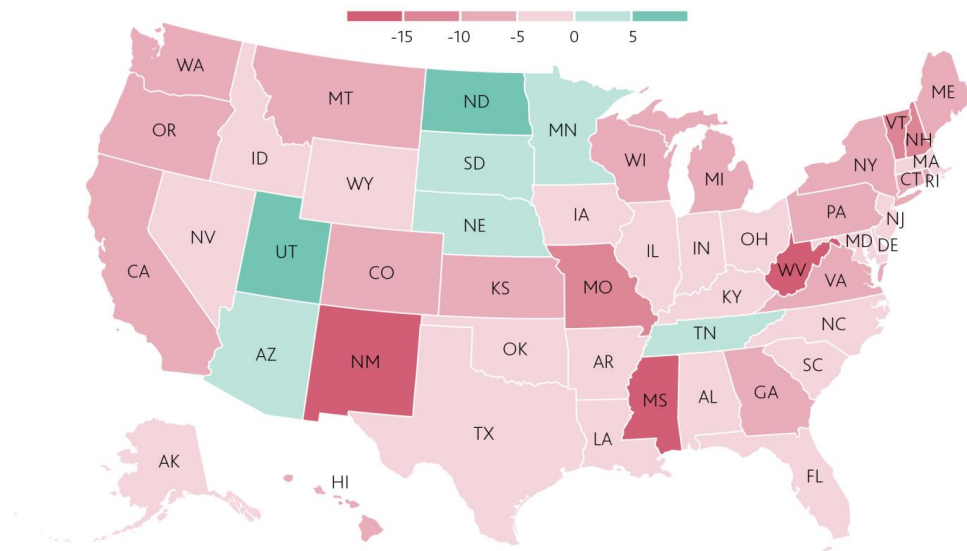
\*2021 to 2023 biennial budget increase; \*\*2023 to 2025 biennial budget increase

Source: Moody's Investors Service

While state revenue growth is slowing, state finances will likely remain strong enough to avoid cuts in school funding in fiscal 2024 (which begins in mid-2023 for most states) in part because state reserves are so strong. If the state funding environment weakens, districts in states with funding formulas based on enrollment that have had drop-offs in students stand to lose funding. The [National Center for Education Statistics](#) projects national public school enrollment will decrease by 4.4% through 2030, primarily due to declines in the school-age population (see Exhibit 5). Only seven states and the District of Columbia will have increases.

Exhibit 5

**Public K-12 enrollment projected to continue declining between 2022 and 2030**  
National decline estimated at 4.4% through 2030



Data includes both traditional public schools and public charter schools.  
Sources: National Center for Education Statistics and US Department of Education

School districts less dependent on state funding face a reduced risk if a state's finances weaken. State funding can vary as a share of revenue even within states, as states have their own funding formulas based on a variety of factors, including resident wealth. For districts with wealthy tax bases, local property tax revenue makes up a larger percentage of revenue than state funding. For districts with less wealthy tax bases, fluctuations in state aid are a greater risk, particularly in districts with declining enrollment.

### Water and sewer utilities face revenue-raising challenges driven by affordability concerns

Water and sewer enterprises will continue to benefit from rate increases in 2023, though at a slower pace compared with the years immediately preceding the pandemic. Municipal utilities have independent rate-setting authority, but rate increases will remain moderate to ease the burden on consumers impacted by the weaker economy, muting revenue growth compared with historical trends.

While there are multiple causes, many water and sewer enterprises endured revenue declines in fiscal 2021 (the latest data available), in part due to moderations in rate hikes. The fiscal 2021 median total revenue increase for water and sewer enterprises we rate (for which we have data) was 2.4%, down from a 4.1% average median increase over the prior five-year period. In addition, 35% of the enterprises had revenue falloffs in fiscal 2021 versus a 22% average for the prior five-year period.

Affordability will continue to affect utility rate-setting nationwide in 2023 and management will likely face public and political resistance to implementing sizable rate increases to meet escalating operating and capital spending challenges. The American Society of Civil Engineers has estimated that "up to 36% of households will not be able to afford the cost of drinking water by 2024" based on the Environmental Protection Agency's affordability standard.<sup>2</sup>

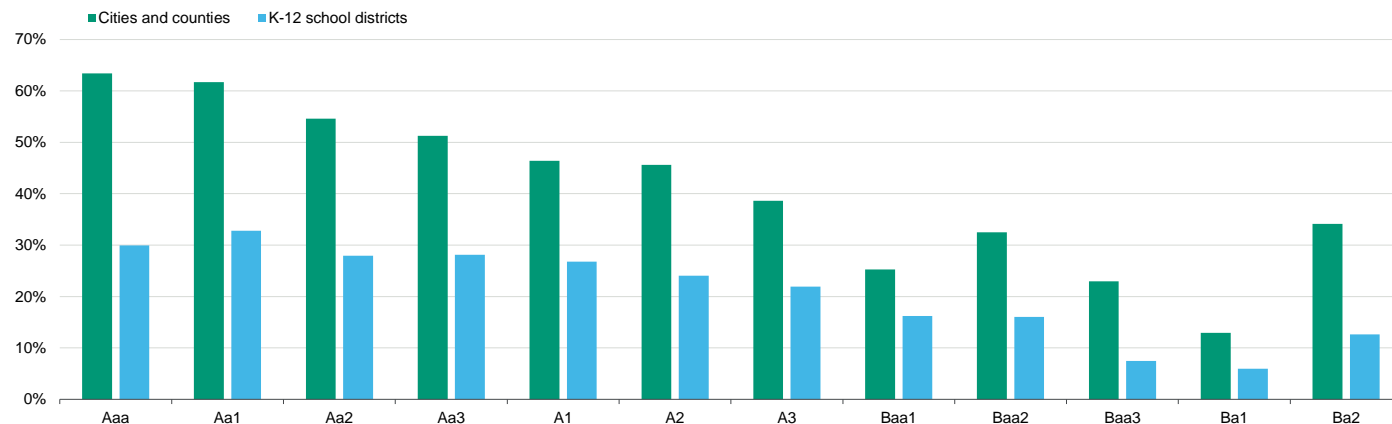
Further, even as utilities begin to reinstitute shutoffs, past-due balances have accumulated. While various programs at the local, state and federal levels are designed to provide arrearage relief to ratepayers, overdue bill collections will take longer than usual.

## Reserves will provide financial flexibility

Strong reserves built up in recent years (see Exhibit 6), partly due to federal pandemic aid, will provide cities, counties, and schools with financial flexibility to manage inflation and rising interest rates. Unspent federal pandemic aid that needs to be allotted by late 2024 will add to the flexibility, though another mass infusion of federal aid is unlikely.

Exhibit 6

### Median available fund balance ratio for local governments and K-12 districts remain strong across most rating categories



Under some state regulations, K-12 districts are more limited than cities and counties in the amount of fund balance they can carry from year to year, which is one reason for the lower balances across the rating categories.

Source: Moody's Investors Service

Water and sewer utilities also enter 2023 well positioned to navigate through a weaker economic environment as balance sheets are reinforced by robust levels of liquidity. Median days cash on hand for enterprises we rate continued to improve in fiscal 2021 to 534 days (the latest data available) and exceed the level prior to the pandemic of 475 days in 2019, highlighting the emphasis management teams have placed on liquidity as a hedge against ongoing economic uncertainty and rising operating and capital costs. Some cities and counties manage their own water and sewer enterprises, meaning aggregate cash and net transfers can affect liquidity.

## Strong governance will help issuers manage the economic downturn

City, county and school district management has a track record of by and large adjusting effectively to economic turmoil, signaling an ability to preserve credit quality amid the current changing macroeconomic conditions. The success comes despite considerable hurdles to raise revenue such as the need for voters to approve budgets and tax hikes in some cases.

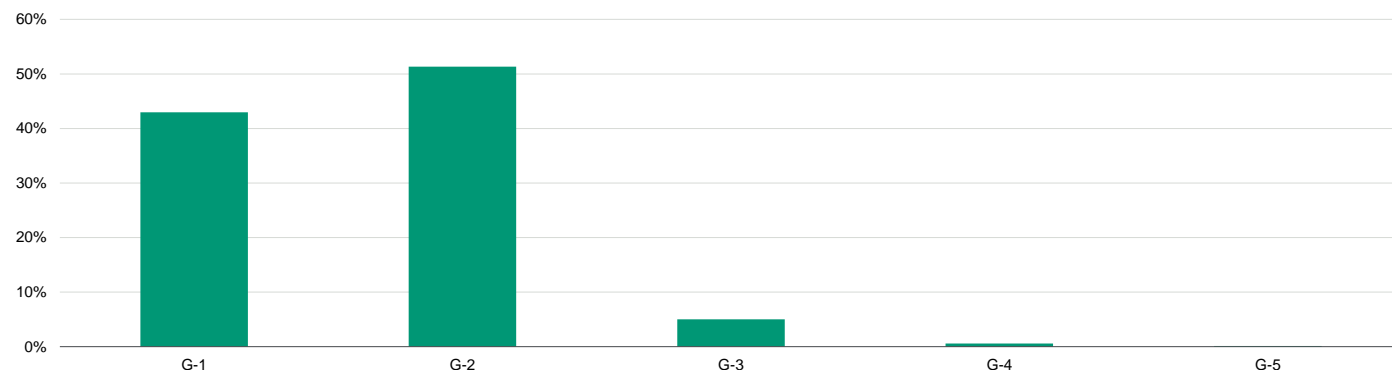
Characteristics of solid management include the development and implementation of effective fiscal, economic and social policies as well as the ability to adjust spending without a material loss in services in the face of economic turmoil. Multiyear financial planning and maintaining debt affordability are also marks of effective governance.

Our assessment of environmental, social and governance (ESG) factors demonstrates management's largely successful track record. For cities, counties and school districts with a public ESG score, 94% have either a G-1 or G-2 issuer profile score, indicating governance is either a positive consideration or risks stemming from governance are neutral to low (see Exhibit 7).

Exhibit 7

### Cities, counties and school districts demonstrate strong governance

Most cities, counties and school districts with public ESG scores have either G-1 (positive) or G-2 (neutral to low) considerations



Data as of November 2022

Source: Moody's Investors Service

Water and sewer management teams have experience regularly managing challenges posed by revenue volatility, in some cases caused by climate events such as drought that are increasing. Management advantages include independent rate-raising authority, the essentiality of water and sewer services and typically solid legal covenants. Still, the independent rate-raising authority comes with practical and political constraints on rate hikes, which intensify during a weak economy. The current turbulence will prompt management teams to deploy various strategies in an effort to drive revenue growth. [Las Vegas Valley Water District, NV](#) (issuer rating Aa1 stable), for example, has for years incorporated indexed, inflationary rate increases (subject to annual caps) into its rate structure.

### Cyber risk is a growing concern

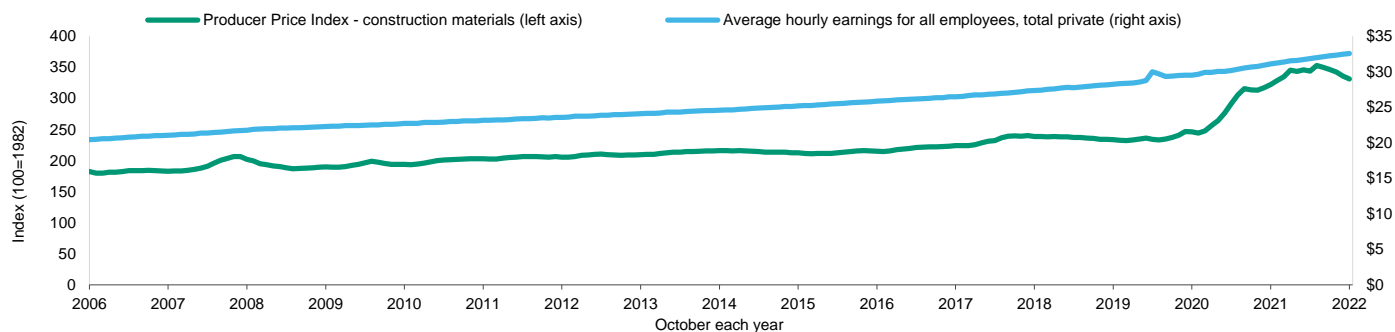
While the cost of cyberattacks have generally been manageable, management's focus on minimizing cyber risk will become increasingly important. Local governments continue to grapple with multiple challenges involving cyber insurance: stricter underwriting standards, increasing premiums and demand outweighing expected supply. As a result, obtaining cyber insurance has become increasingly difficult, increasing local governments' exposure to potential financial losses associated with cyberattacks. [Based on our cyber-risk scoring](#), we score regional and local governments as having "Moderate" overall cyber risk exposure, while critical infrastructure entities such as water and sewer utilities have a "Very High" overall cyber risk exposure.

### Rising construction costs and employee compensation will remain budgetary challenges, though pension liabilities will lessen

Building materials and labor costs remain above historical levels (see Exhibit 8), forcing some issuers to confront cost overruns while others delay projects outright. Higher borrowing costs also threaten to markedly affect capital plans.

Exhibit 8

### Rising costs of construction materials and labor are driving up expenses for capital projects



Hourly earnings are seasonally adjusted; Producer Price Index is not.

Source: US Bureau of Labor Statistics via Federal Reserve Bank of St. Louis

[Richardson Independent School District, TX](#) (Aaa stable), for example, is facing a more than 10% cost overrun on \$750 million in projects funded by a bond program approved by voters in 2021. In order to address the shortfall, the district faces a decision whether to hold a vote prior to the next planned election in 2026 to obtain approval to issue additional debt to cover the overages, or simply reduce the scope of projects. Similarly, inflation has increased costs by 30% versus original estimates for [Paris, TX's Water and Sewer Enterprise's](#) (A3) new wastewater treatment plant.

For water and sewer enterprises, the cost increases come at a time when the utilities are confronted with greater needs associated with aging infrastructure, including adverse effects tied to the increase in the frequency and severity of extreme weather events, and regulatory requirements to replace lead service lines and remediate PFAS (per- and polyfluoroalkyl substances). A recent infusion of federal dollars will help address some of the needs. Longer term, though, without continued and consistent increases in federal dollars, the burden of investing in water and sewer infrastructure will fall largely on ratepayers.

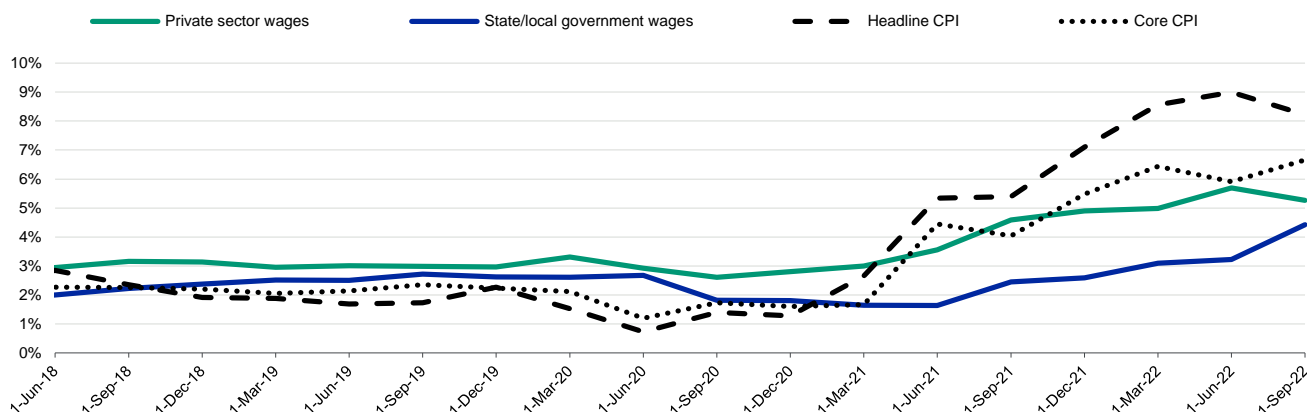
Compounding cost increases will only intensify if renewed supply-chain issues take hold. Overall, until sharp expense increases ease, long-range financial and capital planning will remain challenging.

### Public sector labor costs will remain an expense driver

Cities, counties, school districts and water and sewer enterprises face higher labor costs as employee compensation increases to attract and retain workers amid a tight labor market and private-sector competition. Wages for state and local government workers, which includes teachers, are trailing CPI (see Exhibit 9), likely contributing to current and prospective employees' demands for higher compensation. Even if inflation moderates, employment-related budget squeezes will not ease immediately because budgets are generally enacted once a year.

Exhibit 9

#### Wage growth for state and local government employees is growing, driving up expenses



Source: US Bureau of Labor Statistics

### Rising interest rates offer opportunities to tackle pension challenges, while investment volatility and inflation will remain risks

Rising interest rates are pushing down local governments' pension liabilities to a greater extent than volatile investment performance is constraining asset accumulation, resulting in lower adjusted net pension liabilities (ANPLs). Falling ANPLs signal lower point-in-time costs to governments in the event they wish to transfer a portion of their pension obligations to a third party, such as an insurance company, or pay off legacy obligations to their retirement system(s). The rising rate environment also provides US public pension systems with an opportunity to reduce their investment portfolio volatility by increasing allocations to fixed-income securities with a less detrimental effect on investment return potential than in recent years. Most governments and US public pension systems have thus far shown little appetite for such material de-risking moves, but activity along these lines could increase, especially if interest rates continue to rise.

Very strong pension investment returns in 2021, combined with investment losses in 2022, will produce relatively stable pension costs for governments over the next two years. Governments continue to depend on high allocations to volatile equity and alternative

investments to produce returns they hope will largely offset the budgetary costs of providing defined-benefit pensions. US public pension assets have suffered from declining public equity market values, which will be compounded in many cases by value declines for private equity and other alternative assets which are reported on a lagged basis.

Beyond the direct challenges to governments, such as construction costs and rising wages, inflation will also indirectly drive pension risk. To the extent that governments increase employee wages beyond actuarially assumed levels, new unfunded liabilities will be created. The challenge for retirees stemming from inflation will also drive political and practical pressure on some governments and their retirement systems to restore or grant new pension cost-of-living adjustments (COLAs), pushing up liabilities and costs. Rising healthcare costs will also translate into higher insurance premiums, which will in turn push up retiree healthcare (OPEB) costs and liabilities for some local governments.

### Pandemic-induced learning loss adds to school district expenses

Learning loss from the pandemic, which has disproportionately affected students from lower-income areas, will continue to increase expenses. The [National Assessment of Educational Progress](#)' 2022 testing found declines in math and reading proficiency among 4th and 8th grade students in its first full assessment since the pandemic, with lower-income students experiencing larger declines in proficiency. Many districts, however, still have significant unspent federal pandemic aid, which needs to be allocated by late 2024, to address the problems and help with other expenses. With another round of major federal funding unlikely, districts may need to continue funding programs launched with pandemic relief money with their own budgets.

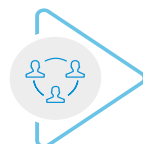
## Moody's 2023 global credit themes affecting the US local government sector

Exhibit 10



### Higher rates, slower growth

- » Traditionally reliable revenue sources and healthy reserves will blunt the adverse effects of a slower economy and high inflation.
- » Financial challenges posed by inflation will linger, however, including rising employee wages and construction costs.
- » Adjusted pension liabilities will fall with higher interest rates though 2023 pension contributions will remain relatively steady.
- » Local government management is typically strong with a history of adapting to budgetary flux.



### Social challenges

- » With inflation rising, consumer affordability will continue to affect rate-setting and, in turn, revenue for water and sewer enterprises as management will likely face public and political resistance to implementing sizable rate increases.
- » Learning loss from the pandemic, which has disproportionately affected students from lower-income areas, will continue to increase expenses for school districts.

Source: Moody's Investors Service

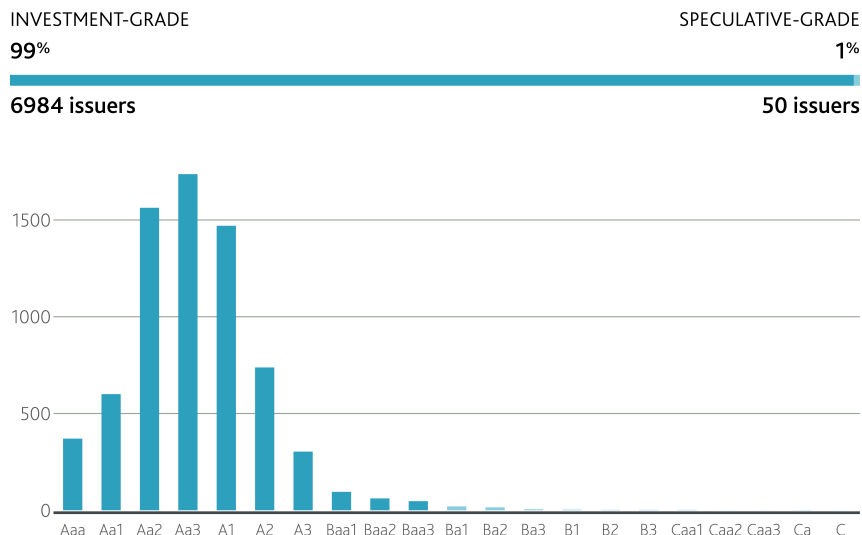


## Appendix

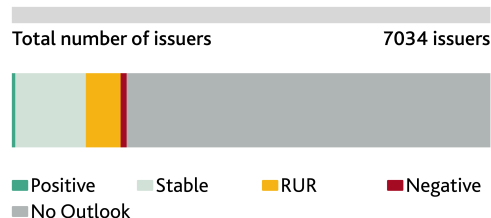
Exhibit 11

### Rating and outlook distribution for local governments Cities, counties, K12 districts and water/sewer as of November 23, 2022

#### RATING DISTRIBUTION BY NUMBER OF ISSUERS



#### OUTLOOK DISTRIBUTION



Higher number of RUR outlooks primarily pertains to the November 2, 2022, [US Cities and Counties Methodology](#) publication. RUR stands for rating under review.  
Source: Moody's Investors Service

## Moody's related publications

### Outlook

» [States - US: 2023 Outlook - Stable as strong reserves, governance counter economic volatility](#), December 5, 2022

### Sector In-Depth

» [Local Government - US: Period of high inflation and interest rates will test ability to raise property tax revenues](#), December 1, 2022

» [State and Local Government - US: Sales taxes provide partial hedge against inflation](#), July 13, 2022

» [Public Finance - US: US public finance issuers not immune from pressure if inflation persists past 2022](#), March 8, 2022

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

## Endnotes

- Occasionally, these legal restrictions are modified. For example, New York had no property tax cap until adding one in 2011. In 2019, Texas changed its property tax cap to require voter approval for any increases greater than 3.5% (down from 8% prior).
- According to the society, the "EPA standard for affordability is that households spend no more than 2% on drinking water and 4.5% of median household income on both drinking water and wastewater services."

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# Exhibit CF-5

# Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

January 12, 2023

## Sector View: Stable

Although cost pressures are mounting, cash reserves have grown, and rate-setting flexibility is strong. But there are some pockets of credit pressure, especially for utilities with substantial deferred maintenance or limited economic underpinnings.

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## What We're Watching -- U.S. Municipal Water And Sewer Utilities



### Extreme weather

Storms, drought, and rising temperatures will necessitate infrastructure investment to support resiliency and reliability.



### Labor considerations

Shortages and retirement may challenge operational and financial performance—even influencing regulatory compliance.



### Rate structure

Given rising fixed costs, reliance on volumetric rates may increase financial volatility. Prudent rate structures are credit-supportive.



### Aging assets

Failure to invest in underlying infrastructure will continue to have material financial consequences.



### Federal environment

Ambitious regulatory goals should improve health and safety but pose execution challenges and may increase leverage ratios.



### Economic considerations

Persistent inflation, supply chain issues, interest rates, and recessionary headwinds may compound financial issues and reduce rate-making flexibility.

Source: S&P Global Ratings.  
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## Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

Chart 1

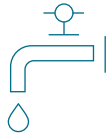
### U.S. Municipal Water And Sewer Sector: By The Numbers

**15**

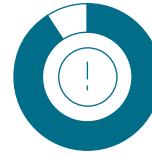
disasters exceeding  
**\$1 bil.** in damages in 2022  
(through October)

**\$744 bil.**

estimated cost to bring wastewater and  
drinking water infrastructure into  
compliance with federal regulations

**\$7.6 bil.**

value of treated water lost  
due to leaks

**91%**

utilities surveyed that have  
emergency preparedness plan

**28%**

utilities that have cyber  
intrusion planning

**136%**

increase in water and sewer rates  
since 2000

Sources: National Oceanic and Atmospheric Administration; Environmental Protection Agency; American Society of Civil Engineers; American Water Works Association; Bipartisan Policy Center.  
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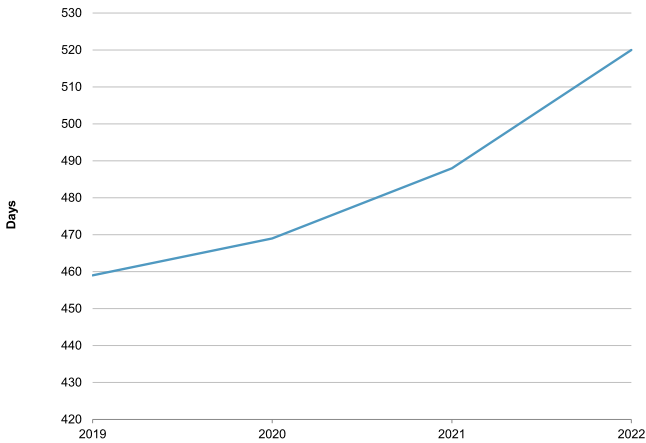
The pandemic was credit neutral, as many utilities were able to cut or defer costs while continuing to meet state and federal health and safety requirements. Moreover, access to federal cash helped support year-end balances even as some utilities deferred rate increases. In fact, because many utilities outperformed expectations, with demand rebounding to pre-pandemic levels more quickly than anticipated, we saw a relatively large number of upgrades over the last year. However, as most of these upgrades were to credits that were exhibiting significant positive credit momentum prior to the pandemic, we do not expect the recent rate of upgrades to continue. Without disciplined rate increases, some utilities may face a fiscal cliff.

The rapid escalation in operating costs over the last 12 months--with prices of chemicals, electricity, and pipes, valves, and other replacement parts rising at levels we haven't seen over the last decade--contributes to our view of potential fiscal strain. Further, the payment culture has changed in some markets, the result of economic stress and the decision by some utilities to limit collection practices such as shutoffs and liens.

Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

Chart 2

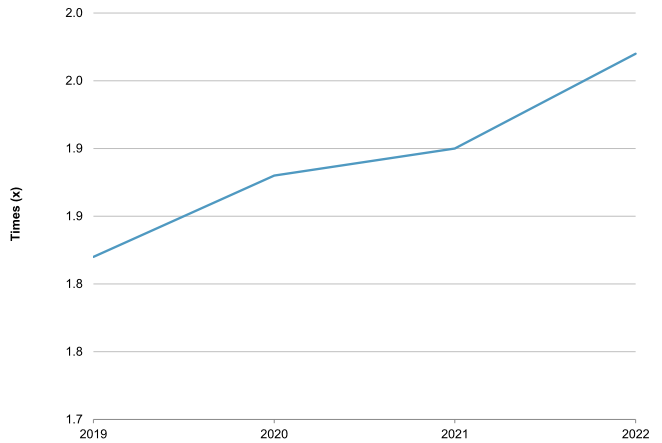
Median Days Cash On Hand



Source: S&P Global Ratings  
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Chart 3

Median Coverage



Source: S&P Global Ratings  
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At the same time, infrastructure needs in the sector are substantial, both with respect to hardening efforts and state-of-good-repair investment. As 2022 demonstrated, inadequate infrastructure investment can result in catastrophic costs and resulted in several downgrades. We continue to observe a clear financial cost to deferred maintenance; further, we believe the reduced reliability associated with infrastructure failures increases political risk and harms ratepayer relationships as well. We will continue to focus on the sufficiency of operational and fiscal management policies and practices, especially given the rising operating risks in the sector. Vulnerable practices may cap the rating outcome given the operational and financial implications of asset failure--which have recently resulted in health and safety risks, litigation, and ratepayer discord.

Given that many pipes were installed in the 19th century, many utility assets are nearing the end of their useful lives. Although we saw certain utilities electing to defer capital spending during the pandemic, overall, the rate of pipe replacement and repair is growing. In 2015, utilities were replacing, on average annually, 0.5% of their pipes, but by 2019, the replacement rate modestly increased to between 1% and 4.8%, a rate that matches the lifecycle of the asset (according to American Society of Civil Engineers standards). While considerable progress has been made and historic federal funding is expected to supplement rate revenue, the gap between available funds and infrastructure need is meaningful, estimated by the Environmental Protection Agency (EPA) to be over \$80 billion. Rising climate and regulatory demands will also drive up capital requirements.

Escalating construction costs are also expected to contribute to weaker financial metrics in 2022-2023 and beyond, especially as bids continue to come in 20% to 30% higher than what many utilities were forecasting just a year ago, which we have observed has driven some issuers to seek project delivery methods other than the traditional design-bid-build method, which can also add risk. While federal support is at historical levels, the benefit is being partly eroded by inflation and rising interest rates. Even so, we believe federal support may be the catalyst that propels several

**Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising**

large-scale water supply projects forward. Given that much of the identified capital needs within the sector are either regulatory-driven or necessary from a climate resiliency or water supply diversification perspective, we expect rising capital costs to eventually be passed through to consumers if not this year, then certainly eventually. We expect limited positive rating action in 2023 given the economic headwinds and sector-specific challenges.

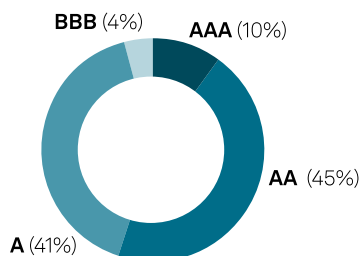
**2022 Rating Performance Was Largely Positive**

Positive rating actions outpaced negative in 2022, primarily driven by criteria implementation and sustained improvements in financial performance. As a result, the median rating increased to 'AA-' from 'A+'. Negative rating actions were primarily driven by weak management and financial deterioration, generally reflecting rising operating expenses and delayed rate increases. Negative outlooks are concentrated at the lower end of the investment grade spectrum, as shown in chart 4.

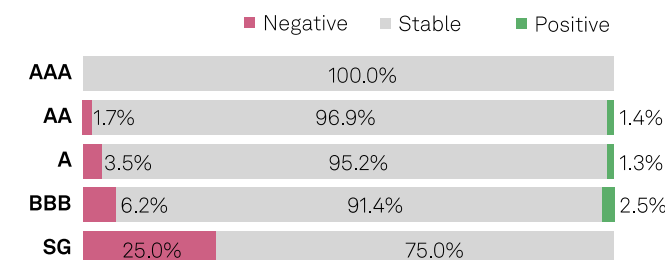
Chart 4

**Rating And Outlook Distribution**

Rating category distribution



Outlook distribution



Rating and outlook actions

Upgrades to downgrades

**2:1**

Favorable to unfavorable outlook revisions

**1.6:1**

Data as of Oct. 31, 2022. SG--speculative grade. Sources: S&P Global Ratings. Copyright © 2023 by Standard & Poor's Financial Services LLC. All rights reserved.

**Sector Top Trends In 2023**

**Will inflationary pressures and higher rates persist?**

Construction cost inflation is reaching levels we have not seen in decades. The Producer Price Index figure for building materials and supplies increased 38% between November 2021 and November 2022. In addition to increased project costs, we expect construction cost inflation will result in higher bids from contractors, larger contingencies in new contracts along with wider cost escalation ranges for materials, and a shift away from fixed-price contracts. While materials costs may begin to stabilize as supply chain issues subside, the shortage of skilled labor may be more enduring given the systemic shortage of new workers entering the construction trades, which will keep labor costs elevated.



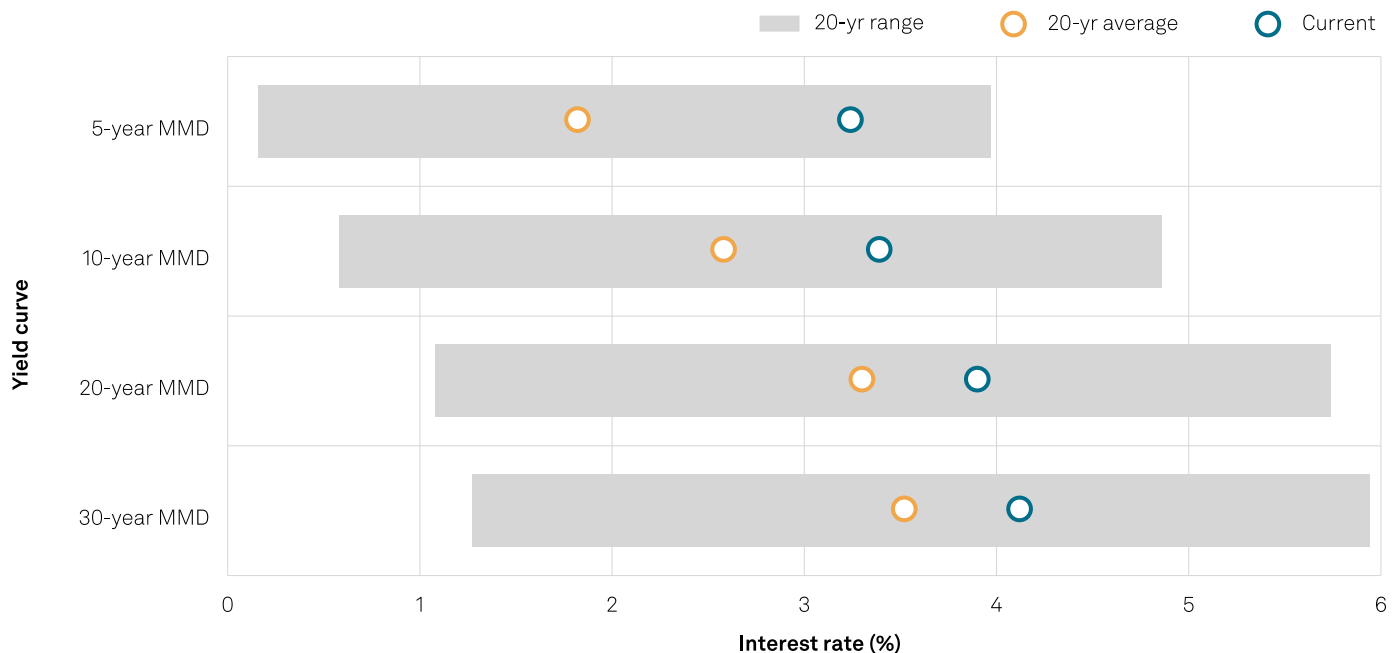
**Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising**

Further, tax-exempt borrowing rates increased nearly 200 basis points year-over-year. To put this into context, a \$100 million, 30-year issuance is now \$2 million per year more expensive and \$60 million more expensive (in future dollars) over the life of the debt. A \$1 billion project costs \$20 million more per year or \$600 million over the life of the debt. This dynamic has arrived at an inopportune time, as capital needs are mounting. Federal loan costs are also escalating. Many issuers have benefited from low-cost federal funding through the Water Infrastructure Finance and Innovation Act (WIFIA) loan program. To date, WIFIA has closed 95 loans totaling \$16 billion in credit assistance to help finance over \$35 billion for water infrastructure projects. Since inception, loan requests have well exceeded program capacity, highlighting the importance of the program to the sector. Given that the cost of borrowing is tied to treasuries, which are roughly 175 basis points higher than a year ago, we expect WIFIA costs to rise commensurately. Even so, we believe the WIFIA program still provides attractive features such as the deferred repayment, prepayment at any time without premium, and only a one basis point spread on the Treasury's State and Local Government Series rate.

Chart 5

**Tax-Exempt Municipal Credit Spreads Are Widening**

Wider credit spreads and higher interest rates will likely keep borrowing costs high in 2023 and could delay deferred maintenance investment for critical infrastructure



Source: Municipal Market Data, current rate as of Nov. 25, 2022.  
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In addition to rates increasing, credit spreads are also widening considerably, increasing financing risks for issuers lower on the credit spectrum. Widening credit spreads may result in significantly higher relative borrowing costs, further pressuring already weak credits on the lower end of the investment grade portfolio or lead to greater deferred maintenance if market access is threatened. While we believe it is possible that the scope of some projects may be reduced or

**Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising**

cancelled as the cost of materials and labor escalate, given that a sizable proportion of the sector's projects are non-discretionary, utilities may not have the flexibility to wait out the current environment. We believe the effect will be higher capital budgets and thus rate increases, potentially threatening affordability for issuers in lower income areas--many of whom have the greatest capital investment needs. We expect to stress capital plans and financial forecasts to account for these headwinds and assess whether issuers have the financial capacity to significantly increase their cost basis.

**How will climate considerations influence financial performance?**

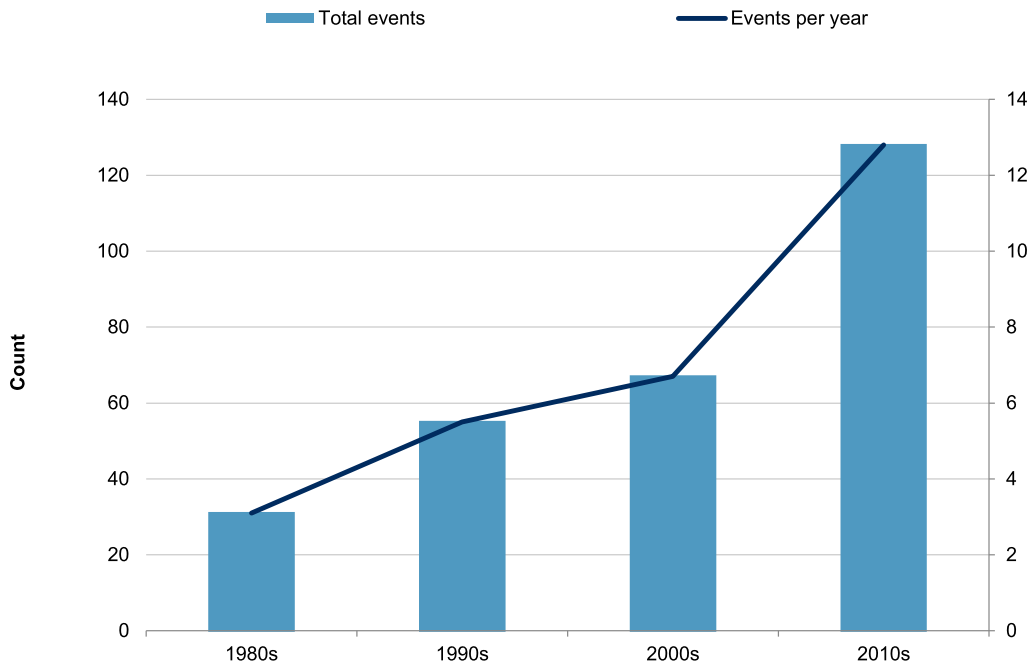
Utility operations and financial performance are inherently linked to weather and other climate hazards. The EPA cites drought, storms, flooding, source water quality, and sea level rise as current and future climate threats in the utility sector. Wildfire incidence is also a rising concern for utilities--especially in the West. Adaptation and mitigation efforts are critical and usually require greater initial investment, typically without the knowledge of how effective these measures will be in offsetting the long-term risks from the exposure. For example, the cost to develop new or alternative water supplies to mitigate drought risk can be orders of magnitude more expensive than traditional supply. Failure to prepare for climate events can have severe operational and financial implications for utilities, influencing supply and demand as well as operating and capital costs. Climate events can also influence the underlying economy and service area, including population migration or relocation, employment shifts, or difficulty obtaining insurance which can reduce home values (affecting issuers that receive property tax revenue). From 1980 through 2022, climate related disasters have cost states \$2,298 billion (see chart 6).



Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

Chart 7

**Billion-Dollar Climate Events**



Source: National Oceanic and Atmospheric Administration  
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We believe that most of our rated U.S. public finance water and sewer utilities are well positioned to meet these challenges. Financial capacity in the sector is extremely strong, including median coverage of 1.97x, liquidity of 519 days on hand, and manageable leverage of 36% debt to capitalization. We view liquidity as critical to bridge reimbursements and revenue loss during recovery and rebuild. As we noted in "Hurricane Ian: Most Municipal Utility Ratings, Bolstered By Significant Liquidity, Are Expected To Be Unaffected," published Sept. 29, 2022, rebuild and recovery in the hardest hit areas can take months, and some communities may be displaced, requiring liquidity to cushion reduced collections and to bridge the period until Federal Emergency Management Agency loans are available. Most of the issuers in areas with hurricane exposure tend to have extraordinarily strong reserves. Considerable management acumen is critical for utilities with above-average event risk. In the higher-grade portion of the portfolio, issuers have robust risk management, forecasting, and infrastructure maintenance, which contributes to the stability of the sector during periods of heightened climate events. Supportive rate structures are also beneficial for credits exposed to physical climate risks. The flexibility to manage demand and stabilize financial stress from lower usage is important in managing scarcity, for example. From a credit perspective, we view rate structures that promote cost recovery and revenue stability positively.

## Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

While most utilities will be adept at managing through the current environment, we believe issuers with narrow financial margins or limited rate-setting capacity could experience a disproportionate effect on their credit ratings from these challenges. Affordability may increasingly become a challenge for utilities, given the magnitude of required system investment and the significantly higher cost of developing alternative supplies, compounded by inflationary pressures and a higher interest rate environment. Further, those with marginal liquidity are more exposed to financial stress and covenant breaches if a climate-related event weakens demand due to population displacement or usage restrictions.

### Will recessionary pressure and cost escalations result in rate affordability challenges?

Utilities are typically operated as self-supporting enterprise funds with revenues generated primarily through user rates and charges. In general, we believe utility rates and charges benefit from being recalibrated at least annually to reflect rising labor and material costs, as well as the potential influence of economic cycles and hydrology on demand. Well-managed utilities also set rates to ensure full cost recovery, including adequate renewal and replacement investment as well as consideration of proposed or future regulatory requirements, and typically manage this risk with appropriate financial performance metrics. Utilities that fail to do so are most exposed to credit stress over time. However, as utility cost of service increase rapidly, concerns over affordability are growing, which means that finding the right balance between how costs are allocated among customer classes is of critical importance, as is the overall demographics and purchasing power of the population served.

Rate increases have been consistently outpacing inflation for a decade. Despite this trend, market position and affordability within the sector has been strong. If a utility raised its rates in 2022, the average water and sewer bill increased by 8%. The average water and wastewater rates in our portfolio are \$43.95 and \$50.98, up from the prior year by 3% and 2%, respectively, which we consider low based on recent cost inflators. We anticipate these numbers will grow in the short term, which suggests likely coverage deterioration in 2023. Given the recessionary influence, rapidly escalating costs, and the increasing income disparity, we expect affordability to weaken and lead to the potential for reduced rate-setting flexibility, especially in areas where disadvantaged communities may be shouldering a disproportionate share of utility costs. About 7% of the sector could see weakening in our assessment of market position if rates were to increase by at least 10%.

With less discretionary income available, communities with relatively high poverty rates or low income levels may have more difficulty effectuating rate increases that fully recover costs. Within our portfolio, 36% of the rated utilities have more than 15% of their customer base at or below the poverty line. We have also observed greater member discord within wholesalers given differing demographic characteristics among members. We believe these dynamics could lead to greater rate-setting challenges. For utilities with significant portions of the customer base at or below the poverty line, customer assistance programs can reduce social risks and improve credit stability. We believe customer assistance programs can reduce political opposition to rate increases, improving the timeliness of implementation and reducing delinquencies. Customer assistance programs can be more challenging for smaller utilities given that there is a higher per-customer

## Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

cost. Further, some utilities are prohibited from such programs given cost of service requirements.

We will continue to monitor the influence of federal, state, and local programs and how managers balance the critical infrastructure investments needed with customer rate affordability and the effect this has on rate-setting and thus financial performance.

### Given the rising regulatory demands, will federal support provide meaningful benefit?

As public health and safety is the foundation of the sector, the regulatory landscape is a critical consideration. The sector is vastly different than it was 50 years ago when the Clean Water Act was promulgated. The EPA has ambitious regulatory objectives for lead and copper pipe replacement and nutrient removal. In addition, health advisories have been released for several emerging contaminants, such as PFAs, signaling that increased restrictions are imminent. From a credit standpoint, we are evaluating whether stricter standards will increase capital requirements and operating costs for treatment for utilities with meaningful exposure. We expect compliance monitoring costs to increase across the sector. We expect to also assess how expensive it will be to address both federal and state regulatory requirements, and what funding will be available.

S&P Global Ratings tends to look at regulatory compliance through a lens of financial affordability, transparency to the rate base, and progress meeting critical milestones, regardless of whether those milestones are outlined in a consent decree or other mandate. We recognize that there may not be a "one size fits all" approach to compliance, since there are so many factors that influence cost and the compliance timeline, from physical constraints at the treatment plant to density of the service area, and size. Nonetheless, from our perspective, reporting and disclosure is tantamount.

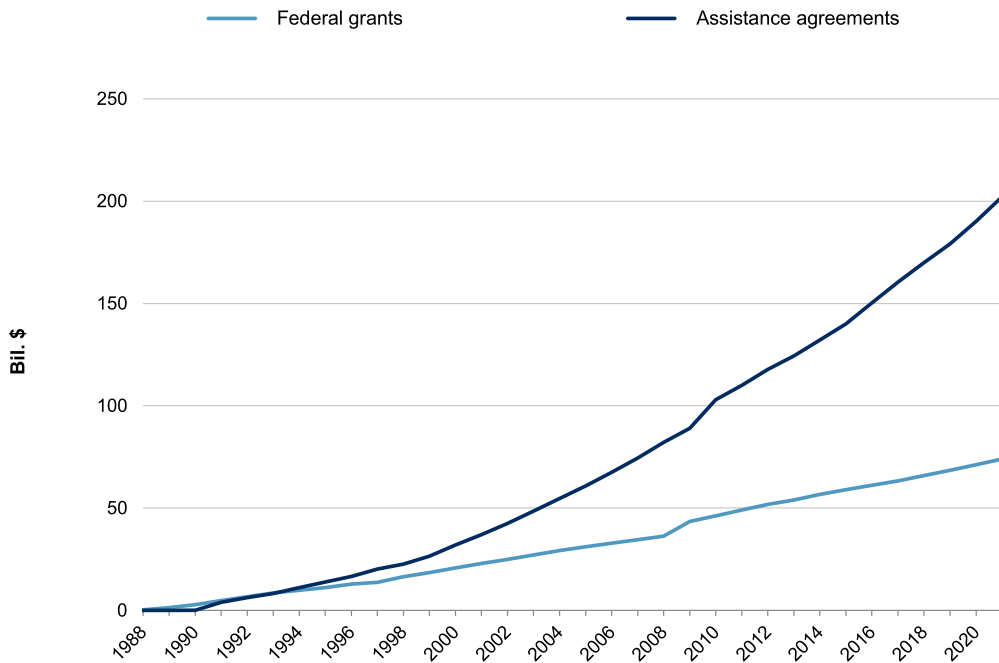
Broadly, the Infrastructure Investment & Jobs Act (IIJA) is expected to be credit supportive with respect to regulatory pressures--with dedicated funding for emerging contaminants and legacy issues such as lead. There is also significant funding for climate resiliency projects and small and disadvantaged communities which we view positively, given the potential for utilities serving these areas to have less rate making flexibility. Congress has directed that most IIJA funding for water projects be administered through state revolving loan fund (SRF) programs for drinking water and wastewater. SRFs are administered jointly by the EPA and state, tribal, and territorial agencies.

Compared to cumulative SRF federal grants totaling almost \$75 billion through the 2021 federal fiscal year, the \$43 billion of IIJA funding to be administered through the SRF programs from 2022-2026 provides significant assistance for local systems. Most of the funds maintain a state match requirement of either 10% or 20%, providing additional leveraging of federal funds. Combining federal grants with state match, SRF bond proceeds, and recycling of assistance agreement repayments, SRFs are expected to aid communities in an amount well more than total federal grants.

Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

Chart 8

**SRF Grant And Assistance Agreement History (Cumulative)**



Source: U.S. Environmental Protection Agency  
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While IIJA, SRF grants, and USDA Rural Development loans have increased federal investment in water and sewer infrastructure, it is still a small portion of utility infrastructure funding, and we do not expect IIJA to be a panacea since authorization and appropriation risks remain. Further, federal provisions such as "Buy American" and the Davis-Bacon wage guarantee can also be challenging for project execution, though waivers are available in some cases.

**Are labor concerns enduring?**

A growing number of utilities have cited a shortage of qualified professionals due to retirement and difficulty recruiting or retaining employees. Water and sewer employees carry out specialized tasks, critical to public health and safety. An estimated one-third of the 1.7 million workers in the sector are projected to be eligible to retire in the next 10 years. Additionally, technology is advancing, increasing the need for workers with sophisticated training and expertise. Insufficient staffing can be costly given the need to increase overtime pay and the inefficiencies associated with reallocating workers. Operational issues also stem from worker shortages including safety risks and compliance and reporting violations. Many major utilities have double-digit vacancy

## Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

rates which we believe is unsustainable. We are monitoring labor strategies to determine how issuers are positioned and whether succession planning promotes critical knowledge transfers. We expect labor costs within utilities to increase at a higher rate than in recent years given the competitive job market and the need to retain skilled employees with critical roles. We assess labor strategy through the organizational effectiveness factor within our Operational Management Assessment. Lack of succession planning will generally limit the sub-score to no better than a standard.

## How Will Credit Quality Be Affected?

**Forward-looking financial data will be increasingly relevant.** Given the recessionary factors, including inflation, we expect to weigh forecast years more heavily than historic data when we believe it is more indicative of future trends. When issuers do not have forecasted data, we will incorporate projected coverage and liquidity assuming reasonable inflationary expectations. This is critical to understand the trajectory of the credit.

**Balanced credits may fare better in the current environment.** We will evaluate the enterprise and financial profiles, as those that have been less balanced in their overall credit profile may experience more pressure. Those credits that were more reliant on their strong financial performance to offset a more limited economy, for example, may be more vulnerable to rating pressure. At a particular rating, some utilities may have some flexibility to generate lower margins than historical levels given our holistic review of credit characteristics.

**Transparency will be increasingly important.** Most issuers in the water and sewer sector rated by S&P Global Ratings do not publicly report quarterly budget-to-actual performance trends and, in fact, many do not have audits until 270 days after the fiscal year end, creating a material reporting lag. While we may rely on our own forecasts to ascertain past-but-not-yet-reported financial performance, we expect issuers to disclose unanticipated events that may adversely influence credit quality, such as a flood, major pipeline or main failure, or extended boil-water notice, if the event is likely to affect operating margins. Transparency and accountability are influential credit drivers that can mitigate forward-looking risks and add credibility to issuer forecasts, as discussed in "Management Matters: As Risks Rise Across The Water And Sewer Sector, The Importance Of Transparency Surges ," published June 24, 2022. Failure to disclose potential risks could indicate that management does not have a full focus on its risk profile and may be less nimble in responding to these risks. In addition, insufficient risk disclosure can weaken relationships with key stakeholders, such as governing boards, market participants, and--most importantly--ratepayers. This potential discord can threaten confidence in management, hindering rate flexibility. In addition, although rare, insufficient, or misleading disclosure can result in fines, higher cost of borrowing, or limited market access, which may influence financial capacity and flexibility and thus credit quality. While ongoing transparency and disclosure practices are explicitly linked to only one component in our criteria, they influence nearly every aspect of our credit rating, informing our view of management's planning and leadership as well as the ability to respond quickly to an emergency. During the past two years, over 40% of the negative rating actions (outlook revisions and downgrades) in the water and sewer



**Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising**

sector have resulted from weak transparency, lack of accountability, or risk management. We expect this trend to continue.

**Small utilities may be more exposed.** We continue to view smaller utilities as having greater exposure to credit pressures given, on average, staff limitations, infrastructure deficiencies, and smaller (and often declining) rate bases across which to spread fixed costs. As we anticipated in last year's sector view report

("Outlook For U.S. Municipal Utilities: Stable, With Expanding Operating Margins," Jan. 19, 2022) smaller utilities accounted for 100% of the multi-notch downward rating transitions in 2022. We expect this dynamic to continue for several reasons. Smaller utilities are no less exposed to event risk or regulatory pressures than their larger counterparts yet have more limited staffing, resources, and management practices on average. Further, economies of scale benefits are not as easily recognized by smaller utilities as costs are borne by fewer customers and often significantly longer pipe per customer. Liquidity impairment also tends to happen more quickly for smaller utilities given the lower nominal amount of liquidity--despite many smaller utilities having relatively high liquidity on a day's cash basis. Finally, transparency and disclosure tend to be more limited and less timely given smaller staff and more lenient policies.

This report does not constitute a rating action.

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## Outlook For U.S. Municipal Utilities: Stable, Though Risks Are Rising

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# Exhibit CF-6

## RATING METHODOLOGY

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# US Municipal Utility Revenue Debt Methodology

This rating methodology replaces the *US Municipal Utility Revenue Debt* methodology published in October 2017. We have added a section on "Other Considerations." We have also made editorial changes to enhance readability. These updates do not change our methodological approach.

## Introduction

In this rating methodology, we explain our general approach to assessing credit risk of essential service US municipal utility revenue bonds, including the qualitative and quantitative factors that are likely to affect rating outcomes in this sector.

The primary factors that drive our credit analysis of revenue bonds issued by municipal utilities that provide essential services are the size and health of the system and its service area, the financial strength of its operations, the legal provisions governing its management, and the strength of its rate management and regulatory compliance.

We discuss the scorecard used for this sector. The scorecard<sup>1</sup> is a relatively simple reference tool that can be used in most cases to approximate credit profiles in this sector and to explain, in summary form, many of the factors that are generally most important in assigning issuer-level ratings to issuers in this sector. The scorecard factors may be evaluated using historical or forward-looking data or both.

We also discuss other considerations, which are factors that are assessed outside the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. In addition, some of the methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.<sup>2</sup> Furthermore, since ratings are forward-looking, we often incorporate directional views of risks and mitigants in a qualitative way.

As a result, the scorecard-indicated outcome is not expected to match the actual rating for each issuer.

<sup>1</sup> In our methodologies and research, the terms "scorecard" and "grid" are used interchangeably.

<sup>2</sup> A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

Our presentation of this rating methodology proceeds with (i) the scope of this methodology; (ii) the sector overview; (iii) the scorecard framework; (iv) a discussion of the scorecard factors; and (v) other considerations not reflected in the scorecard. The appendix shows the full view of the scorecard factors, sub-factors, weights and thresholds.

## Scope

This methodology is used to assign ratings to debt instruments where the primary pledge and source of repayment are revenues generated by US municipal utilities providing monopolistic services essential to public health and functional economies. The approach described in this methodology applies to six basic categories of US municipal utilities: water distribution, gas distribution,<sup>3</sup> electric distribution,<sup>4</sup> sanitary sewerage, stormwater disposal, and solid waste disposal.

This methodology does not apply to debt issued by regulated water utilities, regulated electric and gas utilities and networks, electric generation and transmission cooperatives, power generation projects; nor does it apply to other types of public utilities, such as telephone, cable television, or parking. This methodology also does not apply to utility revenue debt whose rating is based on a general promise of a state or local government to pay the debt (e.g., a general obligation pledge or a full faith and credit pledge).<sup>5</sup>

## Sector Overview

The pledge and source of repayment for a municipal utility revenue bond is typically defined in a bond resolution or a trust indenture, which acts as a contract between the utility and its bondholders. The resolution or indenture most often includes a lien on the net revenues of the utility system after the payment of regular operating and maintenance expenses.

US municipal utilities provide many different services whose rates or fees are pledged to the repayment of debt. The utilities mostly fall into one or more of six basic categories:

- » **Water utilities** take water from the ground, a river, a lake, or in special cases the ocean, treat it to a potable standard, and distribute it to customers for drinking, cleaning, and commercial, industrial, or agricultural use. These utilities can be involved in any or all of the functions of water supply: water treatment, long-distance transmission and retail water distribution. Some water utilities have no treatment capacity and purchase potable water wholesale.
- » **Gas utilities** take natural gas from a wholesale pipeline, odorize it for safety detection and pressurize it for delivery to customers through a pipe network for uses such as heating, cooking or commercial and industrial applications.
- » **Electric utilities** purchase electricity from wholesale suppliers and deliver it to residential, commercial and industrial customers for a wide range of power uses.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on [www.moodys.com](http://www.moodys.com) for the most updated credit rating action information and rating history.

<sup>3</sup> This methodology covers municipal gas distribution utilities. These utilities typically purchase their supply from natural gas producers or intermediaries, and the gas is delivered via natural gas pipeline to the municipality's distributions system. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

<sup>4</sup> Only those municipal electric utilities that generate less than 20% of their own power are rated using this methodology. We rate public power utilities using different methodologies. For information, see our methodology that discusses US public power electric utilities with generation ownership exposure and also our methodology that discusses US municipal joint action agencies. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

<sup>5</sup> A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

- » **Sanitary sewer** utilities collect and treat wastewater, discharging it into a waterway or injecting it underground, and landfilling or incinerating the residual sludge. Some sewer utilities with no treatment capacity gather wastewater and transmit it to another utility that treats it.
- » **Stormwater** utilities collect and treat rainwater before discharging it into a body of water such as an ocean or a river. While every city or county addresses stormwater drainage as an integral element of its streets and highways, the stormwater systems that require capital markets financing are typically large in scale and are necessary to avert flooding from heavy seasonal rainfall.
- » **Solid waste** utilities collect residential or commercial refuse and dispose of it through landfills, waste-to-energy plants, or other waste-disposal processes. A solid waste system can be complete or collection-only, relying on another municipal or private entity for long-haul removal and disposal through landfill or incineration.

Essential-service utilities typically operate as departments, boards or independent authorities of US states or local governments.

States and subdivisions of states, such as counties and cities, often issue bonds where the primary pledge and source of repayment are the net revenues generated by a utility system operated directly under government auspices, such as a city water department. In other cases, states or state subdivisions create an independent authority or special purpose district that operates the system and issues the bonds.

The credit quality of essential-service utility revenue bonds has generally been strong, based on the fundamental strength of utilities, which include the following characteristics:

- » The provision of essential services, usually in a government-protected monopoly;
- » Typically unregulated and independent rate-setting authority;
- » The ability to discontinue service to delinquent accounts and in many cases to put a lien on the property for nonpayment;
- » Utility cost burdens that are typically low relative to household income and to tax burdens;
- » A generally strong federal and state regulatory framework that is designed to keep utilities functioning in order to protect public health and achieve environmental goals;
- » A "special revenue" designation that may insulate a utility from a parent's bankruptcy.

## Scorecard Framework

The scorecard in this rating methodology is composed of four factors. All of the sub-factors comprise a number of sub-factors. The scorecard also includes 20 notching factors, also known as below-the-line adjustments, which may result in upward or downward adjustments in half-notch or whole notch increments to the preliminary scorecard-indicated outcome.

EXHIBIT 1

### US Municipal Utility Revenue Debt Scorecard Overview

Factor	Factor Weighting	Sub-factor	Sub-factor Weighting
System Characteristics	30%	Asset Condition (Remaining Useful Life)	10%
		System Size (O&M)	7.5%
		Service Area Wealth (Median Family Income)	12.5%
Financial Strength	40%	Annual Debt Service Coverage	15%
		Days Cash on Hand	15%
		Debt to Operating Revenues	10%
Management	20%	Rate Management	10%
		Regulatory Compliance and Capital Planning	10%
Legal Provisions	10%	Rate Covenant	5%
		Debt Service Reserve Requirement	5%
Total	100%	Total	100%

Source: Moody's Investors Service

The scorecard does not include or address every factor that a rating committee may consider in assigning ratings in this sector. We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way. Please see the "Other Considerations" section.

## Discussion of the Scorecard Factors

In this section, we explain our general approach for scoring each scorecard factor or sub-factor, and we describe why they are meaningful as credit indicators.

To arrive at a scorecard-indicated outcome, we begin by assigning a score for each weighted sub-factor. Based on the scores and weights for each sub-factor, a preliminary scorecard-indicated outcome before notching factors is produced.

We also assess the notching factors. Our assessment of these notching factors may result in upward or downward adjustments to the preliminary outcome that results from the weighted scorecard factors. The most common notching factors related to each of the weighted scorecard factors are discussed below. In some circumstances, there may be notching for a credit event or trend that is not captured by the weighted scorecard sub-factors or the listed notching factors. We may also choose to make adjustments to the historical inputs to reflect our forward-looking views of how these statistics may change.

Below, we discuss each factor and subfactor, as well as the notching factors that we consider within each category of this methodology.



## Factor: System Characteristics (30%)

EXHIBIT 2

### System Characteristics (30%)

		Aaa	Aa	A	Baa	Ba	B and Below
Asset Condition (10%)	Net Fixed Assets/Annual Depreciation :	> 75 years	75 years ≥ n > 25 years	25 years ≥ n > 12 years	12 years ≥ n > 9 years	9 Years ≥ n > 6 Years	≤ 6 Years
System Size (7.5%)	Water and/or sewer / Solid Waste:	O&M > \$65M	\$65M ≥ O&M > \$30M	\$30M ≥ O&M > \$10M	\$10M ≥ O&M > \$3M	\$3M ≥ O&M > \$1M	O&M ≤ \$1M
	Stormwater:	O&M > \$30M	\$30M ≥ O&M > \$15M	\$15M ≥ O&M > \$8M	\$8M ≥ O&M > \$2M	\$2M ≥ O&M > \$750K	O&M ≤ \$750K
	Gas or Electric:	O&M > \$100M	\$100M ≥ O&M > \$50M	\$50M ≥ O&M > \$20M	\$20M ≥ O&M > \$8M	\$8M ≥ O&M > \$3M	O&M ≤ \$3M
Service Area Wealth (12.5%)		> 150% of US median	150% ≥ US median > 90%	90% ≥ US median > 75%	75% ≥ US median > 50%	50% ≥ US median > 40%	≤ 40% of US median

Source: Moody's Investors Service

### Why It Matters

This factor on the scorecard assesses a utility's capacity to fund its operations and capital needs based on the health of its capital assets, the size and diversity of its operations, and the strength and resources of its service base.

The scope of this factor is broad. Each of the sub-factors contributes to an analysis of what magnitude of expenditures is necessary to keep the system functioning, and how large, diverse, and flexible the available resources are to meet those expenditures.

### Sub-factor: Asset Condition (10%)

Input: Net fixed assets divided by most recent year's depreciation, expressed in years

The condition of a utility's capital assets determines its ability to comply with environmental regulations and continue delivering adequate service with existing resources.

Depreciation is an accounting concept that acts as a proxy for the rate at which a utility's plant and equipment are aging. Central to our analysis of capital adequacy is an assessment of how utilities "fund depreciation," meaning make capital replacements and repairs to address aging plant and equipment.

The consequences of failing to fund depreciation can be costly. Implicit in this measure is the concept of deferred capital investment. Utilities that delay investing in their systems, replacing aging plant and equipment, and modernizing their facilities often find it more expensive to do so later. Capital investments are ordinarily more expensive when deferred.

Further, systems whose facilities deteriorate often run afoul of environmental regulations. The failure to fund depreciation, which will manifest as a declining useful remaining life, can lead to sewage overflows, inflow and infiltration problems, or non-compliant wastewater discharges, resulting in civil fines, litigation, or regulatory consent decrees. These are usually more expensive than funding

depreciation through a prudent multi-year capital plan that replaces assets as they deteriorate or break down.

The inherent differences between types of utilities are manifested in their component parts, which can have very different useful lives. Because a solid waste utility is largely automotive-based, with collection vehicles and earth-moving equipment at the landfill, the useful life of its assets will be well under 20 years, compared to a water utility whose distribution mains and reservoir have useful lives of 40 to 100 years. We generally acknowledge these differences, which may be reflected in our scoring of notching factors.

For utilities whose asset condition ratios are not determinable, such as utilities that utilize cash accounting and do not report net fixed assets or depreciation, we are likely to assess the sufficiency of capital assets based on other available information.

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### Sub-factor: Service Area Wealth (12.5%)

Input: Median family income of the service area, expressed as a percentage of the US median

Most of the costs of operating a utility and maintaining its capital assets are borne by ratepayers. The income of the residents of the service base conveys the capacity of its rate-payers to bear higher rates to fund operations and capital upgrades.

Utilities that serve lower-income ratepayers may have more difficulty implementing higher rates, if utility costs consume a considerable share of residents' budgets. The US Environmental Protection Agency (EPA) considers wastewater costs exceeding 2% of median household income to be a heavy burden, for example, a threshold that would be reached more quickly for a utility serving lower-income ratepayers.

We believe MFI is the best proxy for the wealth of a service base, but other indicators such as the poverty rate, unemployment, home foreclosures, per capita income, and median home value supplement our analysis of ratepayer capacity.

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### Sub-factor: System Size (7.5%)

Input: Most recent year operations and maintenance expenditures, expressed in dollars

Larger systems tend to be more diverse and enjoy economies of scale. The size of a system implies the flexibility and resilience not only of its operations, but also of its service base.

Small systems present a number of risks. They are less likely to have redundancies, which allow a system to shut down some of its operations in an emergency or to make repairs without interrupting service. Small standalone water or sewer systems will typically depend upon a single supply of water or a single sewage treatment plant. They are more likely to be exposed to a concentrated customer base. They are more susceptible to the departure of a single large customer. An unexpected capital need is likely to be more costly relative to its annual budget. The collective engineering and scientific expertise is likely to be less robust than a larger system's.

We use different breakpoints for different types of systems in this subfactor, recognizing that not all types of utilities have the same cost structure. For instance, an electric distribution system is more expensive to run than a stormwater system. A distribution-only water system is likely to have a lower,

more predictable cost base, but also depend on an external system for water supply and pay prices largely out of its control.

Utilities that are wholesalers to municipal government customers may exhibit operating stability not captured by size or service area wealth. Many of a utility's risks may be shifted to its municipal customers if their service contracts prevent these customers from switching providers or decreasing payments. If service contracts are so strongly worded and unconditional that municipal customers would have to pay the utility's debt service under any circumstances, then the utility's bonds may effectively represent a claim on the combined credit quality of the municipal governments.

For utilities that are exclusively wholesalers to municipal customers, we typically consider the credit quality of large customers ("participants") and the nature of the participants' pledge to the utility. For bonds secured by a utility's net revenue pledge, we incorporate the strength of the large municipal customers' credit quality as an important factor in the utility's revenue base. For utilities whose pledges are essentially a pass-through of the municipal customers' underlying pledges, we may rate their bonds using our public sector pool programs and financings methodology, recognizing that bondholders enjoy a direct claim on the underlying municipalities' ability and willingness to pay.<sup>6</sup>

#### Notching Factors Related to System Characteristics

**Additional service area economic strength or diversity:** We would use this adjustment, upward or downward, if the MFI statistic incompletely or inaccurately depicts that capacity of the service base to bear higher rates.

**Significant customer concentration:** A large exposure to a single user or industry, or a small number of users, poses substantial risks that might not be captured in MFI. We may notch down if a large share of a utility's revenues comes from one or a small number of customers, or from a single industry. We would be more likely to use this adjustment for volatile, unpredictable, and mobile industries than for longer-standing, more stable ones. We are less likely to consider a wholesale customer as a factor contributing to concentration, as it is purchasing on behalf of end-users.

**Revenue per customer greatly over/under regional average:** Revenue per customer conveys additional information about users' capacity for higher rates that might not be captured in MFI. We might notch upward or downward if revenue per customer implies higher or lower ability to increase rates than MFI suggests.

**Exposure to weather volatility, extreme conditions or market fluctuations:** Large amounts of rain that infiltrate pipes or storms that destroy equipment are examples of credit risks that could result in downward notching. Weather can also affect the prices that distribution systems pay third-party providers for electricity or natural gas.

**Resource vulnerability:** Water, gas, and electric distribution utilities sell a product whose availability can be limited or expensive in some cases. For instance, a water provider in a drought-stricken region may have to purchase expensive third-party water, resulting in declines in billable flow due to conservation efforts. We may notch down if the availability of water, an adequate gas supply, or a dependable source of electricity is vulnerable or in doubt.

**Sizeable or insufficient capacity margin:** Our useful remaining life calculation is designed to assess the quality of existing capital assets, but it does not measure the adequacy of a system's capacity relative

<sup>6</sup> A link to an index of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

to demand. Areas that are growing need more water, gas, and electricity, and place greater demands on wastewater and trash disposal utilities. Systems that are close to capacity may face greater capital costs to expand in the future, suggesting larger debt burdens and posing additional risks that may result in downward notching. Alternately, systems with ample capacity may be notched up, given the lack of capital spending requirements implied by the excess capacity. Further, excess capacity can sometimes imply a revenue-generating opportunity, since utilities can often sell their product or service to other parties. We are less likely to view excess capacity as a positive if it is caused by a declining user base.

Unusual depreciation practices relative to industry norms: Utilities typically have some flexibility to determine the depreciation schedules of their assets. Utilizing unreasonably long useful lives or employing other practices that distort depreciation schedules would also distort our remaining useful life calculation. We may notch down if an unreasonable depreciation schedule is inflating a utility's remaining useful life. Likewise, we may notch up if an unusually rapid depreciation schedule understates remaining useful life.

### Factor: Financial Strength (40%)

EXHIBIT 3

Financial Strength (40%)	Aaa	Aa	A	Baa	Ba	B and Below
Annual Debt Service Coverage (15%)	> 2.00x	2.00x $\geq$ n > 1.70x	1.70x $\geq$ n > 1.25x	1.25x $\geq$ n > 1.00x	1.00x $\geq$ n > 0.70x	$\leq$ 0.70x
Days Cash on Hand (15%)	> 250 Days	250 Days $\geq$ n > 150 Days	150 Days $\geq$ n > 35 Days	35 Days $\geq$ n > 15 Days	15 Days $\geq$ n > 7 Days	$\leq$ 7 Days
Debt to Operating Revenues (10%)	< 2.00x	2.00x < n $\leq$ 4.00x	4.00x < n $\leq$ 7.00x	7.00x < n $\leq$ 8.00x	8.00x < n $\leq$ 9.00x	$\geq$ 9.00x

Source: Moody's Investors Service

#### Why It Matters

The financial health of a utility determines its flexibility to respond to contingencies, resilience against potential short-term shocks, and cushion against a long-term unfavorable trend.

We measure or estimate utilities' financial health by looking at cash and other liquid reserves, the burden that debt places on operations, and the magnitude by which revenues are sufficient to meet expenditures.

#### Sub-factor: Annual Debt Service Coverage (15%)

Input: Most recent year's net revenues divided by most recent year's debt service, expressed as a multiple

Debt service coverage is a core statistic assessing the financial health of a utility revenue system. The magnitude by which net revenues are sufficient to cover debt service shows a utility's margin to tolerate business risks or declines in demand while still assuring repayment of debt. Higher coverage levels indicate greater flexibility to withstand volatile revenues, unexpected outflows, or customer resistance to higher rates.

Utilities usually enter into a rate covenant under which they pledge to achieve a given level of debt service coverage each year. The covenant helps ensure that the utility utilizes its assets to generate sufficient income to pay bondholders.

The analysis of a utility system's debt service coverage demands ample context. If debt service escalates in future years, then the utility's current net revenues may be sufficient to cover debt service this year, but not in the future. Systems with greater revenue stability can operate comfortably at lower coverage levels. Systems with greater capital needs are likely to incur more debt, which will lead to increased debt service and decreased coverage. The debt service coverage calculation is the basis for a comprehensive analysis of a utility's financial flexibility and trend over the long term.

Rate covenants define a calculation method. These calculation methods vary, for example in the inclusion or exclusion of connection fees. Our coverage calculation will frequently differ from the coverage utilities report for purposes of complying with their rate covenants. Frequently, our analysis will consider several types of coverage, including maximum annual debt service (MADS) coverage, annual debt service coverage, coverage with and without connection fees, and coverage as calculated for the rate covenant. For entry on the scorecard, we include connection fees (when pledged) in revenues, recognizing that these are pledged revenues that are usually generated annually and are an important source of funding for expansion. If connection fees are particularly volatile, or if they represent an inordinate share of revenues, we may adjust below the line.

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#### **Sub-factor: Days Cash on Hand (15%)**

Input: Unrestricted cash and liquid investments times 365 divided by operating and maintenance expenses, expressed in days

Cash is the paramount resource utilities have to meet expenses, cope with emergencies, and navigate business interruptions. Utilities with a lot of cash and cash equivalents are able to survive temporary disruptions and cash flow shortfalls without missing important payments. A large cash balance can also partially compensate for the lack of a debt service reserve fund. A low cash balance indicates poor flexibility to manage contingencies.

We include in this measure any cash or cash-equivalent that is both unrestricted and liquid. The measure does not include cash held in a debt service reserve fund, unspent bond proceeds, or cash that is restricted for capital.

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#### **Sub-factor: Debt to Operating Revenues (10%)**

Input: Net debt divided by most recent year's operating revenues, expressed as a multiple

A utility's debt profile determines its leverage and fixed costs. Systems that carry a lot of debt have less ability to reduce costs if demand shrinks, and are generally more challenged to achieve higher debt service coverage.

A greater debt burden may also prohibit a utility from funding necessary capital upgrades, if a covenant prevents the issuer from incurring the debt necessary to fund those upgrades.

"Net debt" is a utility's long-term debt minus its debt service reserve funds.

#### **Notching Factors Related to Financial Strength**

Debt service coverage (annual or MADS) below key thresholds: A debt service coverage ratio below 1 times is an important threshold, because coverage below 1 times indicates the utility is not fully covering debt service with income generated from operations. If a utility fails to achieve 1 times coverage, we may notch down to reflect the financial imbalance of the utility's operations. Another key

threshold that would likely prompt us to notch down is if coverage were to fall below the utility's coverage covenant, even if that covenant is higher than 1 times. Management's willingness and ability to operate the system for bondholders' benefit is a crucial credit consideration, and a breach of covenant calls that willingness and ability into question. A coverage level that impedes the issuance of additional bonds under the utility's additional bonds covenant could also prompt us to notch score down, if we think it would prevent the utility from funding necessary capital upgrades.

**Constrained liquidity position due to oversized transfers:** It is common for utilities to transfer cash to their general governments regularly, either to share overhead costs, make payments in lieu of taxes for occupied property, or to help fund shared infrastructure. It is also common for parent governments to tap utilities' cash to fund General Fund operations. We may notch down if these types of transfers are large and begin to strain its own liquidity. We are more likely to make this adjustment if the general government is operationally reliant on utility transfers and has the authority to increase them, particularly if the general government is struggling financially. Even if a utility has never transferred cash to its parent, such transfers remain a possibility,<sup>7</sup> one of the reasons for the relationship between a revenue rating and the GO rating of its general government.

**Outsized capital needs:** A utility with significant capital needs will likely need to incur additional debt not communicated in the existing debt metric. We may notch downward for utilities under regulatory consent decree, or otherwise with great capital needs, that are likely to increase their debt levels.

**Oversized adjusted net pension liability relative to debt, or significant actuarial required contribution underpayment:** Employees of public utilities are usually members of a municipal pension plan. Most utilities either sponsor their own plan or participate in another entity's plan and are responsible for funding their share of the plan's pension liabilities. We may notch down if this liability is especially large, or if the utility has underfunded its contributions.<sup>8</sup>

**Significant exposure to puttable debt and/or swaps, or other unusual debt structure:** The risks of a debt portfolio can be magnified if it is significantly composed of puttable debt. Utilities generally set rates with the intention of covering operating expenses and debt service in the current year. A debt put, accelerated amortization under a term-out, or other unexpected calls on a utility's resources can impose immediate and substantial, unbudgeted cash outflows and upend that intention. We may notch down, potentially by several notches, if the composition of a debt portfolio, or cash-flow demands or unfavorable valuation of a swap, indicates a greater degree of risk than the scorecard debt metric.

<sup>7</sup> Unless the utility's flow of funds is closed-loop. A closed-loop flow of funds is stronger than an open one for this reason.

<sup>8</sup> For a description of how we calculate or estimate adjusted net pension liability, please see our cross-sector methodology that describes our adjustments to pension data reported by Governmental Accounting Standards Board (GASB) issuers.

## Factor: Management (20%)

EXHIBIT 4

Management (20%)	Aaa	Aa	A	Baa	Ba	B and Below
Rate Management (10%)	Excellent rate-setting record; no material political, practical, or regulatory limits on rate increases	Strong rate-setting record; little political, practical, or regulatory limits on rate increases	Average rate-setting record; some political, practical, or regulatory limits on rate increases	Adequate rate-setting record; political, practical, or regulatory impediments place material limits on rate increases	Below average rate-setting record; political, practical, or regulatory impediments place substantial limits on rate increases	Record of insufficiently adjusting rates; political, practical, or regulatory obstacles prevent implementation of necessary rate increases
Regulatory Compliance and Capital planning (10%)	Fully compliant OR proactively addressing compliance issues; Maintains sophisticated and manageable Capital Improvement Plan that addresses more than a 10-year period	Actively addressing minor compliance issues; Maintains comprehensive and manageable 10-year Capital Improvement Plan	Moderate violations with adopted plan to address issues; Maintains manageable 5-year Capital Improvement Plan	Significant compliance violations with limited solutions adopted; Maintains single year Capital Improvement Plan	Not fully addressing compliance issues; Limited or weak capital planning	Not addressing compliance issues; No capital planning

Source: Moody's Investors Service

### Why It Matters

While the legal provisions of the indenture or other bond documents may establish the minimum level of financial margin at which a utility must be run, the utility's management determines the actual level at which it is run.

Utility management refers to the dynamics of setting rates, planning for capital spending, budgeting for annual expenditures, and complying with environmental regulations. All of these factors interplay with one another to determine the credit strength of a utility system.

The scorecard captures two crucial aspects of management: rate-setting and capital planning. These two aspects encompass most of what is important in running a utility: keeping the system in good working order, and paying for it.

### Sub-factor: Rate Management (10%)

User rates are the primary, and sometimes only, mechanism utilities employ to pay for their operations.

Ideally, rates increase marginally and steadily, rather than choppily. It is common for utilities to split their rates into a "base" charge (flat rate charged to all users) plus a "volumetric" charge (per unit costs based on flow/usage). Utilities funded to a greater extent by the volumetric charge face greater risks, since volume can be economically sensitive or decline because of a shift in consumption patterns.

Management's track record at setting rates appropriately and increasing them when necessary drives this score. We tend to give higher scores to utilities that set rate structures under which increases are automatic, and do not require annual approval for implementation.

Embedded into this factor is the length of time required to implement a rate increase. Many public utilities enjoy the authority to set their own rates and can enact a rate increase in short order by majority vote of the governing board. Some utilities must give the public a few weeks' or months' notice before increasing rates, or choose to do so by policy or practice. Some utilities require state approval to increase rates. Utilities that need state approval often have to file a rate case subject to public objection, and in some cases the state takes a long time to approve them or denies the full rate increase.

The longer it takes a utility to implement a rate increase, the less flexibility it has to quickly generate new revenues when faced with cash flow shortfalls.

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### **Sub-factor: Regulatory Compliance and Capital Planning (10%)**

The public utility sector is heavily regulated. Most public utilities are regulated by federal as well as state agencies.

The EPA enforces the Safe Drinking Water Act for water distribution utilities, the Clean Water Act for sanitary sewer and stormwater utilities, the Resource Conservation and Recovery Act for solid waste disposal systems, and the Clean Air Act for electric utilities. These statutes, and the methods employed to enforce them, are continually evolving, often intensifying over time. Additionally, many states have passed their own environmental regulations and are active enforcers.

This scorecard factor assesses utilities' compliance with relevant regulations and their plans for the capital expenditures required to comply in the future.

In addition to achieving environmental compliance, proper capital planning ensures the continued delivery of the product or service and the ongoing generation of revenues.

In our assessment, we look for indications of potential compliance gaps, such as environmental litigation, a delay in renewing a permit, or a consent decree with a state or federal enforcement body.

#### **Notching Factors Related to Management**

Unusually strong or weak capital planning: Continued violations of environmental laws and the associated litigation can impose extraordinary costs on utilities. We may notch down if these costs threaten to overwhelm a system's resources, in the form of a large consent decree, lawsuit, or other costs. Alternately, we may notch up if a utility's capital planning is particularly sophisticated or forward-looking. More sophisticated and forward-looking capital management is more important for systems facing resource vulnerability or extreme weather volatility.



## Factor: Legal Provisions (10%)

EXHIBIT 5						
Legal Provisions (10%)	Aaa	Aa	A	Baa	Ba	B and Below
Rate Covenant (5%)	> 1.30x	1.30x ≥ n > 1.20x	1.20x ≥ n > 1.10x	1.10x ≥ n > 1.00x		≤ 1.00x
Debt Service Reserve Requirement (5%)	DSRF funded at MADS	DSRF funded at lesser of standard 3-prong test	DSRF funded at less than 3-prong test OR springing DSRF	NO explicit DSRF; OR funded with speculative grade surety		

Source: Moody's Investors Service

### Why It Matters

The legal provisions of a public utility revenue bond form the backbone of its security.

When a municipality assigns its General Obligation pledge to a bond, it has promised to use any revenues or resources at its disposal to pay debt service.

A utility revenue bond enjoys no such open-ended pledge, making the legal edifice of the bond critical to bondholder security. Most commonly, the pledge for municipal utility revenue bonds is a lien on the net revenues of the system. Occasionally, bondholders enjoy a lien on the gross revenues of a system. We ordinarily do not consider a gross revenue pledge as materially stronger than a net revenue pledge, because systems need to pay operating and maintenance costs in order to remain functional.

The linchpin of a bond's legal structure is its covenants: the contractual compulsions the municipal utility agrees to when issuing the bonds.

Utilities abide by many different types of covenants. We consider three to be the most important: the rate covenant, the additional bonds test, and the debt service reserve fund. Also crucial in the analysis of a revenue bond's legal structure is whether the flow of funds is open-loop (accessible by another government entity) or closed-loop.

Strong covenants bind the utility to utilize its assets to benefit bondholders by operating with a comfortable financial margin, not taking on too much debt, and maintaining adequate cash available to pay debt service. Weak or nonexistent covenants allow the utility to operate on a thin margin or even at a net loss, incur a lot of leverage, transfer its money to other government entities, or maintain inadequate cash, in ways that are detrimental to bondholders.

Covenants specify the minimum factors management must contractually abide by. Utilities frequently exceed the minimum. Many of our ratings represent the expectation of performance at levels that exceed the covenants.

### Sub-factor: Rate Covenant (5%)

Input: Covenant governing net revenues (operating revenues minus operating expenditures net of depreciation) divided by annual debt service, expressed as a multiple

The rate covenant is a pledge to set rates such that net revenues will be sufficient to cover debt service at a prescribed level. For example, a covenant may bind a utility to ensure that net revenues cover debt

service by 1.2 times. If net revenues fall short of this covenant in one year, the utility must raise rates to achieve a compliant coverage level the following year.

The rate covenant takes many forms. Some utilities pledge for net revenues to cover current year annual debt service by a given level. Others pledge to cover average annual debt service throughout the life of the bonds at that level. A strong coverage requirement would be for net revenues to cover maximum annual debt service (MADS) by a certain level.

Some rate covenant formats are materially weaker than this. Some utilities allow a “rolling” calculation, which includes outstanding cash from prior years’ surpluses as part of the resources available to cover debt service. Many rate covenants allow connection fees to be included in available operating revenues.

The rate covenant coverage thresholds are based on a covenant that is an annual debt service coverage calculation. Using the notching factors described below, we may adjust, upward or downward, for any departures from this format.

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### Sub-factor: Debt Service Reserve Requirement (5%)

Input: Debt service reserve requirement

Many issuers agree to hold a specified amount of cash or other resources in a debt service reserve fund (DSRF), which the trustee can tap to pay debt service in the event that net revenues are inadequate. The DSRF covenant ordinarily requires the utility to replenish any draws from the DSRF.

The DSRF protects bondholders by assuring the payment of debt service even if net revenues fall short in one year.

DSRF funds can be funded with cash, or with surety policies from an insurer. We generally consider cash to be superior to a surety, although this is unlikely to materially affect the assigned rating as long as the surety provider is rated investment grade.

One commonly used DSRF requirement is known as the “three-pronged test.” Under tax law, the Internal Revenue Service limits the earning of interest on proceeds of a tax-exempt bond unless the invested proceeds comply with the three-pronged test. Under that test, the DSRF must be the lesser of 10% of principal, MADS, or 1.25 times average annual debt service. A DSRF set at the three-pronged test is usually weaker than one funded at MADS.

Revenue bonds have been issued without a DSRF in the past. This has resulted in a number of utilities with some bonds secured by a DSRF and other parity bonds secured by the same lien but no DSRF. We have rarely distinguished ratings between these parity bonds. The DSRF is a last-resort security measure, and most utilities comply with their coverage covenants and never have to tap their DSRF. We are most likely to distinguish between DSRF-secured bonds and bonds with no DSRF if the system holds narrow liquidity. A system operating with abundant liquidity can use its operating cash to meet debt service shortfalls, effectively executing a similar function to the DSRF. The combination of narrow liquidity and no DSRF exposes bondholders to greater risks of interrupted debt service payments and is therefore more likely to be reflected in ratings.

For a utility whose debt is mostly, but not all, secured by a DSRF, we will still enter the DSRF requirement into the scorecard. For a utility whose debt is mostly not secured by a DSRF, we will adjust the DSRF entry downward.<sup>9</sup>

### Notching Factors Related to Legal Provisions

Coverage covenant other than annual debt service: The thresholds for the rate covenant sub-factor is based on net revenue coverage of annual debt service. A “rolling” coverage covenant that includes outstanding cash, or some other modification that weakens the meaning of the covenant, may prompt us to notch down. Conversely, a MADS coverage covenant may prompt us to notch up.

Structural enhancements/complexities: The scorecard is designed to capture covenants as they are most commonly constituted but cannot account for the myriad structures and complexities that arise in bond transactions throughout the sector. Enhancements such as a lock-box structure for debt service may lead us to notch up. Other shortcomings, such as a weak additional bonds test or the inclusion of cash in a coverage covenant, may lead us to notch down. Any characteristic of the legal provisions of a bond transaction may lead us to conclude that the scorecard does not adequately capture its risk profile, resulting in notching or on a rating that is different from the scorecard-indicated outcome.

### Other Considerations

Ratings may reflect consideration of additional factors that are not in the scorecard, usually because the factor's credit importance varies widely among the issuers in the sector or because the factor may be important only under certain circumstances or for a subset of issuers. Such factors include financial controls and the quality of financial reporting; the quality and experience of management; assessments of governance as well as environmental and social considerations; and possible interference from other levels of government. Regulatory, litigation, liquidity and technology risk as well as changes in demographic and macroeconomic trends also affect ratings.

Following are some examples of additional considerations that may be reflected in our ratings and that may cause ratings to be different from scorecard-indicated outcomes.

### Environmental, Social and Governance Considerations

Environmental, social and governance (ESG) considerations may affect the ratings of municipal utilities. For information about our approach to assessing ESG issues, please see our methodology that describes our general principles for assessing these risks.<sup>10</sup>

Municipal utilities may be directly exposed to extreme weather events due to climate change, such as flooding or droughts, and this may affect credit quality. Government facilities or investments in physical assets could be affected by physical risks and by other sources of environmental risk. Utility systems providing service to coastal communities or communities that are greatly susceptible to drought are highly exposed to environmental risks. Environmental hazards, such as hurricanes, can result in significant system damage requiring unexpected capital spending for repairs, while longer-term environmental trends, such as rising sea levels or prolonged drought conditions, can cause more prolonged pressure on system budgeting and spending priorities.

<sup>9</sup> For example, if 1/3 of a utility's debt is secured by a DSRF funded at MADs and 2/3 is not secured by a DSRF at all, we may enter the DSRF requirement as a Baa.

<sup>10</sup> A link to a list of our sector and cross-sector methodologies can be found in the “Moody's Related Publications” section.

Social considerations such as staff turnover, aging workforce, labor shortages or unrest or changes in the demographics of a municipal utility's service area, the income level of its customers and the affordability of housing may influence credit strength.

Some governance considerations are reflected in the Rate Management and Regulatory Compliance and Capital Planning qualitative sub-factors, including revenue-raising flexibility and capital planning. Additional considerations may include debt management, multi-year fiscal planning and the timeliness of information disclosure. Weak or opaque governance can negatively affect a municipal utility's performance, which can reduce customer willingness to support rate increases and can also constrain a municipal utility's access to capital markets. Conversely, very strong governance can lead to high customer satisfaction that reduces public resistance to rate increases and capital investment.

ESG considerations are not always negative, and they can be a source of credit strength in some instances. For example, access to clean water, options for the safe disposal of wastewater, and a strong labor market and generally affordable housing can drive strong revenue trends and foster utility system growth. External support, such as state or federal government funds for natural disaster relief, can help mitigate the credit impact of ESG exposures.

### Regulatory Considerations

Issuers in the municipal utility sector are subject to varying degrees of regulatory oversight. Effects of these regulations may entail limitations on operations, higher costs, and higher potential for technology disruptions and demand substitution. Regional differences in regulation, implementation or enforcement may advantage or disadvantage particular issuers.

Our view of future regulations plays an important role in our expectations of future financial metrics as well as our confidence level in the ability of an issuer to generate sufficient cash flows relative to its debt burden over the medium and longer term. Regulatory considerations also play a role in our assessment of an issuer's cost recovery framework, competitiveness and willingness to recover costs with sound financial metrics. In some circumstances, regulatory considerations may also be a rating factor outside the scorecard, for instance when regulatory change is swift.

### Likelihood of Receiving Extraordinary or Ongoing Support

Some municipal utilities receive extraordinary support from their component local government or a higher level of government, such as the state, typically to help the municipal utility avoid a default on debt obligations. The circumstances surrounding extraordinary support for a municipal utility are often specific to the situation. In some cases, a state or local government may provide meaningful financial or managerial support to a municipal utility undergoing stress, thereby bolstering a weak fundamental credit profile and materially lowering the risk of a payment default. Conversely, a temporary infusion of funds may bolster financial performance in the short term but leave a municipal utility exposed to rapid financial deterioration if the aid does not continue. We typically assess whether the support will be ongoing and sufficient to stabilize the municipal utility. We also consider the associated benefits or risks of dependence on such support. Alternatively, many municipal utilities receive annual funding or low-interest loans from the federal, state or local government. This type of funding is often earmarked, and we do not consider it to be extraordinary support.

### Parent Government Credit Quality

While some public utility systems are independent of a particular municipality,<sup>11</sup> municipally-owned utility systems typically have enduring credit linkages with their parent government. Important linkages often include a legal structure that could draw the utility system into a general government municipal bankruptcy, combined or intermingled financial operations, shared debt or pension obligations, and mutual or affiliated governance or management. Additional linkages that typically pertain to municipally-owned utility systems, including common boundaries, a common economic environment, and common demographics and income levels, may also apply to some independent utilities. As a result of these credit linkages, the credit quality of a municipally-owned utility's parent government and that government's ability to meet its general obligations are important considerations in the rating assigned to a municipally-owned utility.

Shared credit characteristics between a municipality and an owned utility often affect the metrics used to assess scorecard factors, including the notching factors. For example, a utility system's practice of transferring excess funds to its parent government is likely to be reflected in the assessment of its financial strength, especially in the Days Cash on Hand sub-factor. However, there can be credit linkages between a utility and its parent government that are not fully reflected in the scorecard. Based on these linkages, a municipally-owned utility's revenue rating is typically not higher than two notches above the issuer or general obligation rating of the parent government. Scenarios where a utility's revenue rating may exceed the issuer or general obligation rating of the parent government would be in cases where there is clear information indicating a de-linkage of credit profiles, for example in a distress scenario where it is clear that debt service will continue to be paid on the revenue debt despite a default or impending default of the municipality's general obligation debt. An additional potential example could be a case where a utility has a meaningfully larger service territory than the parent government's boundaries and benefits from a more robust economic environment than the parent.

### Financial Controls

We rely on the accuracy of audited financial statements to assign and monitor ratings in this sector. The quality of financial statements may be influenced by internal controls, including the proper tone at the top, centralized oversight of operations, and consistency in accounting policies and procedures. Auditors' reports on the effectiveness of internal controls, auditors' comments in financial reports and unusual restatements of financial statements or delays in regulatory filings may indicate weaknesses in internal controls.

### Additional Metrics

The metrics included in the scorecard are those that are generally most important in assigning ratings to issuers in this sector; however, we may use additional metrics to inform our analysis in specific cases. These additional metrics may be important to our forward view of metrics that are in the scorecard or other rating factors.

### Event Risk

We also recognize the possibility that an unexpected event could cause a sudden and sharp decline in a municipal utility's fundamental creditworthiness, which may cause actual ratings to be lower than the scorecard-indicated outcome. Event risks — which are varied and can include natural disasters, sudden changes in state law or regulation, material litigation, pandemics or cybercrime events — can have a material credit impact on even a stable municipal utility.

<sup>11</sup> For example, we typically consider a stand-alone utility authority or special purpose district utility system that is not directly owned by a state or local government to be independent of a municipality.

### Treatment of Different Liens on a US Municipal Utility's Net Revenues

It is common for utilities to issue debt secured by different liens on their net revenues. Senior bonds are secured by a first lien on net revenues, and subordinate bonds or loans secured by a subordinate, or junior, lien. Sometimes, utilities will issue debt secured by a third lien or lower.

Our practice is to evaluate the likelihood of default and the expected recovery in the event of default for each lien independently.

This will most commonly result in a rating distinction of one notch for each lien of subordination. In other words, if a municipal utility's senior lien is rated Aa3, its subordinate lien will most likely be rated A1 and the third lien will most likely be rated A2.

The reason for the typical one-notch-per-lien distinction is that subordinate liens are marginally more likely to default than senior liens, and subordinate liens' expected recovery in the event of default would be lower. Senior liens are typically afforded stronger legal protections under utilities' indentures, senior-lien debt service is usually paid earlier in the flow of funds, and the first lien would likely enjoy a better claim in bankruptcy.

For most investment grade municipal utilities, the probability of default for any lien is small, and so the notching distinction is driven primarily by a greater expected loss severity in the unlikely event of a default. This is comparable to our approach for ratings distinctions for different debt classes of investment grade corporations, where ratings distinctions are driven by differences in expected loss severities.<sup>12</sup> In contrast to corporates, however, there often is not an explicit cross-default of senior municipal debt in the event of a subordinate payment default.

In some instances, we may conclude that an investment grade municipal utility's subordinate lien has a default probability and expected loss severity that is nearly as low or just as low as the senior lien (in which case we may not make a ratings distinction), or a default probability and expected loss severity that is materially higher than the senior lien (in which case we may make a ratings distinction of more than one notch).

Such a conclusion would be based on the municipal utility's management of its system with respect to its liens, and the characteristics of the legal framework governing the liens: rate covenants, additional debt provisions, and cross-default and acceleration provisions in a senior lien's variable rate debt resulting from a default on the subordinate lien, for example. If a utility has only a very small amount of senior lien debt, we may choose not to distinguish between liens.

The distinctions among a municipal utility's liens become starker when it faces a material likelihood of default or bankruptcy. For these situations, the different characteristics of the liens are likely to drive greater disparities in default probabilities and expected recoveries for disparate liens. Thus, we are more likely to employ ratings distinctions other than one notch for speculative grade municipal utilities' different liens as the Loss Given Default approach drives more of the analysis.

In nearly all instances, the ratings on the different liens of the same utility will remain closely related. The reason for this is that municipal utilities are actively managed enterprises that continually need to generate net revenues sufficient not only to cover debt service but also to fund capital needs. Even if senior lien coverage is strong, a utility that is unable to pay its junior lien debt service is not generating excess funds for capital investment and does not have capacity for capital borrowing. Thus, while subordinate liens face greater default probability and higher loss expectations based on their first-loss positions, an increased likelihood of default on a subordinate lien implies an increased likelihood of insolvency for the utility as a whole.

For this reason, we enter the debt-oriented inputs into the scorecard on a consolidated basis. For the debt to revenues factor, we enter total debt (senior and junior). For the debt service coverage factor, we enter total debt service coverage. It is the municipal utility's ability to cover all of its debt service with net revenues that determines its viability as a going concern. Even for a senior lien with a large coverage factor by net revenues, a narrow coverage of all debt service implies pressure to maintain healthy operations and generate funds sufficient for capital reinvestment.

<sup>12</sup> For more information, see our cross-sector methodology that describes the alignment of corporate instrument ratings based on differences in security and priority of claim. A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

## Limitations

In the preceding sections, we have discussed the scorecard factors and many of the other considerations that may be important in assigning ratings. In this section, we discuss limitations that pertain to the scorecard and to the overall rating methodology.

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### » Limitations of the Scorecard

There are various reasons why scorecard-indicated outcomes may not map closely to actual ratings.

The scorecard in this rating methodology is a relatively simple tool focused on indicators for relative credit strength. Credit loss and recovery considerations, which are typically more important as an issuer gets closer to default, may not be fully captured in the scorecard. The scorecard is also limited by its upper and lower bounds, causing scorecard-indicated outcomes to be less likely to align with ratings for issuers at the upper and lower ends of the rating scale.

The weights for each factor and sub-factor in the scorecard represent an approximation of their importance for rating decisions across the sector, but the actual importance of a particular factor may vary substantially based on an individual issuer's circumstances.

Factors that are outside the scorecard, including those discussed above in the "Other Considerations" section, may be important for ratings, and their relative importance may also vary from issuer to issuer or from instrument to instrument. In addition, certain broad methodological considerations described in one or more cross-sector rating methodologies may be relevant to ratings in this sector.<sup>13</sup> Examples of such considerations include the following: how sovereign credit quality affects non-sovereign issuers, the assessment of credit support from other entities, and the assignment of short-term ratings.

We may use the scorecard over various historical or forward-looking time periods. Furthermore, in our ratings we often incorporate directional views of risks and mitigants in a qualitative way.

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### » General Limitations of the Methodology

This methodology document does not include an exhaustive description of all factors that we may consider in assigning ratings in this sector. Municipal utilities may face new risks or new combinations of risks, and they may develop new strategies to mitigate risk. We seek to incorporate all material credit considerations in ratings and to take the most forward-looking perspective that visibility into these risks and mitigants permits.

Ratings reflect our expectations for an issuer's future performance; however, as the forward horizon lengthens, uncertainty increases and the utility of precise estimates, as scorecard inputs or in other considerations, typically diminishes. Our forward-looking opinions are based on assumptions that may prove, in hindsight, to have been incorrect. Reasons for this could include unanticipated changes in any of the following: the macroeconomic environment, general financial market conditions, disruptive technology, or regulatory and legal actions. In any case, predicting the future is subject to substantial uncertainty.

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<sup>13</sup> A link to a list of our sector and cross-sector methodologies can be found in the "Moody's Related Publications" section.

## Appendix: US Municipal Utility Revenue Debt Scorecard

EXHIBIT 6

		Aaa	Aa	A	Baa	Ba	B and Below
<b>Numerical score</b>		0.5 to 1.5	1.5 to 2.5	2.5 to 3.5	3.5 to 4.5	4.5 to 5.5	5.5 to 6.5
<b>System Characteristics (30%)</b>							
Asset Condition (10%)	Net Fixed Assets/Annual Depreciation:	> 75 years	75 years ≥ n > 25 years	25 years ≥ n > 12 years	12 years ≥ n > 9 years	9 Years ≥ n > 6 Years	≤ 6 Years
System Size (7.5%)	Water and/or Sewer/ Solid Waste:	O&M > \$65M	\$65M ≥ O&M > \$30M	\$30M ≥ O&M > \$10M	\$10M ≥ O&M > \$3M	\$3M ≥ O&M > \$1M	O&M ≤ \$1M
	Stormwater:	O&M > \$30M	\$30M ≥ O&M > \$15M	\$15M ≥ O&M > \$8M	\$8M ≥ O&M > \$2M	\$2M ≥ O&M > \$750K	O&M ≤ \$750K
	Gas or Electric:	O&M > \$100M	\$100M ≥ O&M > \$50M	\$50M ≥ O&M > \$20M	\$20M ≥ O&M > \$8M	\$8M ≥ O&M > \$3M	O&M ≤ \$3M
Service Area Wealth (12.5%)		> 150% of US median	150% ≥ US median > 90%	90% ≥ US median > 75%	75% ≥ US median > 50%	50% ≥ US median > 40%	≤ 40% of US median
<b>Financial Strength (40%)</b>							
Annual Debt Service Coverage (15%)		> 2.00x	2.00x ≥ n > 1.70x	1.70x ≥ n > 1.25x	1.25x ≥ n > 1.00x	1.00x ≥ n > 0.70x	≤ 0.70x
Days Cash on Hand (15%)		> 250 Days	250 Days ≥ n > 150 Days	150 Days ≥ n > 35 Days	35 Days ≥ n > 15 Days	15 Days ≥ n > 7 Days	≤ 7 Days
Debt to Operating Revenues (10%)		< 2.00x	2.00x < n ≤ 4.00x	4.00x < n ≤ 7.00x	7.00x < n ≤ 8.00x	8.00x < n ≤ 9.00x	≥ 9.00x
<b>Management (20%)</b>							
Rate Management (10%)		Excellent rate-setting record; no material political, practical, or regulatory limits on rate increases	Strong rate-setting record; little political, practical, or regulatory limits on rate increases	Average rate-setting record; some political, practical, or regulatory limits on rate increases	Adequate rate-setting record; political, practical, or regulatory impediments place material limits on rate increases	Below average rate-setting record; political, practical, or regulatory impediments place substantial limits on rate increases	Record of insufficiently adjusting rates; political, practical, or regulatory obstacles prevent implementation of necessary rate increases
Regulatory Compliance and Capital Planning (10%)		Fully compliant OR proactively addressing compliance issues; Maintains sophisticated and manageable Capital Improvement Plan that addresses more than a 10-year period	Actively addressing minor compliance issues; Maintains comprehensive and manageable 10-year Capital Improvement Plan	Moderate violations with adopted plan to address issues; Maintains manageable 5-year Capital Improvement Plan	Significant compliance violations with limited solutions adopted; Maintains single year Capital Improvement Plan	Not fully addressing compliance issues; Limited or weak capital planning	Not addressing compliance issues; No capital planning
<b>Legal Provisions (10%)</b>							
Rate Covenant (5%)		> 1.30x	1.30x ≥ n > 1.20x	1.20x ≥ n > 1.10x	1.10x ≥ n > 1.00x		≤ 1.00x <sup>14</sup>
Debt Service Reserve Requirement (5%)		DSRF funded at MADS	DSRF funded at lesser of standard 3-prong test	DSRF funded at less than 3-prong test OR springing DSRF	NO explicit DSRF; OR funded with speculative grade surety <sup>15</sup>		

Source: Moody's Investors Service

<sup>14</sup> Scores as a Ba.<sup>15</sup> Scores as a Baa.



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## Adjustments/Notching Factors

### Factor: System Characteristics

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Additional service area economic strength or diversity

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Significant customer concentration

---

Revenue-per-Customer greatly over/under regional average

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Exposure to weather volatility, extreme conditions or market fluctuations

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Resource vulnerability

---

Sizable or insufficient capacity margin

---

Unusual depreciation practices relative to industry norms

---

Other analyst adjustment to System Characteristics (Specify)

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### Factor: Financial Strength

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Debt Service Coverage (Annual or MADS) below key thresholds

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Constrained liquidity position due to oversized transfers

---

Oversized capital needs

---

Oversized adjusted net pension liability relative to debt, or significant under-payment of actuarial funding requirement

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Significant exposure to puttable debt and/or swaps or other unusual debt structure

---

Other analyst adjustment to Financial Strength factor (Specify)

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### Factor: Management

---

Unusually strong or weak capital planning

---

Other analyst adjustment to Management factor (Specify)

---

### Factor: Legal Provisions

---

Coverage covenant other than annual debt service

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Structural Enhancements/Complexities

---

Other analyst adjustment to Legal Provisions factor (Specify)

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### Other

---

Credit Event/Trend not yet reflected in existing data set

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Source: Moody's Investors Service

## EXHIBIT 7

**Scorecard-Indicated Outcome**

Scorecard-Indicated Outcome	Aggregate Numeric Score
Aaa	0.5 to 1.5
Aa1	1.5 to 1.83
Aa2	1.83 to 2.17
Aa3	2.17 to 2.5
A1	2.5 to 2.83
A2	2.83 to 3.17
A3	3.17 to 3.5
Baa1	3.5 to 3.83
Baa2	3.83 to 4.17
Baa3	4.17 to 4.5
Ba1	4.5 to 4.83
Ba2	4.83 to 5.17
Ba3	5.17 to 5.5
B1	5.5 to 5.83
B2	5.83 to 6.17
B3 and below	6.17 to 6.5

Source: Moody's Investors Service

## Moody's Related Publications

Credit ratings are primarily determined through the application of sector credit rating methodologies. Certain broad methodological considerations (described in one or more cross-sector rating methodologies) may also be relevant to the determination of credit ratings of issuers and instruments. A list of sector and cross-sector credit rating methodologies can be found [here](#).

For data summarizing the historical robustness and predictive power of credit ratings, please click [here](#).

For further information, please refer to *Rating Symbols and Definitions*, which is available [here](#).

Report Number: 1312726

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# Exhibit CF-7

Criteria | Governments | U.S. Public Finance:

# U.S. Municipal Water, Sewer, And Solid Waste Utilities: Methodology And Assumptions

April 14, 2022

## OVERVIEW AND SCOPE

- These criteria apply to ratings on and refer to all utilities in scope as municipal water and sewer utilities, including waterworks, sanitary sewer, drainage, stormwater, solid waste systems, and irrigation districts. Also included in the scope of these criteria are combined water and sewer systems for which the above-mentioned services predominate. The issuers and issues in scope typically do not benefit from a guarantee from a state or local government nor are they secured by a general obligation (GO) of a state or local government. In-scope utilities may be units of U.S. local and regional governments (LRGs) or comparable political subdivisions provided that they:
  - Maintain discrete operations, and
  - There are ongoing operations to deliver water and sewer services directly to retail customers.
- The public or municipal enterprises within the scope of these criteria include, generally, those with the following characteristics:
  - The entity is an autonomous political subdivision or a wholly owned department of a political subdivision that may have shared governance and financial reporting, including entities where there is a concession agreement with a private operator;
  - The entity has a public policymaking role, mission, or mandate to deliver an essential service deemed necessary for public health, and is not a commercial entity such as an investor-owned utility or a corporation (whether a bankruptcy-remote or single-purpose entity or not);
  - The entity may receive some contractual payments or appropriations from a related political subdivision such as the general fund of the LRG; and
  - The entity is not registered as a commercial enterprise or public corporation and does not pay dividends (other than to its affiliated general government), establish ownership shares, or access the equity markets.
- While not an exhaustive list, examples of debt rated under these criteria are bonds issued by a city, utility board, retail raw-water service providers such as irrigation districts, and a regional authority that provides primarily retail water and sewer service or solid waste collection, handling, and removal services. Examples of entities that are not rated under these criteria include development districts, investor-owned utilities, project finance, master limited partnerships, and

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limited liability corporations. Investor-owned utilities and corporations are rated using "Corporate Methodology," published Nov. 19, 2013, and "Key Credit Factors For The Regulated Utilities Industry," published Nov. 19, 2013. Master limited partnerships are rated based on "Methodology: Master Limited Partnerships And General Partnerships," published Sept. 22, 2014.

4. Entities whose revenues are derived entirely from sales for resale to other entities, such as traditional wholesale providers or joint action agencies, continue to be evaluated based on the "Wholesale Utilities" criteria, published May 24, 2005.
5. LRGs often own and/or operate other enterprises such as electric systems, gas distribution utilities, or other utility services. Although many of the themes addressed by these criteria could apply in part to those other enterprises, we typically assess non-water and sewer utility operations using other industry-specific criteria. We believe related governments, while generally not directly linked, can directly influence credit quality. If a municipal utility is receiving or could receive financial support from the LRG or, conversely, if the municipal utility is providing or could provide support to the LRG, we account for this in the financial profile.
6. Many LRGs issue their own GO or other tax-secured debt on behalf of the utility. In those cases, this debt, even if practically paid by water revenues, continue to be evaluated using the applicable LRG criteria.
7. We generally believe that in cases of distress utilities do not benefit from an explicit or implicit level of extraordinary support from the U.S. federal government or state government in which they operate. In cases where we consider a utility to be a GRE, these criteria are used to determine the stand-alone credit profile (SACP), which is used as an input to the GRE criteria (see "Rating Government-Related Entities: Methodology And Assumptions," published March 25, 2015) to arrive at an issuer credit rating (ICR).
8. We consider the strength of lease revenue or certificates of participation issued by utilities as equivalent to a pledge of the same lien of revenues. Therefore, we do not distinguish between these securities. If a utility were to issue appropriation-secured debt that did not meet the above assumptions, we apply "Issue Credit Ratings Linked To U.S. Public Finance Obligor's Creditworthiness," published Nov. 20, 2019.
9. This article is related to "Principles Of Credit Ratings," published Feb. 16, 2011.

#### KEY PUBLICATION INFORMATION

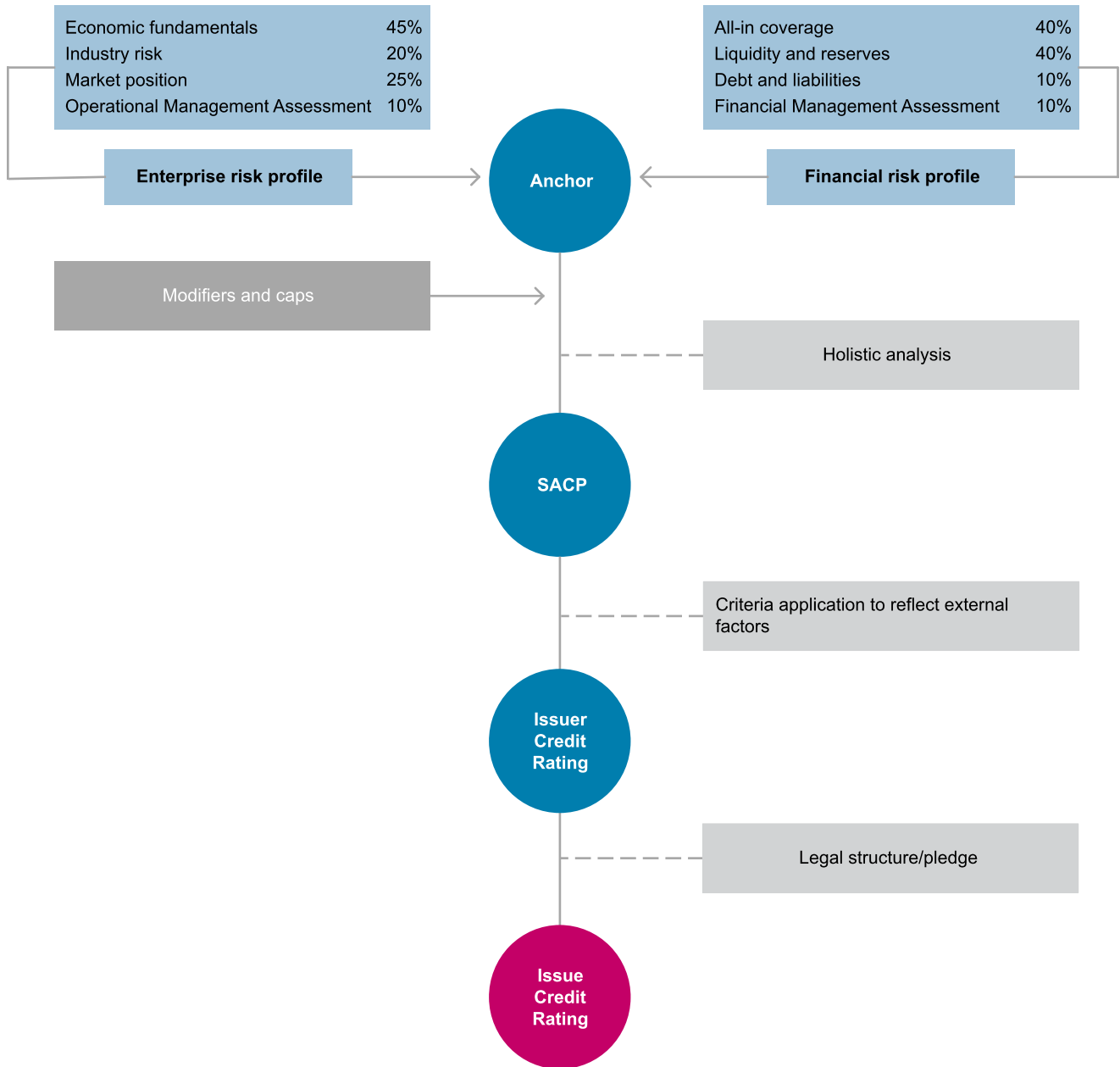
- Effective date: These criteria are effective April 14, 2022, except in jurisdictions that require local registration. In those jurisdictions, the criteria are effective only after the local registration process is completed.
- This updated methodology follows our request for comment, titled "Request for Comment: U.S. Municipal Water And Sewer Utilities: Methodology And Assumptions," published Dec., 14, 2021. For the changes between the RFC and the final criteria, see "U.S. Municipal Water, Sewer, And Solid Waste Utilities: Methodologies And Assumptions," April 14, 2022.
- These criteria supersede the criteria articles listed in the "Fully superseded criteria" section at the end of this article.

## METHODOLOGY

10. These criteria use the same general framework as our criteria for other municipal enterprise sectors. Specifically, these criteria assign ratings using a framework that considers enterprise risk (enterprise risk profile) and financial risk (financial risk profile). Chart 1 depicts how the enterprise and financial risk profile assessments interact to arrive at the anchor.

Chart 1

### Analytical Framework For Municipal Water And Sewer Utility Ratings



Source: S&P Global Ratings.  
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11. The anchor results from the combination of the enterprise and financial risk profile assessments in table 1. We use lower-case letters in table 1 to highlight that the anchors are not ratings themselves, but rather initial indicative credit levels suggested by the enterprise and financial risk profile assessments. In cases where table 1 presents two anchors, the choice between the two anchors is based on our view of the future performance of the factors in the enterprise and



financial risk profiles.

12. After we determine the anchor, we use modifiers. Such modifiers can positively or negatively affect the anchor suggested by table 1. Then we apply our holistic analysis to reach an SACP. A holistic analysis is part of determining the SACP because that helps us capture a comprehensive analysis of creditworthiness. The holistic analysis can have a one-notch impact up or down. When we determine an adjustment of one notch up or down is warranted, it may be based on factors including our forward-looking view of an issuer's operating and financial performance. It may also reflect a comparable ratings analysis when relevant, or strengths or weaknesses not fully reflected through application of the criteria framework as it pertains specifically to the issuer.
13. We use the term SACP to reflect the outcome from table 1 plus any relevant modifiers and caps described in the Primary Credit Factors section and the holistic analysis described earlier. For more information about SACP, see our criteria "Stand-Alone Credit Profiles: One Component Of A Rating," published Oct. 1, 2010. Next, we analyze the influence of external factors such as sovereign risk (i.e., ratings may be constrained by the sovereign rating on the country in which the utility is domiciled) -- see "Ratings Above The Sovereign: Corporate And Government Ratings—Methodology And Assumptions," published Nov. 19, 2013; and the potential for extraordinary support or intervention from a related government or entity -- see "General Criteria: Rating Government-Related Entities: Methodology And Assumptions," published March 25, 2015.
14. Once the effect of any external factors is incorporated, we arrive at the ICR. The ICR reflects the general creditworthiness of the entity and does not incorporate the pledge or covenants provided to bondholders for any particular debt instrument. In the final step of our analysis, if we are rating a specific debt instrument, we review the legal structure of the instrument, including the pledge and covenants, to determine the issue credit rating. This analysis most often results in an issue credit rating that is the same as the ICR. However, the two may differ in some circumstances. For ratings below 'B-', see "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings," published Oct. 1, 2012, as well as "Timeliness Of Payments: Grace Periods, Guarantees, And Use Of 'D' And 'SD' Ratings," published Oct. 24, 2013.
15. Issue credit ratings, including subordinate-lien debt, are determined based on our view of the ICR and the legal/covenant package, as more fully described in "Assigning Issue Credit Ratings Of Operating Entities," published May 20, 2015. Further information regarding our view of debt security and covenants is provided below.

## OVERALL FRAMEWORK FOR RATING MUNICIPAL UTILITIES

16. These criteria are used to assign credit ratings to utilities based on quantitative and qualitative analysis of a range of economic, financial, operational, management, and debt factors, including those related to environmental, social, and governance (ESG). The analytical framework is articulated around two major components: the enterprise risk profile and the financial risk profile. The enterprise and financial risk profile assessments are determined by combining (see chart 1) and then rounding to the whole number the weighted average of the individual factors. The anchor results from the combination of the enterprise and financial risk assessments as shown in table 1.

Table 1

**Determining The Anchor**

Enterprise risk profile	Financial risk profile					
	1	2	3	4	5	6
	Extremely strong	Very strong	Strong	Adequate	Vulnerable	Highly vulnerable
1 Extremely strong	aaa	aa+	aa-	a	bbb+/bbb	bb+/bb
2 Very strong	aa+	aa/aa-	a+	a-	bbb/bbb-	bb/bb-
3 Strong	aa-	a+	a	bbb+/bbb	bbb-/bb+	bb-
4 Adequate	a	a/a-	a-/bbb+	bbb/bbb-	bb	b+
5 Vulnerable	bbb+	bbb/bbb-	bbb-/bb+	bb	bb-	b
6 Highly vulnerable	bbb-	bb	bb-	b+	b	b-

1.The anchor results from the interaction between the enterprise and financial risk profile assessments. Potential adjustments to the anchor are noted in tables 31 and 32 including a holistic adjustment. 2. For ratings below 'B-', see "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings," published Oct. 1, 2012, as well as "S&P Global Ratings Definitions." 3. In certain cases, the anchor in table 1 contains two options for a given combination of enterprise and financial risk profile assessments. In those cases, we would use our expected view of the utility's future performance to determine which of the two anchors to use.

- 17. Where the enterprise and financial risk profiles contain subfactors, each factor and subfactor will be assessed on a numerical scale, with '1' being the strongest outcome, and '6' the weakest.
- 18. If the quantitative metric evaluating a particular factor falls at or near a cut-off point, we may assign the stronger assessment if trends are improving or we believe future metrics or attributes will improve, or weaken the assessment if trends are weakening or we believe future metrics or attributes will deteriorate.
- 19. The initial assessment for each factor may be adjusted based on qualitative factors that may be present or lacking for each characteristic or condition. Tables 4, 17, 19, 21, and 22 describe some of the most common qualitative factors that could adjust each of the respective initial assessments. The maximum net adjustment to the initial assessment is generally two points. For example, if the initial assessment is '3' and there are two favorable adjustments and one unfavorable adjustment identified, the final assessment for that factor would be '2.' The liquidity and reserves assessment, however, can be capped at '5' or worse regardless of the initial assessment.
- 20. The criteria also include various modifiers and caps (see tables 31 and 32) as well as the ability to raise or lower the anchor by one notch based on our holistic adjustment to establish the SACP. The ICR may be influenced by the rating on the U.S. or its associated country risk, as well as the assignment of issue credit ratings and use of subordinate-lien debt.

**ENTERPRISE RISK PROFILE ASSESSMENT**

- 21. The factors that are evaluated for the enterprise risk profile assessment are summarized in table 2. We combine these assessments to determine the initial enterprise risk profile assessment.

Table 2

## Description Of Enterprise Risk Profile Factors

### Economic fundamentals (45% of enterprise risk profile assessment)

Economic fundamentals measure the strength of the utility's service area economy, including the utility's demographics; trends related to the customer base; and how crucial the utility's principal customers are to operating revenues.

### Industry risk (20%)

The industry risk evaluation aims to evaluate the external environment in which municipal utilities operate and its relevant characteristics, including cyclical, competitive risk, and growth environment.

### Market position (25%)

The market position measures the relative affordability of utility rates given the income indicators and relative poverty of the service area, as well as comparability of rates with those of peers in the region or state.

### Operational Management Assessment (OMA; 10%)

The OMA evaluates our view of the effectiveness of utility management in ensuring that there is alignment of operational, environmental, strategic, and financial goals to support the system's success.

22. The descriptors of outcomes for the overall enterprise risk profile are based on the scale shown in table 3. The criteria do not round to a whole number until arriving at a final enterprise risk profile.

Table 3

## Descriptors For Enterprise Risk Profile Factors

Assessment	Description
1	Extremely strong
2	Very strong
3	Strong
4	Adequate
5	Vulnerable
6	Highly vulnerable

## FACTORS THAT AFFECT THE ENTERPRISE RISK PROFILE

### Assessing economic fundamentals

23. The assessment of economic fundamentals provides insight into the employment, socioeconomic, and demographic environment in which the utility operates as well as the health of the service area economy relative to that of the U.S. as a whole.
24. The assessment of economic fundamentals is based on two measures: median household effective buying income (MHHEBI) of the service area as a percentage of the U.S. and the trend in economic output of the service area, as measured by its real (inflation-adjusted) gross county product. If the service area spans multiple counties, these criteria pro rate the metrics based on the estimated population in each county as a percent of the total service area population.
25. The two components are combined (see table 4) to determine an initial economic fundamentals assessment. Positive and negative qualitative factors are then evaluated for applicability to achieve the final economic fundamentals assessment. The cumulative net effect of all

adjustments is limited to an improvement or worsening of two points to the initial assessment.

Table 4

**Assessment Of Economic Fundamentals**

Current median household effective buying income (% of U.S.)	Real gross county product, relative rate of change last two years, plus projected next two years*		
	Stronger than U.S. rate of GDP annual growth by 1% or more	Within +/- 1% of U.S. rate of GDP annual growth	Weaker than U.S. rate of GDP annual growth by 1% or more
125% or more	1	1	2
100%-125%	1	2	3
75%-100%	2	3	4
35%-75%	3	4	5
35% or lower	4	5	6

**Examples of qualitative factors positively affecting the initial assessment include:**

Efficiencies and natural economies of scale associated with being a larger utility.

Broad and diverse employment base, or ratepayers living in the service area have access to such a base.

Unique key local employer, such as a university or military base, that serves to stabilize the economy, even if skewing income indicators unfavorably.

**Examples of qualitative factors negatively affecting the initial assessment include:**

Unemployment rate of the county of 10% or worse.

A steadily declining population, or dependent population of more than 55%. These social capital issues typically indicate an outsized percentage of the population that is not part of the labor force and may therefore have heightened sensitivities to utility bill affordability concerns.

The lack of efficiencies and natural economies of scale because the utility is smaller.

Employment sector concentration, or inauspicious prospects exist for a key major local employer within the next 36 months.

The 10 largest customers account for 25% or more of operating revenues, or the top one is 10% or more.

Each applicable qualitative factor changes the initial assessment by one point (with the exception of the economies of scale adjustor, which can result in a one-half point change), but the net total of all adjustments would generally improve or worsen the initial assessment by no more than two points. \*For example, if the base/current year is Y0, the time period examined would be Y0-1 (actual, full-year); Y0 (annualized estimate); Y0+1 (forecast) and Y0+2 (forecast).

- 26. For service areas in which there are no specific MHHEBI data available, the data from the next-largest measurable geographic unit will be used. For example, if the service area is that of a small unincorporated portion of a county and if those data are not available, the MHHEBI of that county will be used. An exception could be if there is clear evidence that the service area incomes and macroeconomic trends are materially and measurably different from the geographical unit at large, in which case we will use the best available data. Certain natural operating efficiencies and economies of scale are often present in larger utilities. Examples may include physical redundancies or the ability to spread fixed costs over a greater number of gallons sold or solid waste transported, processed, or buried. These criteria define a utility's size based on average

annual gross operating revenues of the three most recent audited fiscal years. In our calculation of operating revenue, we may also include real or potential property tax revenue and the revenue of combined systems, such as electric and water revenues if the water/sewer utility is the predominant entity. Table 5 outlines the applicable adjuster that is combined with the result from table 4. Typically, we apply the simple average of the three years. However, should there be, in our view, a sustained trend indicating a divergence from the average, we will generally assign a stronger assessment if revenues are increasing, or we believe they will increase. A weaker assessment generally is assigned if revenue trends are weakening, or we believe they will decline.

27. Drainage-only utilities are excluded from this adjuster, as we believe they have inherently lower operating risk and usually smaller revenues by their nature. Irrigation districts are addressed separately below.

Table 5

### Economies Of Scale Qualitative Factor

Total operating revenues (mil. \$)	Change to initial assessment
More than 150	(1.0)
Between 75 and 150	(0.5)
Between 25 and 75	0
Between 5 and 25	0.5
Less than 5	1

28. Solid waste systems tend to be smaller, on average, relative to other utilities. When the negative characteristic associated with smaller size, reflected in relatively lower operating revenue, is offset by comparably better efficiency due to a system's affiliation with a larger family of systems (such as water and sewer), it may partially or fully offset an initial negative assessment but will not result in an assessment better than neutral ('0' in table 5).
29. We assess whether the utility's service area participates in a larger, broad, and diversified economy at the federally defined metropolitan statistical area (MSA) level. The determination is based on an evaluation of employment diversity, employment growth, and the employment base. Participation in a strong MSA would generally lead to a one-point improvement in the initial assessment. Conversely, no adjustment would be applied if we deem the MSA as weak or if the service area is not within a defined MSA. If the MSA is described as moderate, applying the broad and diverse positive adjustment may still be applicable if the macroeconomic trends of the MSA and our expectations for future performance in the next two years are reasonably likely to cause existing metrics to improve.
30. The diversification of the utility's service area's economic structure is important to assess the potential volatility of its employment base and its resilience to stresses. An example of a deep, broad, and well-diversified economy would be employment-sector distribution that closely resembles that of the U.S. at large. This depth and diversity could lessen the impact on the utility's operating revenues better than an economy with more exposure to a single employer or industry, or only a few employment sectors. A small and concentrated, or shallow economic base also tends to be more exposed to external factors and macroeconomic cycles.
31. If employment in an individual sector--excluding education and health; government; and transportation, trade, and utilities--represents more than 30% of the nonfarm employment base, the local economy is deemed to be highly susceptible to that employment sector. Therefore, a one-point weakening of the assessment would be applied. An example would be a small town that does not participate in an MSA and has a major manufacturing component in the local labor force.

32. Regardless of the employment sector or nature of its business, if a major local employer has publicly announced that within the next 36 months it will reduce or completely shutter operations within the service area or we expect it to do so, a one-point unfavorable adjustment would be warranted.
33. If we determine there is not a broad and diverse economy, the presence of a major employer can still sometimes act as a stabilizing force, possibly even adding context to lower income indicators. In such a case, a favorable adjustment of one point may be applied. Examples of major employers include higher education institutions; health care facilities; military installations; or even, more rarely, a large and stable corporate presence. Employment and customer base characteristics typically have a close correlation with a utility's operating revenues. If a small number of customers provide a large amount of revenues, the utility could be exposed to revenue volatility. Therefore, when the top 10 customers contribute 25% or more of total operating revenues, or the top customer accounts for 10% or more of total operating revenues, the assessment is weakened by one point.
34. For irrigation districts and comparable raw-water providers for which the end-use customer is agriculture or agriculture-related--such as ranches or dairy farms--MHHEBI and relative economic performance are less meaningful. These economies commonly have inherent limitations given the dominance of farming in the local economy, and non-municipal consumptive use patterns. Therefore, for these issuers, our default initial economic fundamentals assessment is '3', although negative, but not positive, qualitative factors that adjust the initial assessment could still be applicable.

### Assessing industry risk

35. Consistent with "Methodology: Industry Risk," published Nov. 19, 2013, we consider industry risk for water and sewer utilities covered under these criteria based on a scale of '1' to '6' with '1' being the strongest. The industry risk assessment applies to all entities rated under these criteria regardless of the state in which they operate. We generally consider the industry risk for water and sewer utilities, including irrigation districts but excluding solid waste systems, as very low, the most favorable assessment possible. We derive the industry risk assessment based on a (2) low risk cyclical risk and a (1) low competitive risk and growth assessment based on the following characteristics of the water and sewer utilities industry as relevant to the industry risk factors:
- Cyclical risk assessment of '2' based on S&P Global Ratings' review of historical economic cycles and peak-to-trough changes in revenues and margins for regulated utilities. Economic cycles can affect nonrecurring revenues such as impact fees and spur priorities in the capital improvement plan (CIP) but weather, not the economy, is generally the largest single determinant of a favorable or unfavorable variance to budget in any single fiscal year; and
  - Very low competitive risk of '1', owing to legal and practical barriers to entry in almost all jurisdictions, and that as an essential service there is no substitution risk.
36. For solid waste systems, we consider the industry risk assessment as low, which equates to '2', or very strong, on the six-point scale we use for these criteria. We derive the industry risk assessment from the (2) low risk cyclical risk assessment and (2) low competitive risk and growth assessment and characteristic of:
- Cyclical risk assessment of '2' based on S&P Global Ratings' review of historical economic cycles and peak-to-trough changes in revenues and margins for environmental services;
  - Economic cycles can spur priorities in the CIP. Population and business growth are generally the largest determinants of a favorable or unfavorable variance to budget in any single fiscal

year; and

- Low competitive risk of '2', owing to legal and practical barriers to entry in almost all jurisdictions. However, while solid waste systems are an essential service, there is some substitution risk. Solid waste systems' peer industry is environmental services, as described in our industry risk criteria. This reflects both the slightly lower, although still high, essentiality of solid waste services, as well as the breadth of issuers in scope, ranging from traditional carting to recycling services.

37. Although uncommon, limitations on rate autonomy would likely be measured elsewhere, such as in financial performance if the timeliness and magnitude of requested versus granted rate cases leads to deterioration in credit quality.

### Assessing market position

38. The relative poverty rate is an important social credit factor because service areas that have not just lower MHHEBI levels, but disproportionately higher percentages of the population located in the lowest quintiles of the MHHEBI distribution curve, may exhibit greater sensitivity to perceived affordability even if adjusted for low inflation or a favorable cost of living. Therefore, it is possible that the impact of utility bills and related rate increases is even more profound in those communities compared with communities with stronger economic fundamentals.
39. For water and sewer utilities, consumption patterns are based mainly on climate, precipitation, use of demand-side management and water conservation measures, and economic factors. In addition, solid waste system disposal activity varies from region to region based mainly on population and business growth, use of demand-side management, recycling measures, and economic factors. The market position assessment is based on the actual average monthly residential water and sewer or solid waste bill. The information generally will be based on the most recent audited fiscal year, unless we believe that historical rates are not indicative of future rates. In those cases, we will base the assessment on projected rates.
40. There could be practical limitations to these calculations such as transparent and timely financial reporting and disclosure details, the sophistication of the utility's customer information system database, and the possibility that the utility may deem this information as competitively sensitive and nonpublic. For water and sewer utilities, if the actual average monthly water or sewer bill is not readily available, the market position assessment assumes a residential customer that in one month has used 6,000 gallons of both treated water and sanitary sewer service, conceptually similar to the Environmental Protection Agency's residential indicator. In cases where the utility's chosen unit of billing is measured in hundred cubic feet (ccf), the closest rounded equivalent of 8 ccf is used. For solid waste systems, a monthly household rate is based on estimates using tipping fees and a combination of available factors such as disposal capacity and house size. Any minimum, or base charge or "lifeline rate" is also included in the calculation, as are any related fees, surcharges, or taxes regardless of who is levying them, since the burden ultimately still lays with the customer to pay it.
41. To gauge the annual utility burden on the household, the assumed monthly bill, as calculated above, is multiplied by 12 to estimate the total annual cost to the household for utility service.
42. Relative rate affordability is calculated by dividing as follows: in the numerator is the annual household utility burden as calculated above, and in the denominator the actual MHHEBI of the service area of the utility (or the closest approximation), then multiplied by 100. This produces the cost to the household of its utility expense as a percentage of total disposable income.
43. For irrigation districts, the customer base is primarily farms in agricultural production rather than

residential customers that rely on the system for essential public health needs, and in this context, poverty rates do not apply. However, the pricing power of many irrigation districts is constrained by the more elastic demand for water from these businesses, and in many cases the availability of alternative supply sources, such as groundwater produced from privately owned wells. Therefore, for these issuers, the default initial market position assessment is '3', although negative, but not positive, qualitative factors that adjust the initial assessment could still be applicable should they, in our view, affect the system's revenue-raising flexibility.

- 44. For drainage utilities rated under these criteria, rate structures tend to be exclusively either one of two types:
  - A flat monthly charge tied to a residential property as the base unit of billing, with larger properties or parcels assessed as if they were equivalent to multiple residential properties. For example, a strip mall may be treated for billing purposes as if it were five equivalent residential units. For those utilities whose charges are based on a flat fee, we assume the fee assessed to a single-family residential property; or
  - A fee based on the actual impervious surface area of the property. S&P Global Ratings' assumption for the monthly bill is based on a residential property. For those utilities whose charges are based on impervious surface area rather than a flat fee, we assume 2,000 square feet of impervious surface area.
- 45. Tables 6, 7, and 8 summarize how the criteria evaluate the market position of the utility, driven by the rate affordability and relative poverty rate. Table 6 applies to water, drainage, or solid waste systems. Table 7 applies to sewer-only utilities. Table 8 applies to water and sewer/drainage utilities. Positive and negative qualitative factors are then evaluated for applicability to achieve the final market position assessment. The cumulative net effect of all adjustments is limited to an improvement or weakening of two points to the initial assessment.

Table 6

**Market Position Assessment, Water-Only, Drainage-Only, Or Solid Waste Systems**

Percentage of county's population living in poverty	Annual utility bill as a percentage of median household effective buying income		
	Less than 1%	1%-2%	More than 2%
Less than 10%	1	2	3
10%-20%	2	3	4
20%-30%	3	4	5
More than 30%	4	5	6

For utilities with an initial assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the initial assessment may generally improve by one point.



Table 7

**Market Position Assessment, Sewer-Only Utilities**

Percent of county's population living in poverty	Annual utility bill as a percentage of median household effective buying income		
	Less than 1.25%	1.25%-2.5%	More than 2.5%
Less than 10%	1	2	3
10%-20%	2	3	4
20%-30%	3	4	5
More than 30%	4	5	6

For utilities with an initial assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the initial assessment may generally improve by one point.

Table 8

**Market Position Assessment, Water And Sewer/Drainage Utilities**

Percent of county's population living in poverty	Annual utility bill as a percentage of median household effective buying income		
	Less than 2.25%	2.25%-4.5%	More than 4.5%
Less than 10%	1	2	3
10%-20%	2	3	4
20%-30%	3	4	5
More than 30%	4	5	6

For utilities with an initial assessment of 5 or 6 that have recently completed or achieved substantial completion of a historically capital-intensive period, the initial assessment may generally improve by one point.

- 46. Rate affordability without context may under- or over-represent credit strengths. For example, a utility with rates much higher than those of comparable issuers that has already made the capital commitments to address a regulatory mandate driven by past noncompliance with environmental permits would be viewed more favorably than a utility with similarly high rates but that is facing a huge unfunded regulatory mandate. For utilities that have relatively high rates--as defined by an initial assessment of '5' or '6'--but have recently completed or substantially completed an extraordinarily capital-intensive period, the initial market position assessment generally will be improved by one point.
- 47. The criteria do not establish a preference for a particular water and sewer or solid waste rate structure. For example, management may use a flat or fixed rate, volume-based rates, or some combination thereof. We view positively rate structures that allow for cost recovery and stability. In contrast, for solid waste systems, an example of a negative adjustment of typically one point could be applied when a solid waste system relies on flow control ordinances.

**Assessing operational risk management**

- 48. The OMA consists of a review of the following subfactors, assessed from (1) strong; (2) good; (3) standard; to (4) vulnerable and weighted as shown below to calculate the OMA:
  - Asset adequacy and identification of operational risks (40%);

- Organizational effectiveness, management expertise, drought management, or volume variation risk plan, as applicable (20%); and
- Rate-setting practices (40%).

49. The OMA refers to risks associated with the operation of the utility; financial policy is covered by the FMA. For combined utilities where retail electric is a significant component of revenues, we also reference the retail electric criteria, "U.S. Municipal Retail Electric and Gas Utilities: Methodology and Assumptions," published Sept. 27, 2018.
50. The results from the observed evaluations are converted to a '1' to '6' scale as shown in table 9.

Table 9

**Operational Management Assessment (OMA) Conversion To Six-Point Scale**

Observed evaluation	OMA	Characterization
1.0-1.2	1	Strong
1.2-1.8	2	Good
1.8-2.5	3	Good
2.5-3.1	4	Standard
3.1-3.6	5	Standard
3.6-4.0	6	Vulnerable

51. The assessment of all subfactors is based on a preponderance of evidence. A utility receives a neutral assessment of standard for any subfactors for which there is insufficient evidence to assign either a positive or negative assessment. However, some subfactors may receive a negative assessment if a utility has a record of failing to disclose key relevant information.
52. There is no favored governance structure for the utility within the criteria. Some municipal utilities are a department or component unit of the local political subdivision, governed by the same locally elected officials as the LRG. Other utilities are governed by an independent or quasi-independent board. The governance structure will be credit-neutral so long as there is demonstration of the ability for management to operate the utility as an ongoing, viable enterprise, largely independent from politics, with professionals who are capably engaged in risk oversight and can balance interests appropriately.
53. Compliance with environmental regulations to ensure public health and safety is one of the basic purposes of a utility. Asset adequacy and identification of operational risks examines how successfully management is faring by owning and operating a public water, sewer, drainage enterprise, or solid waste system (table 11). Water and sewer utilities are subject to federal, state, and municipal regulations and permitting requirements (table 10). However, all utilities may be in various degrees of compliance or readiness. Examples include a long-term water supply that is appropriate in both quantity and quality to serve the existing and likely future customer base, or treatment capacity that is sufficient to meet average and peak day demand. Maintenance of existing assets, including climate resilience, is also a significant component of asset adequacy. Also assessed in this subfactor is the materiality of nonrevenue water.

Table 10

### Asset Adequacy And Identification Of Operational Risks Assessment for Water, Sewer, And Drainage Systems

Strong	The utility has in place or is in the process of securing a raw-water supply that is reasonably projected to be sufficient through the life of the bonds. The integrity of the distribution and/or collection system, meters, and raw-water delivery assets is strong, or efforts are ongoing to rehabilitate them. Treatment capacity to meet average and peak day demand is sufficient in virtually every circumstance. Climate risk assessment is incorporated into planning and operations as a potential risk to the system. Water audits based on industry-accepted performance standards are incorporated into the annual budget such that nonrevenue water physical and economic losses are not material. A thorough vulnerability assessment across all critical assets has been performed to industry standards and been completed and incorporated into operations as much as reasonably possible.
Good	The existing raw-water supply is sufficient for the current customer base. The utility may need to enhance the supply sometime beyond the next 20 years, depending on growth and climatology/hydrology, but management has identified this risk in its long-term plans. Inflow, infiltration, and/or raw-water delivery are generally not problematic, or efforts are ongoing to rehabilitate them. Treatment capacity to meet average and peak day demand or flow is sufficient with only rare exceptions. Climate risk assessment is addressed in some key areas, such as supply planning or flood protection. Water audits based on industry-accepted performance standards are done on a regular, if not annual, basis such that nonrevenue water physical and economic losses are small. A vulnerability assessment has been completed to industry standards in most key areas and incorporated where management most deems relevant.
Standard	The existing raw-water supply will likely need to be enhanced within the next 10-20 years, but options for addressing the need have not yet been identified or, if so, have not been fully priced. Inflow, infiltration, and/or raw-water delivery are pronounced but not yet material or are problematic but will be addressed within the current capital improvement plan. Treatment capacity to meet average day demand is sufficient, but peak day demand or wet weather flows create constraints until ongoing projects are completed. Climate risks are identified, but other priorities preclude any immediate actions. Water audits based on industry-accepted performance standards are done only when management deems them necessary, likely evidenced by nonrevenue water economic and physical losses that are material. A vulnerability assessment has been done, perhaps only partially or perhaps not in accordance with industry standards, and implementation has been either partial or not at all.
Vulnerable	The existing raw-water supply and/or treatment capacity cannot currently and consistently meet peak day demand or flows. The raw-water supply is subject to a high degree of regulation and/or litigation, which can quickly introduce long-term uncertainty. Inflow, infiltration, and/or raw-water delivery are problematic and material, or the utility is highly dependent on or susceptible to another water purveyor. Climate risk is not explicitly addressed either in plans or operations. Water audits based on industry-accepted performance standards are not done and nonrevenue water economic and physical losses are problematic. No vulnerability assessment has been done.

Table 11

### Asset Adequacy And Identification Of Operational Risks Assessment For Solid Waste Systems

Strong	The system has in place or is in the process of securing disposal capacity that is reasonably projected to be at least 25 years or more. The integrity of the distribution and/or collection system, transfer station, landfill, materials recovery facility, and/or resource recovery facility assets is strong, or efforts are ongoing to rehabilitate them. Treatment capacity to meet average and peak day demand is sufficient in virtually every circumstance. Climate risk assessment is incorporated into planning and operations as a potential risk to the system. Other potential risks to the system are identified and mitigated, including among others, waste flow diversions. Relationships with private haulers, where necessary, are amendable and nonlitigious. Postclosure costs, if applicable, are already being fully funded or plans are to fund them long before closure of the landfill. A thorough vulnerability assessment across all critical assets has been performed to industry standards and been completed and incorporated into operations.
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Table 11

**Asset Adequacy And Identification Of Operational Risks Assessment For Solid Waste Systems (cont.)**

Good	The existing disposal capacity is sufficient for the current customer base. The system may need to enhance the disposal useful life sometime beyond the next 20-25 years, depending on growth, but management has identified this risk in its long-term plans. Climate risk assessment is addressed in some key areas. Relationships with haulers have had one or more periods of strain; however, waste flow trends tend to be stable. Postclosure costs are being funded as needed with a reserve that is currently being funded from operating revenues. A vulnerability assessment has been completed in most key areas and incorporated where management most deems relevant.
Standard	The existing solid waste system operations will likely need to be enhanced within the next 10-20 years, but options for addressing the need have not yet been identified or, if so, have not been fully priced. Climate risks are identified, but other priorities preclude any immediate actions. Relationship with haulers shows signs of strain and waste flow trends have been erratic. Postclosure costs are not being reserved for but the system has indicated a willingness to fund them before the closure of the landfill. A vulnerability assessment has been done, but perhaps only partially or not in accordance with industry standards, and implementation has been either partial or not at all.
Vulnerable	The existing disposal capacity cannot currently and consistently meet daily demand. The relationship with haulers or other stakeholders is strained and litigious. The system's management relies upon flow control regulations to ensure waste flow trends. The system has no plans to deal with postclosure costs. It is highly dependent on/susceptible to another waste flow purveyor. Climate risk is not explicitly addressed either in plans or operations. No vulnerability assessment has been done. The municipality waste flow has been strained in the past, making it difficult to meet contractual obligations.

- 54. Organizational effectiveness informs our view of governance, management expertise, and risk mitigation through an assessment of policies and practices of key decision makers and staff. Examples include an evaluation of risks associated with cyber security, emergency preparedness, resource planning, drought management or volume variation, and succession planning (table 12). This subfactor also assesses how well utility leaders are able to convey the needs of the utility to external and internal stakeholders in a manner that is likely to allow the utility to maintain stability.

Table 12

**Organizational Effectiveness And Management Expertise**

Strong	Management communicates the utility's long-term needs and strategic goals, such as funding requirements, approval of crucial projects, and resource planning, to internal and external key officials on a regular, credible, and transparent basis, putting the utility in the best reasonable position for operational continuity. Examples might include ongoing public education campaigns, town halls, dedicated web sites, and social media. Management has considerable knowledge, experience, or a track record of success in operating all of the utility's key business units in an integrated fashion. Internal mentoring and succession plans are common. Management is able to put its strategic planning into practice; therefore, the utility is successful relative to peers. For water, sewer, and drainage utilities, it has its own drought management plan that details how much conservation it would seek depending on a drought's severity while still ensuring revenue requirements are met. For solid waste systems, there is a clear understanding of the composition of the municipality's waste flows and disposal resources.
Good	Public outreach and transparency is a common part of the organizational culture, even if not comprehensive across all key business units. Management has reasonable expertise and experience and has established pathways for succession and continuity where it can; therefore, operational surprises are rare. Management has a good track record of successfully converting strategic decisions into constructive action. For water, sewer, and drainage utilities, it has its own drought management plan that details how much conservation it would seek depending on a drought's severity although how it might meet its revenue requirements in such a scenario is uncertain.

Table 12

**Organizational Effectiveness And Management Expertise (cont.)**

Standard	Management depth or breadth is limited in some areas, such that the loss of key personnel would create, only temporarily, a learning curve for the new staff but not likely to measurably affect the utility for long. Public outreach is done generally only when necessary, often associated with a large or controversial project. Operational and financial strategies are generally aligned. For water, sewer, and drainage utilities, there is no drought management plan but does operate in a state with a clearly detailed plan that already exists.
Vulnerable	The utility relies on one or only a few key employees or perhaps relies on external consultants. Negative variances are not uncommon. The utility has a history of regulatory or legal infractions beyond an isolated episode or outside industry norms, which introduced an as-yet-unaddressed challenge. Operational and financial strategies may have had one or more major misalignments, limiting the ability to move forward on something important. For water, sewer, and drainage utilities, neither the utility nor the state in which it operates has an existing drought management plan, making resource sustainability as well as meeting financial obligations uncertain.

- 55. Most, but not all, utilities are monopolies with autonomy over their own rates. All have a mission of public health and safety, requiring continuously meeting regulatory standards and also implementing corrective actions when deficiencies occur, all of which spur the need to make adjustments to rates. If the utility is rate-regulated, the history of timeliness on rate cases and the magnitude of what was granted versus requested will be examined. The evaluation of rate-setting practices looks beyond magnitude or frequency of rate adjustments. Instead, we evaluate whether management has acted, in our opinion, in a manner generally supportive of credit quality when tough decisions have needed to be made. Such credibility can also aid community support when such increases are needed, and help protect future rate-making decisions from short-term political manipulation and decrease the potential for rate shock (table 13).

Table 13

**Rate-Setting Practice Assessment**

Strong	When rate increases have been needed, the decision-making body has been supportive and timely, even to the extent that multiyear, preapproved rate increases are common, if not standard. Financial decisions are prudent, in our view, rather than simply politically expedient and that could possibly be to the detriment of the utility's near-term financial health. Periodic rate studies (internal or external) are common.
Good	Rate considerations are done on a year-to-year planning horizon rather than over a long-term time frame, but generally are apolitically approved if and when necessary.
Standard	The rate covenant and/or additional bonds test are the de facto guide as to when rate adjustments are necessary, but that is still enough for the political decision makers to agree to a rate increase.
Vulnerable	Rate increases are often in reaction to a weakened financial position, including a technical default or some other legal covenant violation, even if the recent debt service payments were made on time and in full. There is clear evidence of recent political decisions to defer or downsize needed rate increases.

**Adjusting the initial enterprise risk profile assessment**

- 56. Table 14 outlines examples of situations where we would generally adjust the initial enterprise risk profile assessment. On an exceptional basis, there may be additional situations we have not yet observed that could also result in an adjustment to the initial enterprise risk profile assessment.

Table 14

**Examples Of Adjustments To The Initial Enterprise Risk Profile Assessment**

If	Then
Country risk assessment is '4', '5', or '6'.	Enterprise risk profile assessment generally would be capped at adequate, vulnerable, or highly vulnerable, respectively.

- 57. The relevant credit risks for utilities are also influenced by country-specific risks (see "Country Risk Assessments Methodology And Assumptions," published Nov. 19, 2013). Country risk is the risk an entity faces by having some of its operations or assets exposed to one or more countries. The country risk assessment is determined on a scale from '1' (very low risk) to '6' (very high risk). If the weighted-average country risk assessment is '3' or better, there is generally no positive or negative impact. However, if the country risk assessment were to weaken to '4' or worse, this could affect the enterprise risk profile assessment. Specifically, if the country risk assessment is '4', '5', or '6', the criteria generally assign an enterprise risk profile assessment of no better than adequate, vulnerable, or highly vulnerable, respectively.

**FINANCIAL RISK PROFILE ASSESSMENT**

- 58. The factors that are evaluated for the financial risk profile assessment are summarized in table 15. We combine these factors to determine the initial financial risk profile assessment.

Table 15

**Description Of Financial Risk Profile Factors**

**All-in coverage (40% of financial risk profile assessment)**

Analysis includes examination of historical and preferably generally accepted accounting principles (GAAP)-based results, the current financial condition of the utility, and projected scenarios for the next one to three fiscal years. The focus is on total financial capacity versus total revenue requirements.

**Liquidity and reserves (40%)**

This factor incorporates all lawfully available cash reserves and external working capital or liquidity sources, including bank lines in force within the life of any short-term obligations.

**Debt and liabilities (10%)**

This factor incorporates mainly quantitative, but also qualitative, analyses about not just the absolute measure of the utility's indebtedness but also the capacity to incur and support additional debt, especially in relation to maintaining any minimum financial metrics as covenanted to bondholders. Measurable liabilities such as pension and other postemployment benefits (OPEB) can lead to adjustments to this initial factor.

**Financial Management Assessment (FMA; 10%)**

Analysis includes an evaluation of ongoing management practices and policies that can be supportive of financial performance and continuity, as well as internal controls and reporting. Examples include establishing a minimum level of acceptable working capital, predictability of cash transfers from the utility system, and creating and perpetually updating a long-term financial forecast.

- 59. The descriptors for the overall financial risk profile are based on the scale in table 16.

Table 16

### Descriptors For Financial Risk Profile Factors

Description	Corresponding assessment
Extremely strong	1
Very strong	2
Strong	3
Adequate	4
Vulnerable	5
Highly vulnerable	6

60. These criteria use assessments derived from historical and projected financial performance. In most cases, the ratio calculations are based on the three most recent independently audited financial statements. Our analytical assessment of pro forma or projected data will be used for those ratios affected by additional debt issuance or funded from cash reserves, or when we believe that historical financial performance is not representative of expected future performance.
61. For all-in coverage or liquidity and reserve assessments that use multiple years of historical and projected data, each single year receives a preliminary assessment. The preliminary assessments from each applicable year are averaged together to derive one single assessment for that factor.

## FACTORS THAT AFFECT THE FINANCIAL RISK PROFILE

### Significant additional upcoming debt

62. If a utility has potentially sizable, but as yet unspecified, capital plans that could result in material additional debt and/or the use of reserves--including when there is or will be high levels of nondiscretionary capital funding, and we determine that such plans have a reasonable likelihood of occurrence but are not specific enough yet to determine pro forma or projected financial metrics--we generally will weaken the entire financial profile by one point. Compelling factors that would likely preserve credit quality include preapproved rate adjustments multiple years into the future, or an existing debt service schedule that allows for the new debt to be layered on in a manner that we believe is unlikely to worsen financial performance.

### Assessing all-in coverage

63. All-in coverage is our internally adjusted debt service coverage (DSC) metric that we believe best tracks the use of every dollar of utility operating revenues, regardless of lien position, accounting treatment, or ultimate purpose. It also incorporates recognition of fixed charges or costs, which we define as certain long-term recurring items that are debt-like in nature, even if legally treated as an operating expense. Vertically integrated utilities may not have any fixed costs. An example of a fixed cost would be the take-or-pay minimum payment to the utility's wholesale provider of treated water. Other examples of fixed costs would include rental expenses for a sale-leaseback arrangement, GO debt that we consider self-supporting debt, or other situations that reflect support of off-balance-sheet debt. An example of off-balance-sheet debt is when a related government issues GO debt that is supported by the utility's revenue. We will generally include this portion of the debt that is not supported by any alternative source of revenue in the utility's all-in coverage calculation. All-in coverage also excludes adjustments to fixed costs for small or

nonmaterial financing obligations such as a capital equipment lease for a vehicle or copy machine.

- 64. These criteria also look to total revenues less expenses (but excluding noncash items), even if the pledge to bondholders is based on gross operating revenues. This is because we assume that the utility must be a viable, ongoing, cash flow-positive enterprise.
- 65. We deem net transfers out that legally or by practice support debt service of another governmental fund as part of the denominator's self-supporting debt. Cash that does not truly leave the utility, such as a set-aside into a rate stabilization reserve or pay-as-you-go fund are not included as transfers out. Similarly, the application of a rate stabilization fund (RSF) or other cash on hand as a transfer in would not be included in the all-in coverage calculation, although we would note the presence and use of the RSF as a qualitative adjustment to the all-in coverage assessment.
- 66. The accounting treatments and even provisions in the bond documents vary; for example, transfers are usually a use of surplus net revenues, but sometimes may be treated as an operating expense. The criteria would treat recurring transfers as an operating expense. An annual transfer payment that is consistent in nature, such as one based on a percentage of operating revenues or a fixed dollar amount, is more predictable than one that is not defined and therefore could be as big as the general government decides it should be. For example, an all-in coverage calculation of less than 1x might suggest a net cash withdrawal from the utility fund. Table 17 summarizes the all-in coverage evaluation.
- 67. In cases where an unconditional take-or-pay minimum, capacity payment, or demand charge does not exist or is not explicit, we will impute what we believe to be a logical and reasonable equivalent for the purpose of calculating all-in coverage. We use the utility's relative contribution to its wholesaler provider's total operating revenues as the basis for the fixed-cost imputation. For example, if the utility being rated accounts for 15% of its wholesale provider's total annual operating revenues, and the wholesaler's total annual debt service payments are \$10 million, then \$1.5 million will be imputed as fixed costs for all-in coverage calculation purposes.

Table 17

**Assessment Of All-In Coverage**

Initial assessment	All-in coverage
1	1.60x or above
2	1.40x-1.60x
3	1.20x-1.40x
4	1.10x-1.20x
5	1.00x-1.10x
6	Below 1.00x

**Examples of qualitative factors positively affecting the initial assessment include:**

A significant portion of operating revenues have a high degree of certainty, such as from wholesale sales with take-or-pay minimums, even if those wholesale sales serve to depress total DSC due to cost-of-service rates.

The presence of an RSF that tempers revenue variability and helps ensure adequate fiscal resources during unexpected low revenue periods, so long as the use is infrequent and not offsetting structural budget deficiencies.

**Examples of qualitative factors negatively affecting the initial assessment include:**

A debt service schedule with large bullet maturities that introduces refinancing risk, or that makes it extremely likely the utility will need significant growth or large rate increases to meet future requirements, such as a deferral of principal repayment far into the future.



Table 17

**Assessment Of All-In Coverage (cont.)****Initial assessment****All-in coverage**

DSC that is reliant on new customer fees or nonrecurring nonoperating cash inflows just to achieve a ratio of at least 1x.

Exposure to interest-rate sensitivity via variable-rate debt that is enough to lead to a weaker initial assessment.

A material increase or anticipated increase in required pension or OPEB costs. In making this assessment, we consider risk of acceleration of pension and OPEB payments and likelihood of budgetary stress due to the increase in such payments.

For solid waste systems, the majority of the waste is delivered by the largest customer, generally measured by revenue or tonnage, and we believe that this level of concentration could negatively affect all-in coverage; the majority of revenues are not from tax assessments or collected as part of a combined utility bill and we believe the collection method has or will significantly affect the revenue collection rate; or there is a significant amount of revenue from spot market waste and recyclable sales.

Each applicable qualitative factor changes the initial assessment by one point, but the net total of all adjustments would generally improve or worsen the initial assessment by no more than two points.

68. Some utilities provide mostly retail service directly to the consumptive-use customer, but may also generate operating revenues via sales for resale, or wholesale sales. Wholesale sales are often at a cost-recovery rate with much smaller net operating margins, serving to depress total all-in coverage. For utilities that generally have between 20% and 49% of operating revenues coming from firm (contractual) wholesale sales, a one-point improvement in the all-in coverage assessment would be applied to put the depressed all-in coverage into better context.
69. The planned use of RSF or equivalent designated reserves from time to time could, analytically, temper measurable declines from a trend of stronger financial performance. However, recurring reliance on an RSF in lieu of other measures such as rate adjustments to address imbalances among revenues, expenses, and debt service can be evidence of credit weakness. Utilities that perform down to the level of permissive legal covenants, such as allowing the use of certain cash balances toward satisfying a rate covenant or additional bonds test and potentially creating a weak alignment between revenues and expenses, would see the initial assessment lowered by one point. This is especially true when actual performance indicates insufficient pledged revenues without the use of cash.
70. It is not uncommon for utilities to charge a one-time fee as new accounts are added to the customer base (exclusive of any deposit that may be required), often called a connection or impact fee. The all-in coverage ratio will be stressed by hypothetically removing these nonrecurring items from total revenues, to gauge a utility's relative dependence on these fees just to achieve sufficient financial performance. Such fees are strongest during periods of high growth in the number of accounts. While perhaps they are pledged revenues, impact fees can overstate revenues available for debt service. Conversely, a slowdown or cessation of such growth--especially if not expected by management--could create a precipitous drop in the utility's financial performance and expose vulnerability in the financial risk profile. Achieving a ratio of less than 1x solely from recurring revenues on a consistent basis indicates structural budgetary imbalance and generally would weaken the assessment by one point.
71. These criteria do not establish a guideline as to an allocation of variable-rate debt as a percentage of total long-term debt. However, if all-in coverage by our projections would change between one of the initial assessments to another in table 17 as a result of a change in interest rates, the all-in coverage assessment will reflect the lower/weaker of the two possible outcomes.

## Assessing liquidity and reserves

72. The liquidity and reserves analysis measure is days' cash available to the utility as well as the available reserves. As noted above in Assessing Economic Fundamentals for the enterprise risk profile assessment, size is also a factor in the utility's financial risk profile. A utility may have available reserves, for example, that are equivalent to a high days' cash number, yet these reserves may be nominally very small. Both days' cash and available reserves are evaluated based on table 18. The resultant preliminary evaluations are applied to table 19 to produce the initial liquidity and reserves assessment.
73. For example, a utility with \$1.2 million of cash on hand, which for this example equated to 74 days of operating expenses, would receive a '3' for the days' cash ratio, and a '4' for the available reserve levels, based on table 18. When each preliminary evaluation is applied to the matrix in table 19, the initial liquidity and reserves assessment would be at the intersection of (3, 4), or an assessment result of '4.' Qualitative factors, if any, would then be applied to improve or weaken the '4' to arrive at the final liquidity and reserves assessment.
74. The liquidity and reserves assessment is intended to measure how the utility's internal sources, such as cash reserves and cash flow generation, and external sources--namely undrawn capacity under committed lines of credit--provide the working capital to fund immediate needs on an ongoing basis. The undrawn, available portion of committed bank lines maturing beyond the next 12 months is included in available reserves when applying tables 18 and 19; draws are included as a liability in both long-term debt and, if due within the next 12 months, debt service calculations.
75. The liquidity analysis looks not only to cash and equivalents that are unrestricted or unassigned (that is, unencumbered by legally enforceable agreements and not earmarked for specific purposes) and immediately available, but also gives credit to reserves that are designated, but ultimately available, for any lawful purpose. Examples include renewal and replacement funds, RSF, or other similar set-aside (but not truly restricted) cash. The criteria make no distinction between reserves that can only be appropriated by action of the highest decision-making body, or reserves that can be appropriated by simple administrative action, so long as the reserves are ultimately lawfully available for any purpose regardless of the reporting entity's label on it as determined by GAAP. Issuers that do not use a GAAP basis of presentation, or for which the financial statements do not provide a transparent and explicit breakdown of cash, must provide details of their cash position.
76. Cash that we deem to be restricted--for example, a debt service payment to be made, customer deposits, a fiduciary responsibility like a pension or decommissioning fund, and unspent bond proceeds, or that is related to a posting of collateral, among other restrictions--will generally not be included in the analysis of liquidity. Any debt service reserve fund (DSRF) will also be excluded.
77. Intragovernmental borrowing sometimes occurs between the utility and its associated general government, or sometimes even between one division of the utility and another. Cash in other funds in most cases would not be used to calculate the liquidity ratios, since those other funds likely have their own operating requirements. If a utility pools its cash with other major operating funds or governmental units, only cash that is truly the utility's will be counted in the calculation.

Table 18

### Liquidity And Reserves Preliminary Evaluation

Preliminary assessment	Days' cash	Available reserves
1	Greater than 150	More than \$75 million
2	90-150	\$20 million-\$75 million

Table 18

**Liquidity And Reserves Preliminary Evaluation (cont.)**

Preliminary assessment	Days' cash	Available reserves
3	60-90	\$5 million-\$20 million
4	30-60	\$1 million-\$5 million
5	15-30	\$500,000-\$1 million
6	Less than 15	Less than \$500,000

Table 19

**Liquidity And Reserves Assessment**

Days' cash ratio, preliminary evaluation	Available reserves, preliminary evaluation					
	1	2	3	4	5	6
1	1	1	2	2	3	4
2	1	2	2	3	3	4
3	2	2	3	4	4	5
4	2	3	4	4	5	5
5	3	3	4	5	5	6
6	4	4	5	5	6	6

**Examples of qualitative factors positively affecting the initial assessment include:**

The utility is a distribution- and/or collection-only system with predictable wholesale costs, reducing the level of working capital the utility needs to maintain.

**Examples of qualitative factors negatively affecting the initial assessment include:**

Liquidity is skewed by seasonality or is otherwise not indicative of actual average daily working capital levels.

High refinancing risk over the next two-three years.

Exposure to contingent liabilities can cap this assessment at a '5' or a '6'.

For water, sewer, and drainage utilities, the lack of a "pass-through" component to the rate structure if the utility could face the potential of rapid volatility in operating costs, such as raw-water or commodity costs, implying the utility is using its own cash to subsidize changes in expenses.

For solid waste systems, those that contract out one or more operational responsibilities and we believe that the systems are at risk for increases in contracts costs.

For solid waste systems, underfunding of a post-closure care cost fund when, in our view, the cost creates a near-term financial pressure.

Each applicable qualitative factor changes the initial assessment by one point, but the net total of all adjustments would generally improve or worsen the initial assessment by no more than two points unless an assessment cap of '5' or '6' is applicable.

78. In cases where the utility is a distribution- and/or collection-only system and off-balance-sheet obligations are predictable, the utility's working capital requirements, and therefore liquidity levels, may not need to be as high. In those cases, the liquidity and reserves assessment may be improved by one point.

79. As described in "Contingent Liquidity Risks," published March 5, 2012, contingent liabilities

correspond to explicit or implicit obligations that a utility may incur under certain circumstances. These risks could affect the utility's financial position if they materialize and if not otherwise offset by factors such as available liquidity, undrawn capacity under committed lines of credit, or market access. Furthermore, contingent liabilities might arise from a series of smaller risks that, by themselves, may not otherwise appear material, but could cascade in magnitude as proximity to the trigger or timing becomes less remote. These criteria measure both contingent liabilities as a percentage of total long-term debt, as well as available reserves that generally are legally available to mitigate some or all of the potential claims on the utility's available reserves.

80. For utilities assessed as '5' in our contingent liabilities assessment (table 20), the liquidity and reserves assessment is the lower of a one-point worsening of the initial assessment or a cap of '5'. For utilities whose contingent liabilities initial assessment results in '6', the liquidity and reserves assessment is capped at '6'. Any other result is not impactful to the liquidity and reserves assessment.

Table 20

### Contingent Liabilities Assessment

Available reserves/contingent liabilities (%)	Contingent liabilities/total long-term debt (%)					
	Less than 20	20-30	30-40	40-50	50-60	More than 60
Above 250	--	--	--	--	--	--
200-250	--	--	--	--	--	--
150-200	--	--	--	--	--	--
100-150	--	--	--	--	--	5
50-100	--	--	--	--	5	6
Below 50	--	--	--	5	6	6

### Assessing debt and liabilities

81. For the debt and liabilities assessment, we use debt to capitalization. In cases where the obligor uses securitization debt that meets S&P Global Ratings' criteria for enterprise securitization, see Appendix III.
82. The debt and liabilities assessment is summarized in table 21.

Table 21

### Assessment Of Debt And Liabilities

Initial assessment	Debt to capitalization
1	Up to 20%
2	20%-35%
3	35%-50%
4	50%-65%
5	65%-80%
6	Greater than 80%

Table 21

**Assessment Of Debt And Liabilities (cont.)**

Initial assessment	Debt to capitalization
<b>Examples of qualitative factors positively affecting the initial assessment include:</b>	
A relatively rapid roll-off of the long-term debt, with 65% or more coming due in 10 years or less, assuming there are no bullet maturities within that schedule that would realistically need to be refinanced. Total debt is not reduced by the presence of a DSRF.	
<b>Examples of qualitative factors negatively affecting the initial assessment include:</b>	
For solid waste systems, underfunding of a post-closure care cost fund when, in our view, the cost creates long-term financial pressure.	
An enterprise has large, unfunded defined-benefit pension plan and OPEB obligations. Our assessment includes a forward-looking view of the funding requirements and management’s plans to address such risks. We may make an adjustment if we consider these obligations sizable relative to the overall balance sheet and income statement. We believe a low pension funding ratio could signal elevated risks after incorporating the appropriateness of actuarial assumptions. Similarly, a negative adjustment is more likely to occur when pension contributions are not actuarially determined, based on weak actuarial methods, or when required contributions are not regularly funded. If the enterprise’s pension and OPEB are reported as part of a larger general government, we generally assume the enterprise’s funded ratio is the same, unless more specific information is available for the enterprise (that is, we may use the city’s pension funded ratio when assessing a city-owned and operated system if there is not specific information available).	
Each applicable qualitative factor changes the initial assessment by one point, but the net total of all adjustments would generally improve or worsen the initial assessment by no more than two points.	

**Assessing financial risk management**

- 83. S&P Global Ratings evaluates established and ongoing management practices and policies in the seven areas under control of management that are most likely to affect credit quality. The FMA, like the OMA, ranges from (1) strong; (2) good; (3) standard; or (4) vulnerable. These areas and their weights are:
  - Revenue and expense assumptions (10% of total FMA),
  - Budget monitoring and interim reporting (10%),
  - Long-term financial planning (15%),
  - Long-term capital planning and asset management (20%),
  - Investment and liquidity policies (20%),
  - Debt management policies (10%),
  - Transparency and accountability (15%).
- 84. To convert the FMA to a '1' to '6' scale, see table 22.

Table 22

**Financial Management Assessment (FMA) Conversion To Six-Pont Scale**

Observed evaluation	FMA	Characterization
1.0-1.2	1	Strong
1.2-1.8	2	Good

Table 22

**Financial Management Assessment (FMA) Conversion To Six-Pont Scale (cont.)**

Observed evaluation	FMA	Characterization
1.8-2.5	3	Good
2.5-3.1	4	Standard
3.1-3.6	5	Standard
3.6-4.0	6	Vulnerable

**Examples of qualitative factors negatively affecting the initial assessment include:**

Weak legal provisions when assigning issue credit ratings.

- 85. The ability of a utility's management team to implement measures on a timely basis that will, in our opinion, proactively shape the utility's financial and operating condition can be crucial to maintaining creditworthiness. The assessment looks at the environment in which financial decisions affecting the utility occur. For example, we would view favorably a utility that exhibits strong risk management aspects including asset management and prioritizing operational needs that are aligned with requisite financial resources and the support of the governing body.
- 86. This assessment is based on a preponderance of evidence. A utility receives a neutral assessment of standard for any subfactors for which there is insufficient evidence to assign either a positive or negative assessment. However, some subfactors may receive a negative assessment if a utility has a record of failing to disclose key relevant information.
- 87. By focusing on a utility's policies and practices, the FMA is not an evaluation of the competency or aptitude of individual finance professionals; nor is it an evaluation of management's ability to handle unique challenges. Moreover, the nature of the utility's governing body, the effectiveness of its governance practices, and issues of public policy involved in utility-related decisions are beyond the scope of this analysis. The FMA analyzes the environment in which financial decisions are made, including how both the ordinary and extraordinary are identified and addressed as relevant to the utility's ability to fund them and to what degree those risks are transparently reviewed and reported to ensure ongoing continuity. Financial results are assumed to manifest themselves in other visible ways and are addressed elsewhere in these criteria. The purpose of the focus on policies and practices is to evaluate the potential for credit quality to move away from what the results currently indicate.
- 88. Transparency and accountability in reporting, regardless of governance structure, is important in order to ascertain key quantitative data. States that require annual audited financial statements increase the likelihood that financial information will be available, and late audits will be noted. The use of GAAP usually enhances reporting detail and consistency across the sector, making it easier to have a sufficiently uniform method of interpretation. States that allow cash accounting tolerate a lower degree of completeness and consistency, and transparency suffers. We believe the review of alternative financings and exposure to contingencies is a key component in understanding the entirety of all the risks and revenue requirements to which the utility is exposed.
- 89. We believe that creditor security can be weakened without a minimum set of covenants that constrains the utility's behavior. If we view the utility's legal provisions as sufficiently weak, the initial FMA would generally be weakened by one point. We believe that in the municipal utility sector those minimums generally include the following covenants:
  - A rate covenant to maintain an annual DSCR of at least 1.0x or higher from recurring or ongoing

revenues. However, where indentures permit the utility to use cash balances to achieve rate covenants, whether the cash is in the form of a rate stabilization account or other available funds, we factor the use of such funds into the rating evaluation as specified above in Assessing All-In Coverage;

- An additional bonds test that places some limits on the amount of increased leverage that will otherwise impair the credit quality of the entity; and
- Provisions establishing remedies for when a rate covenant is violated, such as a review of the current rates.

90. In addition, when the liquidity and reserves assessment for existing rated utilities is '4' or weaker, we generally weaken the FMA by one point if there is no DSRF in an amount equivalent to at least half of the average annual debt service requirements. A DSRF typically provides immediately available supplemental liquidity in the event of pledged revenue insufficiency for the payment on the obligations then due.

- We generally would not recognize the utility as having a DSRF at all if it is only conditionally funded, such as a so-called "springing" DSRF. In such cases, this is, in our view, associated with conditions likely to occur at a time when the utility is least able to afford additional demands on its cash flow.
- A DSRF may be satisfied with an unconditional surety policy or similar arrangement with another financial counterparty. If we believe that the counterparty would be unable to provide funding for the DSRF in a stress scenario, and the counterparty could not be easily replaced on a timely basis, we typically would not recognize the utility as having a DSRF.

91. The following tables detail each of the seven financial practice areas examined by the FMA.

92. The revenue and expense assumptions assessment evaluates if the organization's financial assumptions that support the annual budget and any financial forecast are realistic and well grounded from both long-term and recent trend perspectives.

Table 23

**Revenue And Expense Assumptions Assessment**

Strong	Weather-normalized, formal historical trend analysis is performed and updated annually for both revenue and expenses; regular effort is made to determine whether one or more factors will cause revenues or expenses to deviate from their long-term trends over the next few years.
Good	Assumptions for most key line items in pro forma reports are analyzed and updated regularly, while others may assume simplistic changes over time such as linear or inflationary growth or flat from year to year.
Standard	Optimistic assumptions exist that, while supportable, add risk; assumptions are based on recent performance, but little evidence of questioning or validating assumptions exists.
Vulnerable	Assumptions neglect likely shortfalls, expense pressures, or other pending issues; assumptions lack prudent validation.

93. The evaluation of budget monitoring and interim reporting examines how, if at all, management reconciles year-to-date progress versus the budget adopted at the beginning of the fiscal year. This component evaluates if there are procedures for reviewing the budget based on updated information and actual-to-date performance to ensure fiscal targets and revenue requirements are met, and to what degree the interim reporting is disclosed.

Table 24

### Budget Monitoring And Interim Reporting Assessment

Strong	At least quarterly budget surveillance is maintained to identify problem areas, which are publicly report to the system's governing body.
Good	Semiannual budget reviews exist; management identifies causes for variances between budget and actual performance and reports them to the system's governing body.
Standard	A deviation from the budget is only reported because it has occurred; material variances between budget and actual performance are identified after they have occurred but not captured in projections for the remainder of the fiscal period.
Vulnerable	No formal process exists for regular review and timely updating of budget during the year.

94. The long-term financial planning assessment focuses on whether or not a financial forecast exists, the length of the planning horizon, and if it includes a comprehensive identification of all reasonably likely upcoming revenue requirements to determine how the utility will meet them, such as adjusting rates or implementing cost-containment measures.

Table 25

### Long-Term Financial Planning Assessment

Strong	A regularly updated pro forma financial projection exists with a planning horizon of at least three years beyond the current budget year. The forecast includes future impacts onto operating and maintenance (O&M) expenses and total financing obligations--both existing and probable--are identified. Impacts to rates or the ability to generate appropriate levels of pledged revenues through cost containment measures, for example, are clear. Planned use of designated cash reserves may occur infrequently, but structural balance is a clear goal.
Good	Pro forma projections exist and are comprehensive as described for a strong assessment, but are typically over a planning horizon of no more than the upcoming budget year plus one-two years into the future.
Standard	Multiyear projections are done but not updated until the last year of the current forecast. Multiyear projections are done, but with focus only on existing revenue requirements and exclude debt financing that is likely to be issued within the planning horizon, or ignore looming infrastructure investment needs such as growth or regulatory mandates.
Vulnerable	No long-term financial planning exists; O&M planning is done on a year-to-year (or budget-to-budget) basis. Near-term challenges are met with short-term fixes.

95. The asset management and long-term capital planning subfactor assesses if a CIP exists, the length of the planning horizon, how and why projects make the list, and a summary of the most likely funding sources for the identified projects.

Table 26

### Asset Management And Long-Term Planning Assessment

Strong	Strategic and comprehensive planning focusing on the utility's infrastructure requirements, physical and other assets, and ability to continue to meet service levels is combined with likely sources of funding for identified projects; the plan and its priorities are regularly updated and transparently communicated. A characterization of strong will include planning not only the current budget year but also for at least five years beyond that.
Good	A comprehensive multiyear capital improvement program exists as described for a strong assessment but the planning horizon is less than five years.
Standard	The current-year capital expenditures are identified in the budget, but any future projects are currently nothing more than a wish list; a multiyear capital plan exists but funding sources are unclear or absent.



Table 26

**Asset Management And Long-Term Planning Assessment (cont.)**

Vulnerable	Capital planning is done as needs arise, but no more frequently than on a year-to-year (or budget-to-budget) basis.
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96. Seasonal cash flow needs, capital requirements, unbudgeted or unanticipated items, and contingency hedges all suggest at least some level of working capital cushion to be maintained. The investments and liquidity policies assessment evaluates if management has identified preferred cash reserves by way of an adopted policy or even a target. Liquidity policies and targets must be grounded in reality; these criteria would not give credit for a liquidity policy if it is set at a level so far above current or recent financial performance that we would not view it as attainable. Furthermore, this subfactor identifies if there are locally adopted permitted investment guidelines, and if management reconciles and reports on cash and investments with any regularity.

Table 27

**Investment And Liquidity Policies Assessment**

Strong	The utility has embedded policies on the maintenance of minimum reserves, regardless of whether such reserves are deemed by management to be unrestricted or designated yet available for any lawful purpose; the policies are reflective of realistically attainable and sustainable levels. Permitted investments guidelines or policies exist, even if the utility's policies reflect or even mimic the state's policies. Reports on the utility's investment portfolio are prepared and reported to the utility's governing body at least quarterly.
Good	Targets for reserve levels exist by practice, are tied to meaningful levels, and are generally met or exceeded. While the utility's de facto cash management guidelines may defer to the state's permitted investment statutes, no local policy exists. The utility's management reports on its investments at least semiannually to its governing body.
Standard	Management has a target for a preferred level of cash reserves but it seems to be unrealistic given financial performance, or is so newly defined that it may be many years before such reserves are accumulated. Informal or nonpublished investment policies exist, are tracked by administrative staff but only irregularly or at the end of the fiscal year.
Vulnerable	Absence of informal reserve policies; even if they exist, they have been suspended or ignored. Weakness in cash flow adequacy has resulted in a greater appetite for risk in its investments. Investments are monitored irregularly and an external auditor deems there to be weakness or risk in cash handling and monitoring duties.

97. The debt management assessment evaluates if the utility has in place robust guidelines on the use of debt, excluding any covenant already established in its legal provisions. Examples include minimum savings thresholds for refunding bonds; stated preferences regarding final maturity, structure, and overall tenor of its debt, and the use of variable-rate debt, derivative products, floating-rate notes, or direct placement arrangements. If the debt instrument requires a financial institution counterpart, this assessment looks to any policies the utility may have regarding counterparty risk.

Table 28

**Debt Management Policies Assessment**

Strong	Debt policies exist and are thorough and well-defined, even if they reflect or mimic state statutes. These policies are widely communicated and followed. While management has a general tendency toward risk-aversion, robust policies and sophistication among key finance officials make it likely that debt instruments that may require heightened levels of monitoring will make surprises a remote occurrence.
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Table 28

**Debt Management Policies Assessment (cont.)**

Good	Policies exist but may not address some key areas. In the absence of policies, management defers to state statutes that themselves are strong; some of the utility’s financing obligations may be of the type that require a heightened level of monitoring, and management has some reliance on external consultants to help ensure remoteness of risks associated with those particular debt instruments.
Standard	Legal provisions and state laws are the sole guiding influences on management’s use of and attitudes toward debt, or any internal guidelines are not meaningful beyond very basic or minimum debt management or are identified as unwritten goals.
Vulnerable	Absence of basic policies or clear evidence that basic policies are not being followed. Nontraditional financing options are utilized but there is no internalized knowledge, or utility management relies very heavily on consultants to monitor or manage the risk.

- 98. The transparency and accountability subfactor assesses whether or not management has established the independent review of important financial and operational data as well as the quality, regularity, and timeliness of its continuing disclosure practices, even for things that the utility may not be legally required to disclose. Even with annual audited financial statements produced according to GAAP, nonpublic disclosure of an alternative financing such as a direct-placement arrangement would result in an assessment of vulnerable for this subfactor.

Table 29

**Transparency And Accountability Assessment**

Strong	Management produces annual independently audited financial statements that comply with GAAP. Alternative financings and exposure to contingent risks are voluntarily disclosed as they are entered into, and overall continuing disclosure is deemed as robust and timely.
Good	Management produces annual independently audited financial statements that comply with GAAP. Alternative financings, exposure to contingent risks, and overall continuing disclosure are done, but generally only on an annual basis.
Standard	Management produces independently audited annual financial statements, but on a cash or other non-GAAP basis of presentation. Audits typically are released more than 180 days after fiscal year-end. The disclosure of alternative financings and contingent risk is not always timely but generally updated on an annual basis
Vulnerable	Management produces independently audited financial statements, but cash or other non-GAAP basis of presentation is permitted. Audits typically are late or not produced each year. Regardless of frequency and quality of the audited financial statements, alternative financings and contingent risk are not voluntarily disclosed or overall continuing disclosure is poor and not timely.

**Adjusting the initial financial risk profile assessment**

- 99. Table 30 outlines examples of situations where we would generally adjust the initial financial risk profile assessment. On an exceptional basis, there may be situations that haven't yet been observed that could result in an adjustment to the initial financial risk profile assessment.

Table 30

**Examples Of Adjustments To The Initial Financial Risk Profile Assessment**

If	Then
Total indebtedness is likely to increase substantially, but magnitude, scope, and timing are not fully defined.	Final financial risk profile assessment generally will be weakened by one point.

## RATING MODIFIERS AND CAPS

<sup>100</sup>. In certain conditions, the SACP may move a specified number of notches above or below the anchor. Other conditions place a specific cap on the SACP. Examples of these are outlined in table 31 and table 32. In cases when multiple modifiers and caps exist, we would generally adjust the anchor by the net effect of those conditions. In those cases, we typically consider entity-level modifiers and caps before we consider related government modifiers and caps. However, rating caps are absolute, meaning that positive relative adjustments, other than any holistic adjustment, do not allow ratings to exceed the cap. Depending on the severity of the condition, we could assign a rating below the cap. On an exceptional basis, there may be additional situations we have not yet observed that could also result in rating modifiers or caps.

Table 31

### Examples Of Modifiers That Generally Cap The SACP

Modifier/cap* that would generally:	Additional comments
<b>Cap the SACP in the 'a' category</b>	
Either the Operational or the Financial Management Assessment is vulnerable.	
<b>Cap the SACP in the 'bbb' category</b>	
Both the Operational and the Financial Management Assessments are vulnerable.	
There is a going concern opinion.	
Negative extraordinary intervention	SACP is generally capped at the lower of the 'bbb' category and the GO rating of the related government.
<b>Cap the SACP in the 'bb' category</b>	
Utility or its related government is recovering from a financial crisis, emerging out of a recent bankruptcy or receivership, or has significant consultant oversight following an event of default.	
Both the all-in coverage and liquidity and reserve assessments result in a '5' or weaker.	SACP is generally capped in the 'bb' category although if we view liquidity as especially vulnerable, the final rating would generally be capped in the 'b' category.
Either the Operational or the Financial Management Assessment is vulnerable and the liquidity and reserve assessment is a '5' or weaker.	
<b>Cap the SACP in the 'b' category</b>	
Both the Operational and Financial Management Assessment are vulnerable and the liquidity and reserve assessment is a '5' or weaker.	
Management demonstrates a lack of willingness to support financial obligations, or we believe the utility may be considering bankruptcy or receivership filing.	SACP on any rated debt not in default generally is capped at 'b' category.

\*Depending on the severity of the condition, we could assign a rating below the cap.

## EXAMPLES OF MODIFIERS THAT GENERALLY CAP THE SACP

### Weak management

101. The decentralized and autonomous nature of U.S. LRGs creates a stronger link between management and credit quality. In cases where either the operational management assessment (OMA) or the financial management assessment (FMA) is characterized as vulnerable, the SACP will generally be no higher than the 'a' category. In cases where both the OMA and FMA are characterized as vulnerable or if an auditor has delivered a going-concern opinion with the most recent review of the utility's or related government's financial position, the SACP will generally be no higher than the 'bbb' category.

### Emergence from bankruptcy or receivership

102. A water/sewer utility that has just emerged from bankruptcy or receivership or a period of consultant or governmental oversight, by definition, has just been in a period where the financial risk profile--and possibly the enterprise risk profile as well--is extremely weak. Although an issuer may emerge with an improved financial risk profile after debt forgiveness or other negotiated settlements or restructuring, or under a new management team, the SACP will generally be limited to the 'bb' category until the utility has re-established a two- or three-year record of audited financial performance, at which time we would re-evaluate it using that new financial history as part of the analysis.

### Negative extraordinary intervention

103. The line between what may be termed extraordinary and ongoing negative intervention is not always clear. However, examples of negative extraordinary intervention typically occur when the related government exhibits signs of financial weakness or uses various measures to divert resources from the utility. These measures affect the utility's ability to operate as a stand-alone system and may include cash stripping, increased transfers, withholding or delaying payments or appropriations, or adversely changing funding formulas, as a related government's needs rise. In such cases, the utility's SACP will generally be capped at the lower of the 'bbb' category and the GO debt rating of a related government.

### Weak total liquidity combined with weak all-in coverage

104. If the utility's all-in coverage as well as liquidity and reserves assessments are both '5' or worse, we will cap the SACP in the 'bb' category, although if we view liquidity as a weakness that cannot be rectified by other available resources, the rating would generally be no higher than the 'b' category. In our view, poor assessments on both these factors imply that the utility has no margin for error in any of its operating, debt service, or capital funds in the event of an unfavorable or unplanned variance to its annual budget.

### Weak management of liquidity and reserves

105. Strong management alone can lend itself to operational and fiscal continuity and can serve as a credit stabilizer. In addition, liquidity and reserves provide working capital, funding for unexpected

operational problems, and general budgetary flexibility. In contrast, as when the OMA or FMA is characterized as vulnerable and the liquidity and reserves assessment is '5' or higher, the SACP is generally capped in the 'bb' category. If both management assessments are characterized as vulnerable and the liquidity and reserves assessment is '5' or higher, the indicative and final ratings are generally capped at no higher than the 'b' category.

### Weak willingness or capacity to support financial obligations

106. If the utility's or sponsoring governmental entities' representatives take actions that indicate active consideration of bankruptcy in the near term, or if there is a perceived change in the willingness or lack of capacity to honor all long-term, legally binding financial obligations in full and on a timely basis, the indicative and final ratings will generally be capped in the 'b' category. If applicable, we would apply "Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings," published Oct. 1, 2012. Such a condition might be evidenced by way of conversations with management or governance, verifiable reports in the media, public disclosure, or other informational sources we judge to be relevant. The utility's issuer ratings would be 'D' or 'SD' following a default on an actual financial obligation, or in a distressed exchange.

## MODIFIERS THAT GENERALLY NOTCH FROM THE ANCHOR

Table 32

### Examples Of Modifiers

Modifier/cap* that would generally:	Additional comments
<b>Notch the anchor up</b>	
Median household effective buying income is among the top quintile of the U.S.	SACP generally will be one notch above that suggested by table 1.
Median household effective buying income is among the top 10% of the U.S.	SACP generally will be two notches above that suggested by table 1.
Utility benefits from tax levies.	SACP may be up to four notches higher than that suggested by table 1.
All-in coverage is at or above 3x or days' cash on hand is equivalent to at least 24 months of operating expenses.	SACP generally will be one notch above that suggested by table 1.
<b>Notch the anchor down</b>	
Median household effective buying income is among the lowest quintile of the U.S.	SACP generally will be one notch below that suggested by table 1.
Exceptional operational risk	SACP generally will be one or more notches below that suggested by table 1.
<b>Cap the enterprise risk profile or financial risk profile</b>	
U.S. country risk assessment of '4', '5', or '6'	Final enterprise risk profile assessment is generally capped at '4', '5', or '6'
Total indebtedness is likely to increase substantially, but magnitude, scope, and timing are not fully defined.	Final financial risk profile assessment generally will be weakened by one point.

\*Depending on the severity of the condition, we could assign a rating below the cap.

### Exceptionally strong or weak income indicators

107. Extremely favorable or unfavorable demographics--measured as well above or below the strongest or weakest initial assessments, respectively--could imply extraordinary flexibility or limitation in a utility's ability to enhance its operating revenues on an ongoing basis. MHHEBI at or above the highest quintile of distribution according to the U.S. Census Bureau's and Bureau of Labor Statistics' joint "Current Population Survey" would generally result in a one-notch rating uplift from the anchor. MHHEBI at or above the top 10% of all households would receive a two-notch rating uplift. MHHEBI in the lowest quintile in the U.S. would generally lower the SACP by one notch.

### Benefit from tax levies

108. The number of notches is generally determined by a combination of size and wealth of the district population to the extent that it differs from the economic fundamentals assessment, diversity of the tax base, growth rate of assessment base, significance of tax revenues to total revenues, capacity for increased tax levies (both legally and politically), and durability of the taxing authority. In general, higher notching benefits are applied to those utilities with a strong and growing tax base and where there is a willingness and ability to increase tax levies for operations.

### Exceptionally strong financial risk profile

109. We use the term exceptionally strong as defined specifically to mean: all-in coverage at or above 3x or days' cash on hand is equivalent to at least 24 months of operating expenses (without giving favor to an already-existing DSRF, and calculated consistent with our definition of days' cash). In such cases, the SACP will generally be one notch higher.

### Exceptional operational risk

110. Generally, the risk associated with value-added processes is captured in our analysis. Should there be, in our view, the presence of exceptional risk associated with the system's activities that is not captured fully in our credit analysis, we generally would lower the indicative rating. The amount of any downward notching would depend upon our assessment of the severity of the operational risk, but would typically be one notch, although in extraordinary cases it could be more.

## APPENDIX I: GLOSSARY OF KEY TERMS

111. In our criteria, "utility" refers to a municipally owned utility or other legally authorized political subdivision that provides raw and/or potable water, sanitary sewer, solid waste systems, and/or drainage services at the retail level, or with wholesale (sales for resale) service representing not more than 49% of total operating revenues. The utility is most often, but not always, an enterprise within a larger general government, or an independent utility with its own governing board.
112. "Sewer", "sanitary sewer", and "wastewater" are used as interchangeable terms. "Drainage", "stormwater", and "storm sewer" are used as interchangeable terms.
113. The following terms are based on the definitions provided in "Methodology: Definitions And Related Analytic Practices For Covenant And Payment Provisions In U.S. Public Finance Revenue

Obligations," published on Nov. 29, 2011:

114. **Actual average monthly residential bill.** The total annual residential operating revenues plus any related fees, surcharges and taxes divided by the number of active residential metered accounts. The result is divided by 12 to arrive at the monthly bill.
115. **All-in coverage.**  $[(\text{revenues} - \text{expenses} - \text{total net transfers out}) + \text{fixed costs}] / (\text{all revenue bond debt service} + \text{fixed costs} + \text{self-supporting debt service})$ . Total net transfers from the utility fund minus transfers into the utility fund, include among other things:
- Transfers that are viewed as general fund resources, such as a payment in lieu of taxes, indirect cost reimbursements, and open-ended transfers;
  - Transfers that reimburse the general fund for pension and OPEB payments the general fund made on behalf of utility employees and retirees;
  - Transfers that fund pay-as-you-go capital expenditures in another governmental fund; and
  - Transfers to support any other governmental operations regardless of the destination fund.
116. **Available reserves.** Unrestricted cash and equivalents plus any working capital that resides on the utility's balance sheet and is lawfully available for any purpose plus any undrawn capacity under committed lines of credit. Examples include emergency and contingency funds, rate stabilization reserves, and other cash that may be designated in purpose but not restricted for debt service, fiduciary purposes, or asset retirement obligations.
117. **Contingent liabilities.** Variable-rate demand bonds, commercial paper, bullet payments due within five years, bonds with mandatory tender dates in five years or less, direct bank debt with acceleration clauses, the potential for a wholesale provider to reallocate its costs to the utility in an unbudgeted or otherwise unpredictable manner or the obligation is not based on an availability payment structure, swap or related termination payments if the current rating is two notches or less from the termination trigger, and other identifiable contingencies.
118. **Days' cash.** A measure of cash, investments, and equivalents, calculated as follows:
- Numerator: Available reserves.
  - Denominator: 1/365th of income statement operating expenses. For operating expenses, depreciation, amortization, and other noncash items, such as those that update a fair value on a derivative or pension obligation, are excluded. Transfers are included in operating expenses.
119. **Debt to capitalization.** A measure of the relative leverage of the utility, as follows:
- Numerator: The sum total of all short- and long-term debt both on the utility's balance sheet and that is allocable to the utility, including draws on credit lines, commercial paper notes and other loans, debt or material obligations, even if not rated by S&P Global Ratings.
  - Denominator: The total debt as calculated in the numerator plus the utility's net position, which we view as public sector accounting's closest approximation of equity.
120. **Dependent population.** The total population of the service area that is younger than 15 years old plus the total population of the same area older than 65 years old.

121. **GAAP.** Generally accepted accounting principles are the common set of accounting principles, standards, and procedures that most governments and utilities in the U.S. follow.
122. **Nonrevenue water.** The sum total of leaks, water that is incorrectly billed (whether because of an inaccurate meter or human error), theft, unbilled, and unmetered water such as that which is used for fire protection or line flushing, and unbilled-but-metered water such as water provided to schools or churches that because of local policy is provided free of charge.
123. **Off-balance sheet.** An obligation for which the utility is legally responsible, but which may appear only in the rated utility's financial statement notes, or another entity's balance sheet, but not within the long-term debt of the rated utility itself.
124. **Other postemployment benefits.** Health care, along with dental, vision, disability, long-term care, and life insurance benefits offered to qualified retirees of the utility.
125. **Self-supporting debt.** Debt is considered self-supported if the debt issued by the related unit of government on behalf of the utility--such as a city issuing GO or priority-lien debt to fund projects for the betterment of its water system--is fully paid by practice from the utility's surplus net revenues. Full self-support means surplus net revenues must be at least as large as the principal and interest payments then-due on that tax-secured debt.
126. **Solid waste systems.** Municipal enterprises that include, generally, one or more of the following characteristics:
- Collection and transport of solid waste;
  - Intermediate handling of solid waste (transfer stations, waste-to-energy systems, material recovery facilities); and
  - Providing final disposal of solid waste (landfill services).

## APPENDIX II: AN OVERVIEW OF IRRIGATION DISTRICTS

127. Irrigation districts are special districts that share a broad range of common features with other water districts that we rate; however, certain credit characteristics are materially different and therefore affect our evaluation of credit quality. In contrast to water utilities that primarily provide water for municipal and industrial uses, irrigation districts often have operations that are limited to the production and distribution of water supply for agricultural purposes. Customers of these districts are predominantly farms of varying size for which the cost of water supply is one input into the production of agricultural goods ranging from cotton to almonds. In this context, the service area's income levels and unemployment rates are less meaningful, and we focus more broadly on the fact that the customer base is concentrated in a single industry--agriculture--that can be susceptible to unique risks from poor weather conditions such as drought and frost, or pests, which may materially affect the ability of customers to pay their bills on time and in full.
128. Operationally, irrigation districts often provide a supplemental source of supply rather than a primary source of supply for customers. District activity typically focuses on the distribution of raw water with no treatment required because customers use the water for agricultural production rather than potable consumption. Many, although not all, farms have private groundwater wells that serve as a source of supply, and the cost of water from this source is typically calculated based on the depth to groundwater in the aquifer, the electricity cost to operate pumps to extract groundwater, and a nominal allocation of maintenance expense for the pumps. We believe that the availability of an inexpensive alternative water supply materially constrains an irrigation district's



revenue-raising flexibility, since in the short term we expect that businesses will select the lowest cost of supply, all else being equal. Also, while irrigation districts often have some of the oldest established water rights to a given surface water source, others depend on contractual rights or permanent water rights to supply from large-scale water projects--such as the U.S. Bureau of Reclamation's Central Valley Project or the California State Water Project--that may be subject to allocation methodologies that prioritize supply for municipal uses over agricultural uses due to public health concerns.

129. We have observed that limitations on sources of supply during drought periods may result in volatile DSC patterns, including periods of insufficiency, that are generally inconsistent with the vast majority of rated water utilities and we view as a material credit weakness for this portion of the sector. Furthermore, while capital needs for irrigation districts are often limited to renewal and replacement of existing infrastructure, we have observed that irrigation districts may have unexpected and sizable capital needs for the acquisition of additional water rights or development of water banking capabilities--either internal capability development or participation in an external water bank--that make it very difficult to predict future capital spending patterns.

### **APPENDIX III: METHODOLOGY FOR ASSESSING THE IMPACT OF SECURITIZED DEBT**

130. This appendix addresses the financial adjustments we may make when the issuer's debt portfolios include securitization debt. When the securitization financing meets the elements of our securitization criteria, and there is statutory provision for a mandated recovery of the securitization costs, the securitization effectively makes all consumers responsible for principal and interest payments, and the utility is simply a pass-through entity for servicing the debt. As such, we deconsolidate securitization debt. The rating evaluation of the securitization debt is distinct from these criteria, and is addressed exclusively by our securitization criteria, "Global Methodology And Assumptions For Nonfinancial Future Flow Transactions," published Jan. 16, 2020.
131. Segregated securitized debt that securitizes a portion of an enterprise's revenue debt reduces an issuer's exposure to direct debt obligations because securitization financings create a revenue pledge that is legally separate from the revenues that fund utility operations and debt service because of a statutory authorization that mandates recovery, even when securitization and nonsecuritization charges are billed together on customers' billing statements. At the same time, even where utility financial statements consolidate securitization debt, a securitization financing does not have a claim on utility revenues that fund utility operations and unsecuritized debt service.
132. When securitization financings contain the structural features described in this paragraph, we deconsolidate segregated securitized debt from the utility's financial statements, meaning we remove securitization debt, revenues, and expenses from the utility's financial statements, and we remove the securitization-related debt service from our debt service calculations. The securitization financing must be pursuant to statutes enacted by a government entity constitutionally authorized to mandate recovery of securitization financing costs that are segregated for specialized recovery. Also, the securitization financing structure needs to exhibit protective features, including: an irrevocable, non-bypassable charge and an absolute transfer and first-priority security interest in transition property; periodic adjustments ("true-up") of the charge to remediate over- or under-collections compared with the debt service obligation to ensure collections match debt service over time and do not diverge significantly in the short run; and reserve accounts to cover any temporary shortfall in collections.

133. Specifically, S&P Global Ratings makes the following financial adjustments for segregated securitized debt:
- Adjustment to debt: We subtract the securitized debt from total debt.
  - Adjustment to revenues: We reduce revenue allocated to securitized debt principal and interest. The adjustment is the sum of securitization interest and principal payments made during the year.
  - Adjustment to interest expense: We remove the interest expense of the securitized debt from total interest expense.
  - Adjustment to debt service: We reduce debt service by netting out the securitization debt's principal and interest payments.
134. After deconsolidating segregated securitized debt, we assign our ratings to the utility's unsecuritized debt in accordance with these criteria.
135. Utilities generally act as the servicers for segregated securitized debt and collect securitization debt service requirements for the benefit of securitization debt bondholders. Utilities aggregate these charges on customer bills together with ordinary charges covering operating expenses and unsecuritized debt service. It is our view that customers focus on the total amount of a utility bill, rather than its component parts. We believe that customers do not disaggregate securitization charges from traditional utility charges in assessing whether the utility's traditional charges are favorable or onerous following a securitization. Consequently, while we exclude securitization-related revenue collections, debt, and debt service from the analysis of a utility's financial metrics, we do not make any adjustment for securitization in our qualitative assessments of financial and rate-making flexibility. Therefore, the analysis of a utility's capacity to adjust rates, a fundamental element of the qualitative analysis of utility credit quality, takes into consideration the entire amount of the customer bill, including securitization-related charges.

## CHANGES FROM PREVIOUS CRITERIA

136. The criteria fully supersede our previous criteria article, "ARCHIVE: U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems: Rating Methodology And Assumptions," Jan. 19, 2016, by restating that criteria in full and incorporating the targeted changes described in "Request for Comment: U.S. Municipal Water and Sewer Utilities: Methodologies and Assumptions," published Dec. 14, 2021.
137. Specifically, we expanded the scope to include all entities with water and sewer operations, including tax-secured debt issuances that were previously rated under "GO Debt," Oct. 12, 2006. We also consolidated solid waste systems previously rated under "ARCHIVE: Solid Waste System Financings," Jan. 29, 2018 (now fully superseded) into the scope of the criteria by incorporating their sector-specific considerations herein. In addition to several editorial changes to aid readability, we increased clarity around the framework used to drive the SACP and ICR and applied a flexible approach to the caps and notching assessments, which better captures the relevant credit factors associated with the sector.

## IMPACT ON OUTSTANDING RATINGS

138. S&P Global Ratings maintains approximately 2,100 ratings on water and sewer utilities. This includes approximately 70 water and sewer utilities previously rated under "GO Debt," Oct. 12,

2006, and approximately 50 solid waste systems previously rated under "Solid Waste System Financings," Jan. 29, 2018. Assuming that the providers maintain their current credit characteristics, testing indicates that approximately 98% of the ratings will remain unchanged; approximately 1% will be raised, generally by no more than two notches; and approximately 1% will be lowered, generally by no more than two notches.

## Related Publications

### Fully superseded criteria

- Solid Waste System Financings, Jan. 29, 2018
- U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems: Rating Methodology And Assumptions, Jan. 19, 2016

### Related Criteria

- Environmental, Social, And Governance Principles In Credit Ratings, Oct. 10, 2021
- Global Methodology And Assumptions For Nonfinancial Future Flow Transactions, Jan. 16, 2020
- Issue Credit Ratings Linked To U.S. Public Finance Obligors' Creditworthiness, Nov. 20, 2019
- USPF Criteria: Assigning Issue Credit Ratings Of Operating Entities, May 20, 2015
- General Criteria: Rating Government-Related Entities: Methodology And Assumptions, March 25, 2015
- Methodology: Master Limited Partnerships And General Partnerships, Sept. 22, 2014
- General Criteria: Methodology: Industry Risk, Nov. 19, 2013
- Corporate Methodology, Nov. 19, 2013
- Country Risk Assessment Methodology And Assumptions, Nov. 19, 2013
- Key Credit Factors For The Regulated Utilities Industry, Nov. 19, 2013
- Ratings Above The Sovereign: Corporate And Government Ratings—Methodology And Assumptions, Nov. 19, 2013
- Criteria For Assigning 'CCC+', 'CCC', 'CCC-', And 'CC' Ratings, Oct. 1, 2012
- Contingent Liquidity Risks In U.S. Public Finance Instruments: Methodology And Assumptions, March 5, 2012
- Methodology: Definitions And Related Analytic Practices For Covenant And Payment Provisions In U.S. Public Finance Revenue Obligations, Nov. 29, 2011
- Methodology: Rating Approach To Obligations With Multiple Revenue Streams, Nov. 29, 2011
- Principles Of Credit Ratings, Feb. 16, 2011
- Stand-Alone Credit Profiles: One Component Of A Rating, Oct. 1, 2010
- Wholesale Utilities, May 24, 2005

## Related Research

- Credit FAQ: All-In Coverage, Transfer Payments, And Credit Quality, Jan. 19, 2016
- Credit FAQ: An Overview Of Standard & Poor's Updated Methodology For Rating U.S. Public Finance Waterworks, Sanitary Sewer, And Drainage Utility Systems, Jan. 19, 2016
- Management Is Key For U.S. Water Utilities To Align Operations And Finances, Jan. 19, 2016
- The Broad And Diverse Economy Adjustment: 2015 Updated Scores For U.S. Metropolitan Statistical Areas Based On Local Government GO Criteria, Dec. 15, 2015
- Alternative Financing: Disclosure Is Critical To Credit Analysis In Public Finance, Feb. 18, 2014
- Credit FAQ: U.S. Public Finance Ratings And Criteria For Ratings Above The Sovereign, Dec. 19, 2013

This report does not constitute a rating action.

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# Exhibit CF-8

## CREDIT OPINION

20 October 2022



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# Pittsburgh Water & Sewer Authority, PA

## Update to credit opinion

### Summary

[The Pittsburgh Water and Sewer Authority](#) (“PWSA” or “the Authority”) (A3 stable) benefits from a large and diverse service area, primarily serving the city of [Pittsburgh](#) (A1 stable), which, favorably, provided relatively stable customer revenues through the pandemic, a credit strength compared to regional peers. The Authority has also benefitted from proactive steps to strengthen two key credit areas - its management and governance, and its financial position. PWSA's governance structure has been materially improved by oversight from the Pennsylvania Public Utility Commission (PUC), initiated in 2018. Though the PUC's rate approval process is a lengthy 270 days, the commission has committed to allowing for rate increases that will both satisfy bond covenants and allow for needed capital improvements. Further, the PUC has helped to ensure timely system maintenance and routine capital investment, in line with broad industry standards. At the same time, PWSA has taken steps to strengthen its internal management structure and build its workforce; also a credit positive.

The Authority's financial position has also improved considerably over the past several years, with liquidity reaching a satisfactory 137 days cash on hand as of fiscal 2021 year end, up from just 23 days cash in 2017. Debt service coverage has likewise strengthened, to 1.44 times when all liens of debt are considered. These metrics compare well to similarly-rated peers, and also to the Authority's own past performance.

Yet certain credit challenges persist, and high leverage will be a continued headwind for the Authority going forward. The Authority's current debt burden is significant, and material additional debt is expected as the Authority progresses on its capital improvement plan. The Authority's current five year plan assumes an additional \$1 billion in debt, before consideration of a yet-to-be-determined consent order for combined sewer overflow remediation. The Authority's ability to maintain a healthy financial position while increasing leverage will be key to future credit reviews. Future reviews will also consider the potential challenges associated with the expected consent order and its impact on overall leverage and customer affordability.

### Credit strengths

- » Diverse, urban Pittsburgh service area, supported by strong “eds & meds” presence
- » Considerable size; system assets include water conveyance and treatment, and sewer conveyance that ties to ALCOSAN
- » Significant, recently implemented rate increases boost revenues; PUC oversight brings improvements and controls

## Credit challenges

- » Substantial debt burden; debt ratio is 99% and will continue to grow
- » Narrow, though improved, liquidity versus similarly sized peers
- » Projected \$1.4 billion in capital needs over the next five years, to be primarily funded with debt
- » Consent decree to remediate combined sewer overflows not yet finalized

## Rating outlook

The stable outlook reflects an expectation of satisfactory liquidity and coverage as leverage continues to increase. The outlook also speaks to an expectation of continued progress on the authority's capital plan.

## Factors that could lead to an upgrade

- » Substantial improvement in liquidity that is maintained over several reporting periods
- » Meaningful reduction of debt
- » Sustained improvements in debt service coverage

## Factors that could lead to a downgrade

- » Material narrowing of debt service coverage and liquidity position
- » Inability to raise rates sufficiently to meet debt service coverage covenants while also funding significant deferred capital improvements
- » Failure to effectively deploy new revenues to address near term infrastructure and operating needs
- » Substantial new or worsening long-term environmental concerns

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.



## Key indicators

### Exhibit 1

#### Pittsburgh Water & Sewer Authority, PA

##### System Characteristics

Asset Condition (Net Fixed Assets / Annual Depreciation)	42 years
System Size - O&M (in \$000s)	\$179,900
Service Area Wealth: MFI % of US median	89.23%

##### Legal Provisions

Rate Covenant (x)	1.10
Debt Service Reserve Requirement	DSRF funded at lesser of standard 3-prong test (Aa)

##### Management

Rate Management	A
Regulatory Compliance and Capital Planning	A

##### Financial Strength

	2017	2018	2019	2020	2021
Operating Revenue (\$000)	\$202,996	\$231,734	\$249,049	\$241,997	\$269,121
System Size - O&M (\$000)	\$157,220	\$153,180	\$165,230	\$169,507	\$179,900
Net Revenues (\$000)	\$47,071	\$81,565	\$87,280	\$79,692	\$90,592
Net Funded Debt (\$000)	\$817,394	\$871,040	\$915,696	\$978,458	\$1,064,365
Annual Debt Service (\$000)	\$57,818	\$59,406	\$52,010	\$64,774	\$67,796
Annual Debt Service Coverage (x)	0.8x	1.4x	1.7x	1.2x	1.3x
Cash on Hand	26 days	112 days	143 days	130 days	155 days
Debt to Operating Revenues (x)	4.0x	3.8x	3.7x	4.0x	4.0x

Coverage reflects total annual debt service and the city payment included in operating expenditures.

Source: Moody's Investors Service, audited financial statements

## Profile

PWSA is an authority of the city of Pittsburgh, providing water treatment and conveyance to 84% of the city's population of roughly 305,000 residents and sewer conveyance for the entire city.

## Detailed credit considerations

### Service area and system characteristics: large, stable customer base in Pittsburgh

The Authority provides water distribution and wastewater collection and conveyance for the city of Pittsburgh and neighboring municipalities. The city's diverse economy is a credit positive for the Authority. Favorably, PWSA reported strong revenue collections throughout the coronavirus pandemic and did not experience large scale delinquencies that effected some regional peers, signaling resiliency in the customer base. The Authority's 10 largest customers (3.7% of revenues) include major Pittsburgh institutions, such as the Fox Chapel Water Authority, Allegheny County (Aa3 stable), University of Pittsburgh (Aa1 stable), and Allegheny Health Network. All of the Authority's five largest customers have been in the system for at least 75 years. Notably, given a newly renegotiated cooperation agreement with the city of Pittsburgh in 2019, most city buildings are now metered for water going, with the city paying for water usage - something it had not done previously.

The Authority continues to maintain an ample water supply, providing water to a population of approximately 305,000. The system is permitted to draw up to 100 million gallons per day (MGD) from the Allegheny River, its sole water source, though average demand for water is well below that level, at 70 MGD. The Authority treats drinking water at one plant located on the river, as well as a microfiltration plant at one of its reservoirs. The Authority has capacity to store approximately 3 days' worth of finished water for uninterrupted supply to its customers.

The Authority does not treat wastewater. It transmits all of its sewage to the Allegheny County Sanitary Authority. There is no contractual limit to the amount of sewage that can be conveyed, however, during wet weather events, the existing system frequently overflows and continues to experience unusually large water loss. ALCOSAN is projecting annual rate increases over the next twenty years that will pass through to PWSA customers.

PWSA has made significant strides in improving its governance and management of its organization as well as its physical assets. Ordinary system updates and routine infrastructure improvements had been sorely lacking at PWSA, and years of deferred maintenance have led to cost inefficiencies and exacerbated the natural wear and tear on an already aged system. PUC oversight since 2018 has already served to remediate some of this by establishing guidelines for system improvements based on industry-wide standards. The Authority has also hired more than 155 employees over the last five years - a 63% increase, and has filled key management roles with qualified personnel. This is a significant improvement over Authority operations of just a few years ago where management was mostly outsourced and employment was insufficient to provide for the day to day operations.

The additional operational oversight by the PUC is expected to be a credit positive going forward. Whereas the Authority had used capital deferment as a tool to maintain satisfactory finances and rate increases were heavily influenced by local politics in the past, the PUC has ensured that rate increases are less politicized. Further, while certain capital projects may be slowed to accommodate softening revenue if necessary, a complete sidelining of the capital plan and required maintenance is unlikely.

#### **Debt service coverage and liquidity: recent history of satisfactory financial performance**

The Authority's net revenues have been fairly stable since 2018, averaging a net take-down (net revenue / gross revenue) of about 34% over the past three years, as increased revenues have been matched by increased spending for maintenance and capital improvements. PWSA's operating margins are well in line with similarly rated peers and are expected to remain stable as rate increases and further revenue growth is used to fund needed capital spending and a growing workforce payroll.

At fiscal 2021 year end, the Authority reported senior debt service coverage of 1.74 times and total coverage of 1.44 times, well within covenant requirements and solid coverage ratios versus similarly-rated peers. Moody's reports a slightly lower 1.58 times senior lien debt service coverage and 1.34 times all-in coverage, based on a net income figure that includes payments to the city of Pittsburgh as an operating expense. Favorably, coverage has been fairly stable since 2018, when PUC rate oversight went into effect, signaling that rate increases have been effective to maintain sufficient coverage while providing for more normalized operations and investment in system infrastructure.

Rates have been approved through 2023, with the Authority's next rate case planned for 2024. Assuming continued rate increases are approved, management projects senior lien coverage to average 1.7 times over the next five years, with coverage of 1.18 times when all liens of debt are considered. Future reviews will consider whether the Authority is able to maintain satisfactory coverage and adhere to projected financial performance while supporting increased leverage to execute the Authority's sizeable capital plan.

#### **Liquidity**

The Authority's liquidity is satisfactory, at 137 days unrestricted cash on hand as of fiscal year end 2021, equating to about \$76 million. PWSA's cash position is considerably weaker than [national water and sewer system median days cash](#) of 450 days as of 2021.

#### **Debt and pensions: elevated debt burden continued credit challenge**

The Authority continues to face material pressure to improve its infrastructure given years of disinvestment. Coupled with its own consent decree pertaining to combined sewer overflows during wet weather events, which will be negotiated starting 2021, the Authority will necessarily add to its already elevated debt burden in the near term. PWSA anticipates roughly \$1.4 billion in capital spending over the next five years, largely funded by debt. This will add to leverage substantially, and future credit reviews will focus on the Authority's ability to manage additional debt while maintaining satisfactory cash and coverage metrics; largely dependent on PWSA's ability to increase rates as needed.

The Authority's total debt is equal to 99% of fixed assets as of 2021 year end, well above similarly sized peers. The outstanding debt amortizes slowly, with only 36% of principal scheduled to be repaid in the next 10 years.

**Legal security**

PWSA's first lien revenue debt benefits from a limited obligation revenue pledge backed by a first lien security interest in and to the revenues of the authority after payment of current expenses.

**Debt structure**

The majority - 68% - of Authority debt benefits from a first lien pledge on net revenues. Another 11% is subordinate debt, and the remainder is backed by a third lien, which is shared on a parity basis between PennVest and [PNC Bank, NA \(A2\)](#) which provides a revolving credit facility to PWSA. Roughly 22% of the Authority's current \$982 million of debt outstanding (as of September 2022) is variable rate.

The Authority introduced a new indenture in 2017, which strengthened the rate covenant. The requirement is now 125% of senior debt service coverage plus 110% of subordinate debt service coverage. Free cash is no longer used in the coverage calculation. The debt service reserve is funded at the lesser of the three-pronged test.

The Authority materially reduced its variable rate debt outstanding with its Series 2019 A&B issuance. Variable rate debt has been reduced to 22% of the total debt portfolio today, down from 44% prior to 2019. There is one variable rate issuance outstanding currently - the Authority's senior lien Series 2017C bonds, which were last remarketed in December 2020 and are subject to mandatory tender in December 2023. The bonds were remarketed with a rate indexed to SIFMA. Since the fixed-to-floating rate swaps associated with the 2017C bonds were LIBOR-based, the Authority layered on a basis swap alongside the remarketing in order to convert the variable rate received on the swaps to SIFMA from LIBOR, creating an effective hedge for the bonds.

[Assured Guaranty Municipal Corp. \(A1 stable insurance financial strength\)](#) insures the Authority's variable rate bonds and all of the Authority's swaps, except the 2020 basis swap, and provides the surety policy for all debt service reserve funds, except the reserve associated with PWSA's 2013 bonds, which is cash funded. This counterparty concentration may adversely impact the Authority should AGM's credit quality deteriorate.

The Authority maintains \$206 million in outstanding PennVest loans as of September 2022 and an \$150 million revolving credit facility, of which \$102 million is currently drawn. The Authority will apply proceeds from its Series 2022 issuance to pay down the credit line. Given an intercreditor agreement, PennVest and PNC Bank, NA share a third lien priority on system revenues.

**Debt-related derivatives**

The Authority maintains floating-to-fixed rate swaps in support of its Series 2017C issuance under ISDA Master Agreements with [JP Morgan Chase Bank N.A. \(Aa2 Sr. Unsecured\)](#) (64%) and Merrill Lynch Capital Services (36%), whereby the authority pays a fixed interest rate semiannually (3.79% weighted average) and receives 70% of LIBOR. The Authority layered on a basis swap in 2020 to convert the LIBOR received rate to SIFMA.

AGM provides swap insurance for all swaps. The aggregate swap mark to market is a negative (\$42 million) as of fiscal year end 2021.

The floating-to-fixed rate swaps are included in the parameters of a credit support annex (CSA), though there is no collateral posting requirement unless an Insurer Event occurs. The basis swap is excluded from the CSA. The amortization schedule for each swap mirrors that of the corresponding bonds and the swaps terminate at bond maturity. The basis swap terminates in December 2023 with the next mandatory tender of the Series 2017 C bonds. For all of the swaps, per the 2017 indenture, regularly scheduled swap payments are subordinate to subordinate bond debt service. Early termination is optional for the Authority only, and termination by the counterparty depends upon specified termination events, including the downgrade of PWSA's underlying rating below investment grade. An Authority termination payment would be subordinate to first and second lien debt service payments.

**Pensions and OPEB**

Most of the Authority's employees participate in the city's pension program. The Authority's share of its pension contribution is now accurately provided for through its renegotiated cooperation agreement with the city. Beginning in 2019, all new full time non-union PWSA employees are eligible to participate in a 401(a) retirement plan and do not have the option of enrolling in the city's municipal pension fund plan.

## ESG considerations

### Environmental

The Pittsburgh metropolitan area faces a high risk of elevated rainfall levels. Demonstrated elevated rainfall levels in the region have directly impacted PWSA, as wet weather events overwhelm the system's current combined sewer infrastructure. This is the reason for the Authority's consent decree related to combined sewer overflows.

### Social

Pittsburgh's population is relatively stable at roughly 301,000 and the five year average annual growth rate of the city's full value is a strong 4.5% as of fiscal 2021, well above the US median of -0.5%. Nevertheless, the city's wealth indicators remain below average with median family income at just 89% of the nation. Poverty is also elevated at 20%. As PWSA has increased rates, it has also implemented a rate relief program for qualifying residents, acknowledging this weakness in its rate base.

### Governance

The Authority's current management team has developed a comprehensive plan to bring operations to good working order and to proceed with much needed capital improvements. Strong governance controls at the Authority are evidenced by several years of improved financial performance.

Management views its relationship with the PUC as well as the DEP and EPA as an opportunity for partnership and has proactively sought to engage these agencies as PWSA moves forward with its substantial CIP. This is a definitive, positive change from the Authority's prior actions, and informs our stable outlook on PWSA's current credit profile.

The Authority's Board consists of nine members recommended by a nominating committee, appointed by the Mayor, and approved by City Council. Currently, eight of the nine Board seats are filled. Starting in 2020, city water charges were phased in pursuant to a cooperation agreement; the Authority had provided water to the city at no cost prior to 2020. Among other things, the cooperation agreement also provides for payments between the city and the PWSA to be based upon actual, verifiable, direct expenses, and in accordance with customary utility practices under the PUC Code, and importantly, confirms that payments by the PWSA to the city will continue to be subordinate to all debt obligations of the PWSA.

Pennsylvania's Public Utility Commission began oversight of the authority in April 2018. The PUC is responsible for regulating the Authority's rate making, operating effectiveness, and debt issuance. We expect that the PUC will bring standardization and effective governance to the Authority's future operations. The PUC is required to approve rate increases that will ensure PWSA complies with its bondholder covenants, though we note that the approval process for increases can be lengthy.

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REPORT NUMBER 1345841

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Japan	81-3-5408-4100
EMEA	44-20-7772-5454

# Exhibit CF-9

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## Summary:

# Pittsburgh Water & Sewer Authority; Water/Sewer

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## Summary:

# Pittsburgh Water & Sewer Authority; Water/Sewer

Credit Profile		
US\$41.865 mil wtr and swr sys first lien rev bonds ser 2022A due 09/01/2052		
<i>Long Term Rating</i>	A+/Stable	New
Pittsburgh Wtr & Swr Auth WS (AGM)		
<i>Unenhanced Rating</i>	A(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR		
<i>Long Term Rating</i>	A+/Stable	Upgraded

## Credit Highlights

- S&P Global Ratings raised its rating on the Pittsburgh Water and Sewer Authority's (PWSA) first-lien revenue bonds to 'A+' from 'A'.
- At the same time, S&P Global Ratings also raised its rating on PWSA's subordinate-lien revenue bonds to 'A' from 'A-'.
- Additionally, we assigned our 'A+' rating to PWSA's series 2022A \$41.8 million water and sewer system first-lien revenue bonds.
- The upgrade reflects the management team's continued maturation and conservative budgeting practices as it works through a \$1.4 billion capital improvement plan (CIP) from 2022-2026, along with seeing continued successful rate cases with the Pennsylvania Public Utility Commission (PaPUC).
- Total debt outstanding will be approximately \$1.08 billion.
- The outlook is stable.

## Security

The first-lien bonds are secured by a senior-lien pledge on the net revenues of the authority's waterworks and sanitary sewer system. A fully funded common reserve in the amount of the lesser of maximum annual debt service (MADS), 125% of average annual debt service, or 10% of proceeds provides additional liquidity on the senior-lien bonds; an amendment in 2017 to the master trust indenture permits a surety to be used to satisfy any future series-by-series reserve fund requirement. The 2017 amendments additionally strengthened the covenants by eliminating consideration of the use of certain cash reserves toward compliance with the rate covenant and limiting the frequency with which transfers in from the rate stabilization fund can be used toward meeting the rate covenant.

We have applied our primary utility revenue bond criteria to determine the authority's general creditworthiness and have applied this rating to its senior-lien issues. We rate PWSA's subordinate lien one notch lower based on the application of our criteria "Assigning Issue Credit Ratings Of Operating Entities" (published May 20, 2015, on RatingsDirect) given the open status of the senior lien and the likelihood that PWSA will continue to use the senior lien from time to time.

Proceeds of the series 2022A bonds will be used to pay down \$45 million of the \$101.8 million that PWSA has outstanding on its PNC capital line of credit.

Of the series 2017C bonds, the subseries 1, 2, and 3 will each be associated with a basis swap to the Securities Industry and Financial Markets Association (SIFMA) index rate. The counterpart for this overlay swap is Merrill Lynch Capital Services Inc. with a notional amount of \$216.72 million. In addition, subseries 1 is already synthetically fixed by way of an interest rate swap with JPMorgan Chase Bank N.A.; subseries 2 is synthetically fixed by way of an interest rate swap with Bank of America Merrill Lynch N.A.; and subseries 3 is synthetically fixed using an interest rate swap also with JPMorgan Chase Bank N.A. Although only a point-in-time snapshot and--barring a termination event such as the rating on PWSA falling below 'BBB-'--not an actual liability, those swaps are currently substantially out of the money. Subseries 4 (\$2 million) and the balance on the PNC line (\$101 million) is not hedged.

### **Credit overview**

A very conservative approach to long-term planning has enabled management to successfully get three rate increases from PaPUC, with the last being for two years (fiscal years 2022 and 2023). These rate increases have enabled management to continue funding the CIP while dealing with rising costs from its suppliers. Additionally, management was successful in getting a new stormwater fee approved to assist in funding those projects.

Other factors that support the rating include:

- Pittsburgh's role as the anchor and economic engine for western Pennsylvania, based on an employment base that has reinvented itself from one that once relied heavily on manufacturing and industrial jobs;
- Rates for service that have been pressured over the past decade by the unfunded mandates, and will need to be reviewed by the state's rate regulator, but remain affordable;
- Operational management assessment (OMA) that we view as good even despite the above-mentioned challenges;
- Strong coverage levels of all-in debt service historically and projected;
- Strong on-balance-sheet liquidity, supported further by the available credit line; and
- Financial management practices and policies we consider good.

The rating is limited by extremely high leverage, with \$1.4 billion in capital commitments identified through fiscal 2026 likely to continue to pressure the financial profile.

### **Environmental, social, and governance**

In our view, PWSA has outsize risks related to each of environmental, social, and governance (ESG) factors, although each of these are generally trending favorably. The authority in previous years faced scrutiny from local and state elected officials who voiced concerns over its operations. An auditor general's opinion released in November 2017 cited "aging and deteriorating infrastructure issues and financial and operational long-term viability issues" and was an important factor in legislation that ultimately placed PWSA under PaPUC oversight as of April 1, 2018. PaPUC regulates the authority's rates and fees, and must approve additional debt. PWSA's management team has worked closely with regulators and other stakeholders and has already achieved several measures that are likely to improve operations and financial capacity. This includes recent approval of a distribution system improvement charge that will

be dedicated to underground infrastructure rehabilitation. PWSA has also implemented various socially directed programs such as lead service line replacements and customer bill-pay assistance programs. We view the latter as a credit quality stabilizer that could allay affordability concerns. PWSA's own environmental compliance mandates, as well as drinking water efficiency are two key programs in PWSA's capital budget and have been the major generators for the need to consider additional rate adjustments; the authority has the ability to administratively pass through and recover costs from its wholesale wastewater treatment provider. PWSA, under its Green First plan, is also piloting approximately a dozen projects to experiment with different approaches to green infrastructure and overflow reduction that could also present capital budget cost savings.

## Outlook

The stable outlook reflects our expectation that when PWSA does need to propose a rate case to PaPUC, there will generally be a credit-supportive relationship, observed by both the timing and magnitude of rate adjustments that PWSA is likely to request, versus what the PUC ultimately grants. We are assuming that the financial profile will be further stabilized by the sufficiency test in the rate covenant--which does not allow for the use of cash transfers. We will also likely keep in place the one-notch distinction between the first- and subordinate-lien debt.

### Downside scenario

Should inflationary and supply-chain issues significantly drive up the cost of the CIP, which is expected to be mostly debt funded, and thereby causing additional debt which pressures financial metrics, the rating could be lowered.

### Upside scenario

Management has represented that total debt service coverage (DSC) will generally move toward about 1.25x and on-balance-sheet available reserves equivalent to four-to-five months of operating expenses. Consistently outperforming financial projections while meeting the long-term challenges presented by an aging system, compounded by regulatory pressures, would be the key to achieving a higher rating.

## Credit Opinion

### Enterprise risk

PWSA provides drinking water and sewer collection to more than 83,641 metered accounts in most, but not all, of the city, as well as five neighboring municipalities and three wholesale customers for needs ranging from emergency interconnections and peaking to full requirements. It also provides sewer collection to the entire city. Although median household effective buying income (MHHEBI) is only 78% that of the U.S., the local economy has long since transitioned from its historical manufacturing base. Those sectors are still part of the employment base. Financial services, health care, and a booming technology sector are all increasingly important contributors to the metropolitan area. We do not view there to be any dependence on the authority's principal customers, given that they include another water authority and the University of Pittsburgh. Regional water authority wholesale customers do have some minimum contractual payments to PWSA, lending further stability to cash from operations.

Based on our OMA, we view PWSA to be good. An assessment of good, in our opinion, implies that overall alignment

between the system's operational characteristics and its management is sufficient, although there are areas of opportunity. Management's plans to rehabilitate and build reliability into the operations improved our view of this assessment. The CIP contains projects that are both based on PWSA's prioritization as well as those reflecting consent decrees.

Much of the existing infrastructure was also built to serve a much larger population and a workforce much different from that of today. While we note, for example, that the city has an essentially unlimited raw-water supply from the Allegheny River and overall system capacity that could support a population several times the size of the current one, it is also the case that the authority's focus remains the renewal and replacement of its aging underground infrastructure. The water distribution system is also an identified area of opportunity given the high nonrevenue water percentage, attributable to line losses. However, under a 2019 cooperation agreement, the city will no longer receive free service, which alone should help improve nonrevenue water. The renegotiated agreement will not affect the capital lease agreement, and PWSA still intends to purchase the system from the city for \$1 in 2025 under the terms of the current agreement.

PWSA is able to administratively fully pass through and recover ALCOSAN billings and the surcharge for distribution system improvements. Management instituted stormwater charges in fiscal 2022. For fiscal 2021, the average customer--using 3,000 gallons of both water and sewer service plus ALCOSAN's treatment surcharge--pays about \$121 per month, or 3.3% of MHHEBI. As costs increase over time to support the CIP, headroom for affordability, especially to lower-income customers, could diminish.

### **Financial risk**

All-in DSC by our calculation was below 1.4x in 2021, up from 1.2x in 2020. Based on our review of management's projections, all-in DSC is likely to trend toward 1.16x assuming additional debt and a supportive relationship with PaPUC. All-in DSC is S&P Global Ratings' adjusted DSC metric that includes all obligations of the system regardless of lien or accounting treatment.

The system's liquidity remains an area of consistency and credit strength. Total available reserves also include the line of credit, designated as an interim funding mechanism for capital projects that will be somewhat repaid following the 2022 transactions. All told, cash and equivalents held by PWSA remains sound, usually equivalent to four-to-six months of operating expenses. At the end of fiscal 2021, the authority had \$76.4 million in available reserves or 281 days' cash.

Approximately 30% of PWSA's debt is variable rate, most of which is synthetically fixed by way of interest rate swaps. We view the contingent liquidity risk as remote, as the most prominent termination event would be if the ratings on PWSA were to be lowered to below investment grade. Although the current positions of the interest-rate swaps remain materially unfavorable, PWSA has not had to post collateral to its counterparts.

An FMA of good indicates that we consider practices currently good, but not comprehensive. The authority maintains many best practices we believe are critical to supporting credit quality, particularly in the finance department. These practices, however, may not be institutionalized or formalized in policy, or may not be as robust as those of comparable utilities with an FMA of strong. The FMA of good includes a long-term financial plan that management intends to implement in partnership with PaPUC to support its identified capital commitments. The authority also has

implemented new, more comprehensive and conservative budgeting assumptions that better capture annual revenue requirements. We understand that the authority's management team regularly tracks budget-to-actual performance and that the new management team is instituting a number of additional best practices to target consistently higher levels of financial performance.

## Related Research

- Through The ESG Lens 3.0: The Intersection Of ESG Credit Factors And U.S. Public Finance Credit Factors, March 2, 2022

Ratings Detail (As Of October 12, 2022)		
Pittsburgh Wtr & Swr Auth WS (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WS (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR <i>Long Term Rating</i>	A+/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR (AGM) <i>Unenhanced Rating</i>	A(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded
Pittsburgh Wtr & Swr Auth WTRSWR (AGM) <i>Unenhanced Rating</i>	A+(SPUR)/Stable	Upgraded

Many issues are enhanced by bond insurance.

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

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## Summary:

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**Summary:****Pittsburgh Water & Sewer Authority,  
Pennsylvania; Water/Sewer**

Credit Profile		
US\$52.5 mil WIFIA loan due 12/31/2060		
<i>Long Term Rating</i>	A+/Stable	New
Pittsburgh Wtr & Swr Auth WTRSWR		
<i>Long Term Rating</i>	A+/Stable	Affirmed

**Credit Highlights**

- S&P Global Ratings affirmed its 'A+' rating on the Pittsburgh Water and Sewer Authority's (PWSA) first-lien revenue bonds.
- At the same time, S&P Global Ratings also affirmed its 'A' rating on PWSA's subordinate-lien revenue bonds.
- Additionally, we assigned our 'A' rating to PWSA's upcoming \$52.5 million WIFIA loan.
- Total debt outstanding will be approximately \$1.08 billion.
- The outlook is stable.

**Security**

The first-lien bonds are secured by a senior-lien pledge on the net revenues of the authority's waterworks and sanitary sewer system. A fully funded common reserve in the amount of the lesser of maximum annual debt service (MADS), 125% of average annual debt service, or 10% of proceeds provides additional liquidity on the senior-lien bonds; an amendment in 2017 to the master trust indenture permits a surety to be used to satisfy any future series-by-series reserve fund requirement. The 2017 amendments additionally strengthened the covenants by eliminating consideration of the use of certain cash reserves toward compliance with the rate covenant and limiting the frequency with which transfers in from the rate stabilization fund can be used toward meeting the rate covenant.

We have applied our primary utility revenue bond criteria to determine the authority's general creditworthiness and have applied this rating to its senior-lien issues. We rate PWSA's subordinate lien one notch lower based on the application of our criteria "Assigning Issue Credit Ratings Of Operating Entities" (published May 20, 2015, on RatingsDirect), given the open status of the senior lien and the likelihood that PWSA will continue to use the senior lien from time to time.

Proceeds of the WIFIA loan will be used to fund a portion of the system's capital program.

Of the series 2017C bonds, the subseries 1, 2, and 3 will each be associated with a basis swap to the Securities Industry and Financial Markets Association (SIFMA) index rate. The counterpart for this overlay swap is Merrill Lynch Capital Services Inc. with a notional amount of \$216.72 million. In addition, subseries 1 is already synthetically fixed by way of



an interest rate swap with JPMorgan Chase Bank N.A.; subseries 2 is synthetically fixed by way of an interest rate swap with Bank of America Merrill Lynch N.A.; and subseries 3 is synthetically fixed using an interest rate swap also with JPMorgan Chase Bank. Although only a point-in-time snapshot and--barring a termination event such as the rating on PWSA falling below 'BBB-'--not an actual liability, those swaps are currently substantially out of the money. Subseries 4 (\$2 million) and the balance on the PNC line (\$132 million) is not hedged.

### **Credit overview**

A very conservative approach to long-term planning has enabled management to successfully get three rate increases from the Pennsylvania Public Utility Commission (PaPUC), with the last being for two years (fiscal years 2022 and 2023). These rate increases have enabled management to continue funding the capital improvement program (CIP) while dealing with rising costs from its suppliers. Additionally, management was successful in getting a new stormwater fee approved to assist in funding those projects.

Other factors that support the rating include:

- Pittsburgh's role as the anchor and economic engine for western Pennsylvania, based on an employment base that has reinvented itself from one that once relied heavily on manufacturing and industrial jobs;
- Rates for service that have been pressured over the past decade by the unfunded mandates, and will need to be reviewed by the state's rate regulator, but remain affordable;
- Operational management assessment (OMA) that we view as good even despite the above-mentioned challenges;
- Strong coverage levels of all-in debt service historically and projected;
- Strong on-balance-sheet liquidity, supported further by the available credit line; and
- Financial management practices and policies we consider good.

The rating is limited by extremely high leverage, with \$1.4 billion in capital commitments identified through fiscal 2026 likely to continue to pressure the financial profile.

### **Environmental, social, and governance**

In our view, PWSA has outsized risks related to each of our environmental, social, and governance (ESG) factors, although each of these are generally trending favorably. The authority in previous years faced scrutiny from local and state elected officials who voiced concerns over its operations. An auditor general's opinion released in November 2017 cited "aging and deteriorating infrastructure issues and financial and operational long-term viability issues" and was an important factor in legislation that ultimately placed PWSA under PaPUC oversight as of April 1, 2018. PaPUC regulates the authority's rates and fees, and must approve additional debt. PWSA's management team has worked closely with regulators and other stakeholders and has already achieved several measures that are likely to improve operations and financial capacity. This includes recent approval of a distribution system improvement charge that will be dedicated to underground infrastructure rehabilitation. PWSA has also implemented various socially directed programs such as lead service-line replacements and customer bill-pay assistance programs. We view the latter as a credit quality stabilizer that could allay affordability concerns. PWSA's own environmental compliance mandates, as well as drinking water efficiency are two key programs in PWSA's capital budget and have been the major generators for the need to consider additional rate adjustments; the authority has the ability to administratively pass through and

recover costs from its wholesale wastewater treatment provider. PWSA, under its Green First plan, is also piloting approximately a dozen projects to experiment with different approaches to green infrastructure and overflow reduction that could also present capital budget cost savings.

## Outlook

The stable outlook reflects our expectation that when PWSA does need to propose a rate case to PaPUC, there will generally be a credit-supportive relationship, observed by both the timing and magnitude of rate adjustments that PWSA is likely to request, versus what the PaPUC ultimately grants. We are assuming that the financial profile will be further stabilized by the sufficiency test in the rate covenant--which does not allow for the use of cash transfers. We will also likely keep in place the one-notch distinction between the first- and subordinate-lien debt.

### Downside scenario

Should inflationary and supply-chain issues significantly drive up the cost of the CIP, which is expected to be mostly debt funded, and thereby causing additional debt which pressures financial metrics, the rating could be lowered.

### Upside scenario

Management has represented that total debt service coverage (DSC) will generally move toward about 1.25x and on-balance-sheet available reserves equivalent to four-to-five months of operating expenses. Consistently outperforming financial projections while meeting the long-term challenges presented by an aging system, compounded by regulatory pressures, would be the key to achieving a higher rating.

## Credit Opinion

### Enterprise risk

PWSA provides drinking water and sewer collection to more than 83,641 metered accounts in most, but not all, of the city, as well as five neighboring municipalities and three wholesale customers for needs ranging from emergency interconnections and peaking to full requirements. It also provides sewer collection to the entire city. Although median household effective buying income (MHHEBI) is only 78% that of the U.S., the local economy has long since transitioned from its historical manufacturing base. Those sectors are still part of the employment base, however. Financial services, health care, and a booming technology sector are all increasingly important contributors to the metropolitan area. We do not view there to be any dependence on the authority's principal customers, given that they include another water authority and the University of Pittsburgh. Regional water authority wholesale customers do have some minimum contractual payments to PWSA, lending further stability to cash from operations.

Based on our OMA, we view PWSA to be good. An assessment of good, in our opinion, implies that overall alignment between the system's operational characteristics and its management is sufficient, although there are areas of opportunity. Management's plans to rehabilitate and build reliability into the operations improved our view of this assessment. The CIP contains projects that are both based on PWSA's prioritization and those reflecting consent decrees.

Much of the existing infrastructure was also built to serve a much larger population and a workforce much different

from that of today. While we note, for example, that the city has an essentially unlimited raw-water supply from the Allegheny River and overall system capacity that could support a population several times the size of the current one, it is also the case that the authority's focus remains the renewal and replacement of its aging underground infrastructure. The water distribution system is also an identified area of opportunity given the high nonrevenue water percentage, attributable to line losses. However, under a 2019 cooperation agreement, the city will no longer receive free service, which alone should help improve nonrevenue water. The renegotiated agreement will not affect the capital lease agreement, and PWSA still intends to purchase the system from the city for \$1 in 2025 under the terms of the current agreement.

PWSA is able to administratively fully pass through and recover ALCOSAN billings and the surcharge for distribution system improvements. Management instituted stormwater charges in fiscal 2022. For fiscal 2021, the average customer--using 3,000 gallons of both water and sewer service plus ALCOSAN's treatment surcharge--pays about \$121 per month, or 3.3% of MHHEBI. As costs increase over time to support the CIP, headroom for affordability, especially to lower-income customers, could diminish.

### Financial risk

All-in DSC by our calculation was below 1.4x in 2021, up from 1.2x in 2020. Based on our review of management's projections, all-in DSC is likely to move toward 1.16x assuming additional debt and a supportive relationship with PaPUC. All-in DSC is S&P Global Ratings' adjusted DSC metric that includes all obligations of the system regardless of lien or accounting treatment.

The system's liquidity remains an area of consistency and credit strength. Total available reserves also include the line of credit, designated as an interim funding mechanism for capital projects that will be somewhat repaid following the 2022 transactions. All told, cash and equivalents held by PWSA remains sound, usually equivalent to four-to-six months of operating expenses. At the end of fiscal 2021, the authority had \$76.4 million in available reserves or 281 days' cash.

Approximately 30% of PWSA's debt is variable rate, most of which is synthetically fixed by way of interest rate swaps. We view the contingent liquidity risk as remote, as the most prominent termination event would be if the ratings on PWSA were to be lowered below investment grade. Although the current positions of the interest-rate swaps remain materially unfavorable, PWSA has not had to post collateral to its counterparts.

An Financial Management Assessment (FMA) of good indicates that we consider practices currently good, but not comprehensive. The authority maintains many best practices we believe are critical to supporting credit quality, particularly in the finance department. These practices, however, may not be institutionalized or formalized in policy, or may not be as robust as those of comparable utilities with an FMA of strong. The FMA of good includes a long-term financial plan that management intends to implement in partnership with PaPUC to support its identified capital commitments. The authority also has implemented new, more comprehensive and conservative budgeting assumptions that better capture annual revenue requirements. We understand that the authority's management team regularly tracks budget-to-actual performance and that the new management team is instituting a number of additional best practices to target consistently higher levels of financial performance.

### Ratings Detail (As Of March 16, 2023)

## Ratings Detail (As Of March 16, 2023) (cont.)

Pittsburgh Wtr & Swr Auth WS (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WS (AGM)		
<i>Unenhanced Rating</i>	A(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WS (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR		
<i>Long Term Rating</i>	A+ /Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
<i>Unenhanced Rating</i>	A(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
<i>Unenhanced Rating</i>	A+(SPUR)/Stable	Affirmed

Many issues are enhanced by bond insurance.

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

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**VERIFICATION**

I, Christine Fay hereby state that: (1) I am Senior Managing Director and Partner with Public Resources Advisory Group, Inc.; (2) I have been retained by The Pittsburgh Water and Sewer Authority and am authorized to present testimony on its behalf; (3) the facts set forth in my testimony are true and correct (or are true and correct to the best of my knowledge, information and belief); and (4) I expect to be able to prove the same at a hearing held in this matter. I understand that the statements herein are made subject to the penalties of 18 Pa.C .S. § 4904 (relating to unsworn falsification to authorities).

05/04/2023 | 8:13 PM EDT

Dated

DocuSigned by:  
*Christine Fay*  
E1C03447089F49E...

Christine Fay, Senior Managing Director and Partner  
Public Resources Advisory Group, Inc.

Consultant to:  
The Pittsburgh Water and Sewer Authority