BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

VOLUME II

TESTIMONY

PITTSBURGH WATER AND SEWER AUTHORITY
RATE FILING

Docket Nos. R-2020-3017951 (water)
R-2020-3017970 (wastewater)

March 6, 2020

Pittsburgh Water and Sewer Authority
2020 Rate Filing

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R-2020-3017970 (wastewater)

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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

ROBERT A. WEIMAR

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:
Overview of Filing
Description of PWSA and Process of Transition
Organizational Structure, Management Quality Updates
Accomplishments Since Last Rate Case

March 6, 2020

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I. INTRODUCTION

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

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

Q. HOW LONG HAVE YOU HELD THIS POSITION?

A. I was appointed Interim Executive Director in April 2017. Prior to that appointment, I worked for PWSA as a capital program manager and interim director of construction and engineering. I signed a contract to take the Executive Director as an employee of the Authority in May 2018. The Contract was renewed in May 2019, and I remain an employee as of this date.

Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES?

A. In my present position, my responsibilities include executing policy goals and objectives established by the Board of Directors; preparing an annual business plan and budget; developing, supervising and administering the PWSA's staff and programs; directing the operation of the water system; overseeing the operation of the sewer system and related stormwater system; developing and implementing a capital improvement and maintenance plan; directing water Customer Assistant Program efforts; and interacting with customers, elected officials, consumer groups, governmental entities and the media.

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A. I have worked in the water and wastewater industries as a professional engineer for 46 years. I have a degree in civil engineering from the University of Massachusetts and completed master's-degree-level classes in water resources at Northeastern University. In addition to managing hundreds of capital projects for public utilities as a Professional Engineer for more than thirty five years employed by international consultant firms, I

have held responsible leadership roles for water and sewer authorities in Hartford Connecticut and Pittsburgh for more than eight years.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I submitted Direct and Rebuttal testimony in PWSA's Initial Tariff and Rate Case at Docket Numbers R-2018-3002645 (water) and R-2018-3002647 (wastewater). I also submitted written Direct, Supplement Direct, Rebuttal, Supplemental Rebuttal and Rejoinder testimony in PWSA's combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement Plan ("LTIIP") proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater).

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

A. The purpose of my testimony is to offer a high-level synopsis of this rate filing while introducing the other PWSA witnesses presenting testimony and explaining the scope of their testimony. I will also provide an overview about PWSA to include its continuing transition process to Commission jurisdiction and the current status of various projects and initiatives that have occurred since PWSA's Initial Rate Case (including the status of commitments made by PWSA as part of the settlement of its Initial Rate Case).

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. No.

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

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

Witness	St No.	Topics
Deb Lestitian	2	Status of Various Contracts; PWSA Staff Recruitment Efforts
Jennifer Presutti	3	Support for Proposal; Budgeting Process; Financial Results; Multiyear Rate Increase; Settlement Commitments; Allocation of Water and Wastewater Costs
Barry King	4	Capital Projects; Infiltration Remediation; Highland Membrane Filtration Plant
Ed Barca	5	Support of Proposal; Capital Improvement Plan; DSIC; Debt Portfolio; Financial Metrics
Tom Huestis	6	Financial Policies and Goals; Capital Markets Consideration; Peer Review of Financial Metrics; Impact of Multiyear Rate Adjustment
Harold Smith	7	Cost of Service Study; Cost Allocation; Rate Design
Julie Quigley	8	Customer Impacts, Customer Service, Low Income Customer Assistance Programs, Water and Wastewater Tariffs
Beth Dutton	9	Stormwater

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

Q. PLEASE PROVIDE AN OVERVIEW OF THIS FILING.

A. PWSA is focused on rebuilding and upgrading Pittsburgh's water systems, including drinking water, wastewater conveyance and stormwater conveyance. PWSA has made significant progress on these goals in 2019[1] and anticipates being able to continue its forward progress in 2020 without needing to seek a rate increase. Looking ahead to

[1] Some of these goals include: (1) adding orthophosphate to the drinking water system to reduce lead pipe corrosion; (2) accelerating lead line replacements; (3) working collaboratively with the City on pressing stormwater issues; (4) improving and returning Highland Park Reservoir #1 and the microfiltration water treatment plant to service and renewing the Herron Hill Reservoir; (5) enhancing customer assistance programs; and, (6) affirming public ownership of Pittsburgh's water.

2021, however, PWSA's operating and capital expenses will continue to increase. While PWSA is taking every reasonable step to operate efficiently and to keep costs down, its extensive Capital Improvement Program ("CIP"), which includes acceleration of its lead line replacement program and the refurbishment and replacement of a significant portion of PWSA's water supply system simply cannot be accomplished without additional rate relief. In addition, addressing regulatory compliance issues and responding to unexpected situations that arise due to the age of the system are directly contributing to increasing operating costs. Accomplishing these challenging goals requires implementation of a more balanced financing strategy. A more balanced financing strategy is one that will enable PWSA to utilize all available funding sources to their full advantage rather than to be overly reliant on any one source (such as debt). PWSA is also including a request to approve a multiyear rate plan so that it can provide transparency to ratepayers while reducing the time and expense of seeking approval for a rate increase in year 2022 that can be determined now.

Q. WHAT INCREASED COSTS ARE DRIVING THE NEED FOR THIS RATE INCREASE?

A. PWSA's direct operating expenses are increasing as a result of continuing to add necessary personnel, increased salaries and associated benefits, large operating contracts (including emergency issues, information and non-capital facility upgrades) to meet regulatory compliance responsibilities, including the negotiated settlement conditions developed through the Stage 1 Compliance Plan proceeding, and the increasing cost of debt service. At the same time, PWSA is now positioned to begin undertaking many important long-term capital projects (including projects related to addressing the existing water system deficiencies) as a result of both developing its staff to manage/oversee these

projects and receiving various regulatory approvals and permits necessary to begin the work. These projects will necessitate PWSA's continued issuance of long term bonds to finance these projects (along with available state and/or federal loans and "pay-go" financing produced from rates). PWSA needs to increase its rates to cover the additional debt service and debt service coverage required for its additional bond issuances. PWSA is also proposing to use a portion of the requested rates to increase the amount of "pay-go" financing for this construction. The pay-go financing will come from base rates as well as from PWSA's proposed DSIC, which we are proposing to set at 10%.[2] Below, I provide more detail on these points; and Mr. Barca has extensive testimony regarding PWSA's financing plan.

Q. CAN YOU PROVIDE MORE DETAIL REGARDING THE ANTICIPATED INCREASED COSTS IN 2021 RELATED TO OPERATING EXPENSES AND PERSONNEL?

A. While the overall budgeting process for operating expenses will be covered by Jen Presutti and Deb Lestitian will address PWSA's plans regarding staffing, the key point here is that in 2021, PWSA anticipates it will be operating with a full water and sewer team staff to achieve increased levels of service in concert with many of our key "performance requirements," which increases overall costs due to salaries and benefits, as well as operations contracted third party services. This staffing is needed, in part, to enable PWSA to satisfy the various compliance requirements developed through the Stage 1 Compliance Plan proceeding intended to ensure a customer focused public utility.

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2 *See Petition of the Pittsburgh Water and Sewer Authority for Waiver of Provisions of Act 11 to Increase the DSIC Cap, to Permit Levelization of DSIC Charges, and to Authorize the Pay-As-You Go Method of* Financing, filed March 3, 2020 at P-2020-2019019. PWSA is seeking to consolidate the Petition with this rate proceeding

Q. CAN YOU PROVIDE MORE DETAIL ABOUT THE ENGINEERING AND CONSTRUCTION PROJECTS ANTICIPATE FOR 2021?

A. While this will be covered more fully by the testimony of Barry King, the key point is that PWSA is now well-positioned to significantly invest in the various engineering and construction projects necessary to modernize and update the water supply, water distribution and wastewater conveyance infrastructure. A major infrastructure project addresses the poor condition of the clearwell constructed in 1908 to store and disinfect filtered water prior to the introduction of the water into PWSA's distribution system. PWSA received approval in September 2019 from the Pennsylvania Department of Environmental Protection ("PaDEP") to implement a series of related key projects to construct a temporary bypass chlorination/disinfection system which will enable the clearwell to be shut down from service so it can be replaced.[3] The scope of this project involves numerous, interrelated components of PWSA's overall infrastructure and the ability to begin to undertake these projects (with continuing oversight by PaDEP) will significantly reduce the risks of water system failure.

Q. HOW CAN APPROVAL OF THIS RATE FILING ASSIST PWSA IN DEVELOPING A MORE BALANCED FINANCING STRATEGY?

A. The increase in rates along with approval of a Distribution System Improvement Charge ("DSIC") will enable PWSA to take advantage of a variety of available funding sources. The availability of DSIC funding offers the ability to establish pay-go funding for a portion of PWSA's distribution system reconstruction plan. Pay-go financing provides a reliable financing source that is flexible and avoids the cost of interest payments required

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3 *See In The Matter Of: Pittsburgh Water and Sewer Authority, Violations of the Pennsylvania Safe Drinking Water Act and the Rules and Regulations Promulgated Pursuant Thereto*, Consent Order and Agreement entered September 6, 2019.

by long-term bond financing. The increase in rates allows PWSA to meet its debt and debt service coverage requirements and to provide further assurance that PWSA will continue to have access to capital markets for critical projects. In addition to these two sources, PWSA will continue to pursue other state or federal funding as appropriate.[4] Developing a well-balanced financing strategy ensures the most cost effective use of ratepayer money to restore its water and sewer systems, and achieve PWSA's goal of becoming a more professional and customer centric public utility that delivers "best in class" drinking water, and wastewater collection services.

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

A. Yes. While these (and all) PWSA's proposals will be more fully detailed by other witnesses, I do want to highlight a few significant proposals included with this filing.

First, PWSA is submitting a stormwater tariff as directed by the Commission in its Final Implementation Order.[5] While the proposed stormwater tariff sets forth PWSA's proposed program structure, policies and procedures, PWSA is not proposing to assess a separate stormwater fee to customers through the tariff at this time. Rather, stormwater costs combined with wastewater will continue to be assessed as part of PWSA's wastewater tariff and those costs are included with this filing. Beth Dutton will provide more detail about PWSA's stormwater plans as well as the proposed future stormwater tariff in her testimony.

Second, PWSA is seeking approval of a multi-year rate plan. PWSA is proposing

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[4] As an example, the Pennsylvania Infrastructure Investment Authority ("PENNVEST") recently approved a funding offer for more than $65 million in low interest loans to PWSA to support the first phase of its small diameter main replacement plan. PWSA filed to register an Abbreviated Securities Certificate in connection with the loan on February 10, 2020 at Docket No. S-2020-XXXX (number pending).

[5] Final Implementation Order at 31.

that the amount of the increase to rates for 2022 will be based on increased debt service and debt service coverage that PWSA will experience in 2022. Seeking approval of the 2022 rates as part of this proceeding will reduce the overall costs for PWSA to prepare and litigate a rate case, provide transparency for ratepayers and enable PWSA to focus on the critical risk capital projects it is undertaking. This proposal is detailed further in the testimony of Harold Smith.

III. DESCRIPTION OF PWSA AND THE PROCESS OF TRANSITIONING TO COMMISSION JURISDCITION

Q. PLEASE DESCRIBE PWSA.

A. Created by the City of Pittsburgh in 1984 pursuant to the Municipality Authorities Act,[6] PWSA operates the largest combined water and sewer authority in Pennsylvania producing an average of 70 million gallons of treated water daily and providing service to more than 300,000 residents as well as up to 520,000 people during working hours in total throughout the City of Pittsburgh and surrounding communities. PWSA's employees are primarily city residents and customers of PWSA with expertise in engineering, operations, maintenance, water quality, customer service, safety, green infrastructure and many other disciplines. PWSA is committed to continuing to enhance its operations to provide service in a safe, sustainable and customer-friendly manner at just and reasonable rates.

Q. WHAT INFRASTRUCTURE DOES PWSA MANAGE?

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

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[6] 52 Pa.C.S. §§ 5601-5632.

- The **water** supply and distribution system consists of a 117 million gallon per day conventional flocculation, sedimentation and rapid sand process treatment plant which was placed in service in 1969, 930 miles of water mains plus more than 81,000 service lines, more than 25,900 line valves, more than 7,300 fire hydrants, twelve pumping stations, one membrane filtration retreatment plant, five reservoirs, and eleven storage tanks. The total storage capacity of the reservoirs and tanks is approximately 455 million gallons. With consideration given to the pressure requirements of the distribution system, and storage capacities in each of the 15 pressure zones, the Authority stores enough finished water to provide (with water use restrictions) 1 to 2 day uninterrupted supply to all customers should it temporarily be unable to treat additional water from the Allegheny River.

- The **wastewater** collection and conveyance system consists of 1,200 miles of sewer lines, approximately 25,000 stormwater catch basins and four pump stations which are designed to carry both storm and sanitary flows. About 75% of the system is serviced by combined sewers (both wastewater and stormwater are collected in one pipe) and the remaining 25% are designed as separate sewage and stormwater piped systems. The average age of the sewer lines is between 60 and 70 years old, with some portions reaching nearly 150 years in age. The wastewater collection and conveyance system discharges to a regional system that conveys sewer flows through trunk sewers to deliver to a wastewater treatment which services eighty-three cities, towns and boroughs in Allegheny County. The regional system is owned and operated by the Allegheny County Sanitary Authority ("ALCOSAN")[7] which maintains interceptors along the rivers to deliver sewage to its Woods Run Wastewater treatment plant prior to discharge in the Ohio River. Because the current combined sewer systems contribute to the Allegheny Region's Combined Sewer Overflow volume, state and federal water quality regulations apply, including a regional Consent Decree involving ALCOSAN and the Pennsylvania Department of Environmental Protection mandating a $2 Billion Combined Sewer Overflow reduction program.[8]

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

[8] ALCOSAN recently announced a modified consent decree agreement with the Department of Environmental Projection which approves 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

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

A. Stormwater issues arise in two contexts: (1) the combined wastewater system Combined Sewer Overflows; and, (2) the municipal separate storm sewer system (known as "MS4s").[9] The federal Environmental Protection Agency ("EPA") develops and implements federal stormwater regulations to require compliance with water quality standards, which are implemented by USEPA and the PaDEP. Regarding the sewer system, 75% of the wastewater conveyance infrastructure is designed as a "combined" sewer system to capture both wastewater and stormwater in one pipe network. In addition to the combined system, one quarter of the current infrastructure managed by PWSA includes separate sewer and stormwater systems which require compliance with stormwater management regulations (i.e., MS4) and are subject to National Pollutant Discharge Elimination System ("NPDES") Permits issued by PADEP pursuant to EPA requirements.

Q. PLEASE EXPLAIN THE IMPACT OF STORMWATER IN PITTSBURGH AND HOW PWSA IS WORKING TO ADDRESS THESE ISSUES.

A. As heavier and more intense rains are overwhelming the current combined wastewater system capacity, stormwater management is a growing concern throughout Pittsburgh. Federal and state mandates also require a reduction in the volume of combined sewer overflows as this has a direct impact on water quality when it overflows from the sewer system into the rivers.[10] To address this, PWSA is taking a deliberate approach

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9 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.

10 See https://www.3riverswetweather.org/sites/default/files/Consent%20Order%20and%20Agreement%20final%202004.pdf for the 2004 Consent Order between the City of Pittsburgh and other Allegheny municipalities.

concerning the way stormwater is managed across Pittsburgh to lower the volume of combined system overflows.[11] The plan looks comprehensively at stormwater issues and overlaps both categories of stormwater (i.e. addressing the combined system and the separate stormwater system). Rather than directing the extreme rainfall events into a network of pipes, PWSA is distributing the collection of rainwater into a series of stormwater infrastructure projects across the city to help capture, absorb, hold back, and slow the flow of stormwater into the existing piped network. These methods use distributed water storage systems, and surface water detention infrastructure which are integrated into the urban and related open lands to temporarily detain rainwater which is ultimately released to the existing combined sewer system. This cost-effective approach manages CSO and basement sewage backups, which also helps to create safe, flood-prepared neighborhoods. More detailed information about PWSA's stormwater plan and the Stormwater tariff that we are proposed is set forth in the testimony of Beth Dutton.

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

A. The water/wastewater conveyance infrastructure operated by PWSA is currently owned by the City. PWSA first assumed responsibility for the system operation and maintenance from the City pursuant to an agreement effective January 1, 1995 between the City and PWSA (the "1995 Cooperation Agreement"). Consistent with a Memorandum of Lease dated July 27, 1995, PWSA is on the path to becoming the official owner of the City's assets and, on September 1, 2025, this transfer will be

[11] In 2016, the City and PWSA developed the Citywide Green First Plan which outlines how Pittsburgh intends to use cost-effective green infrastructure solutions to manage stormwater which will reduce local street flooding and sewer backups while also assisting Pittsburgh and the region to comply with EPA CSO mandates. Copies of PWSA's stormwater Plans, including the Citywide Green First Plan, are available at: https://www.pgh2o.com/your-water/stormwater.

effectuated. On December 20, 2019, PWSA filed a newly negotiated City Cooperation Agreement pursuant to 66 Pa. C.S. § 507 and requested that it be referred to the Office of Administrative Law Judge for a formal on-the-record proceeding.[12]

Q. HOW IS THE CITY COOPERATION AGREEMENT RELEVANT TO THIS PROCEEDING?

A. Historically, as the owner of the assets, the City did not pay itself for water usage. As ownership of the assets transfer and in consideration of PWSA's new obligations under the Public Utility Code, the newly negotiated City Cooperation Agreement is intended to be a path forward toward a more "business-to-business" relationship between these two public entities. As explained more fully in the testimony of Harold Smith and Jen Presutti, assumptions about the revenue that will be received from the City for FPFTY 2021 are based on the payment agreement as set forth in the new City Cooperation Agreement.

Also relevant regarding the City Cooperation Agreement is its impact on PWSA's plans regarding stormwater. Currently, PWSA's recovers the costs of stormwater activities within the combined sewer areas to comply with USEPA water quality requirements as part of its wastewater rates and is proposing to continue to do so as part of this rate case. However, as explained more fully in the testimony of Beth Dutton, PWSA is planning to seek recovery of a stormwater fee in the future which will compensate for all stormwater related costs from both separated and combined stormwater systems. The costs to be recovered will include any Commission approved agreements related to stormwater as set forth in the new City Cooperation Agreement.

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12 *Cooperation Agreement between the City of Pittsburgh and the Pittsburgh Water and Sewer Authority*, Docket No. U-2020-3015258 (per Secretarial Letter dated January 16, 2020, Commission extended the period for consideration until further order of the Commission).

Q. WHAT ISSUES ARE FACING PWSA AS IT OPERATES THE WATER, WASTEWATER CONVEYANCE SYSTEMS OF THE CITY OF PITTSBURGH?

A. The City's current water and sewer systems date back to the 1850s. PWSA has faced numerous and complex issues related to the water and sewer systems including operational issues with the dated infrastructure, the presence of lead in water service lines, historical contractual relationships, complex organizational and management structures and numerous regulatory requirements and obligations imposed upon PWSA by PaDEP and the federal Environmental Protection Agency ("EPA"). These issues and how they impact this rate request will be discussed more fully through the various testimony submitted in support of this filing.

Q. HOW DID PWSA – A MUNICIPAL AUTHORITY – COME TO BE SUBJECT TO THE COMMISSION'S JURISDICTION?

A. In December 2017, Act 65 was passed which added Sections 3201-3209 to the Public Utility Code subjecting PWSA to the Commission's jurisdiction. Shortly after passage of Act 65, the Commission issued a Tentative Implementation Order to guide the process for PWSA's transition to Commission jurisdiction.[13] After review of comments from interested stakeholders, the Commission entered its Final Implementation Order on March 15, 2018 which is the roadmap PWSA has been following to transition to Commission jurisdiction.

Q. PLEASE PROVIDE SOME BACKGROUND REGARDING PWSA'S INITIAL RATE FILING.

A. Consistent with the statute and the Commission's direction in the Final Implementation Order, PWSA filed its Initial Rate Case on July 2, 2018. By Commission Order entered

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[13] *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.

February 27, 2019, the Commission approved a Joint Petition for Settlement that authorized an increase to water and wastewater total annual operating revenues that resulted in a $21 million revenue increase, approved PWSA's first official Public Utility Commission water and wastewater tariffs, and included numerous other settlement terms related to PWSA's future compliance plan and rate case proceedings.[14]

Q. DID THE COMMISSION ALSO CONDUCT A PROCEEDING REVIEWING PWSA'S COMPLIANCE WITH COMMISSION REQUIREMENTS?

A. Yes. Consistent with the statute and the Commission's direction in the Final Implementation Order, PWSA filed a Petition for Approval of Its Compliance Plan and a Petition for Approval of its Long-Term Infrastructure Implementation Plan on September 28, 2018.[15] In accordance with subsequent direction from the Commission the Compliance Plan proceeding proceeded in two stages which included the various commitments made by PWSA as part of the Initial Rate Case Settlement, PWSA: (1) filed a Compliance Plan Supplement on February 1, 2019; and, (2) served direct testimony in support of the Compliance Plan (Stage 1) on February 14, 2019. This testimony primarily responded to the Technical Staff Initial Report and Directed Questions Stage 1 of the Technical Utility Staff ("TUS") dated November 28, 2018.

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14 *Pennsylvania Public Utility Commission v. PWSA*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

15 *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water and Sewer Authority*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Petition Of The Pittsburgh Water And Sewer Authority For Approval Of Its Compliance Plan filed September 28, 2018. *Petition Of The 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) filed September 28, 2018.

Q. WHAT IS THE CURRENT STATUS OF THE COMPLIANCE PLAN STAGE 1 PROCEEDING?

A. On September 13, 2019, a Joint Petition for Partial Settlement entered into by PWSA, the Bureau of Investigation and Enforcement ("I&E"), the Office of Consumer Advocate ("OCA"), the Office of Small Business Advocate ("OSBA"), Pittsburgh UNITED ("UNITED") and Pennsylvania-American Water Company ("PAWC") was filed which offered proposed resolutions for 75% of the identified issues. Some of the remaining issues were reserved for litigation. A Recommended Decision on the Joint Petition for Partial Settlement and the litigated issues was released on October 29, 2019. On January 24, 2020, the Commission entered a Secretarial Letter postponing its consideration of the matter to no later than March 31, 2020.

Q. HAS PWSA CONTINUED TO KEEP THE COMMISSION UP-TO-DATE REGARDING ITS COMPLIANCE PROGRESS?

A. Yes. Pursuant to the Partial Settlement of the Compliance Plan Stage 1 proceeding, PWSA agreed to file a quarterly compliance plan progress report which updates its status on meeting the various commitments from the Partial Settlement.[16] PWSA filed its most recent Quarterly Compliance Plan Progress Report on January 31, 2020. Also included in this Compliance Plan Progress Report is an update regarding the settlement commitments from PWSA's Initial Rate Case filing.

Q. GIVEN THE FILING OF THIS RATE CASE, DOES PWSA PLAN TO CONTINUE REPORTING ON COMMITMENTS IN FUTURE COMPLIANCE PLAN QUARTERLY PROGRESS REPORTS?

A. PWSA will continue to honor its commitment to provide Compliance Plan reports but plans to discontinue reporting on commitments from the initial rate case settlement

[16] Joint Petition for Partial Settlement dated September 13, 2019 at Section III.ZZ.

because it is addressing those items in the context of this case. PWSA is willing to work with the parties in this proceeding to the extent there is a desire for PWSA to report on items in future progress reports but, for now, a better use of PWSA's resources is to continue to report on Compliance Plan items while working through this and the other pending proceedings at the Commission.

Q. PLEASE IDENTIFY THE SETTLEMENT TERMS FROM THE OTHER PRIOR CASES THAT ARE BEING ADDRESSED IN THIS PROCEEDING.

A. In addition to all of the specific commitments PWSA agreed to address in this rate filing, we are also addressing where other agreed-to commitments have an impact on the proposal here. The various PWSA witnesses will address the specific items within the subject matter of their testimonies.

IV. PWSA ORGANIZATIONAL STRUCTURE, MANAGEMENT QUALITY UPDATES

Q. PLEASE DESCRIBE THE GOVERNING BODY FOR PWSA.

A. PWSA is governed by a seven Board of Directors (Board) whose members are appointed by the Mayor of the City. The Board is responsible for providing strategic direction and oversight to the PWSA management team, as well as adopting the Authority's annual operating and capital budgets, approving contracts, and setting rates. Board Members are nominated by the Mayor and confirmed by City Council.

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

A. PWSA is operated through three operating divisions under the Executive Director: Administration, Engineering and Construction, and Operations. These divisions are supplemented by a Program Management Office which provide company-wide support for operational improvements, process improvements and information management

systems.

The Administration Division is responsible for the administrative and support functions of PWSA. This division's major responsibilities include administration, customer service, finance, procurement, and human resources.

The Engineering and Construction Division works to safely and efficiently deliver an effective capital improvement program and to support operations with cost-effective technical solutions to water line breaks, sewer stoppages and collapsed pipes, combined sewer overflows ("CSOs") and stormwater flooding and basement backups. Also, Engineering and Construction is responsible for managing PWSA's response to all regulatory consent orders for water supply sewer collection and stormwater management related to Combined Sewer Overflows issued by the Pennsylvania Department of Environmental Protection and the United States Environmental Protection Agency. These include the Water Supply, CSO, Sanitary Sewer Overflow ("SSO") and municipal separate stormwater systems compliance requirements from State and Federal environmental authorities. Engineering and Construction also prepares and assists in reviewing of water and sewer tap-in applications, as well as proposed addressing localized combined sewer overflows and sewerage system backups.

The Operations Division operates and maintains the water supply and water distribution storage system, to ensure an adequate quantity of water to PWSA's customers while maintaining compliance with state and federal quality drinking water regulations. The operations division also ensures conveyance of sewage and stormwater to the ALCOSAN regional wastewater system and is responsible for maintaining all sewerage collection infrastructure below grade. The operations division works

collaboratively with the City of Pittsburgh Department of Public Works and Department of Mobility and Infrastructure to ensure roads remain safe for public travel at all times. It is Operations' responsibility to be aware of customer needs and address their concerns (e.g., service line leaks, water main leak repairs, catch basin cleaning, and sewer line maintenance and repair). PWSA maintains sufficient inventory of materials, staff, and equipment to respond promptly to a request regarding water and wastewater services. Additionally, Operations strives to maintain a safe working environment while establishing an effective and efficient operations division that will provide the highest quality customer service at the lowest possible cost.

Q. HOW DOES PWSA STAFF ITS OPERATIONS?

A. PWSA has 343 employees as of February 5, 2020, with four more scheduled to start within the next two months. The majority of Authority employees are represented by one of three labor unions. The Pittsburgh Joint Collective Bargaining Committee (PJCBC) represents blue-collar employees. The American Federation of State, County and Municipal Employees (AFSCME) represents Local 2719 and Local 2037 employees. Management and professional staff are contracted as "at will" employees, with no Union affiliation. In addition, PWSA has engaged the services of professional consultants to support engineering senior management positions, as well as numerous other project management and senior technical experts to support engineering and operations. The hiring of consultants as embedded staff has been the result of PWSA's rapid growth in all staff categories and is necessary to meet its regulatory compliance obligations, to address the limited Pittsburgh domiciled professionals, who assist in facilities maintenance and restoration, permitting, and design and construction of facilities upgrades and replacements. PWSA also engages engineering consultants to support all capital project

implementation, including planning, design and construction under the supervision of PWSA Project Managers. PWSA also supplements its core staff with a program manager (to facilitate engineering and construction policies and procedures improvements) and a financial consulting services firm to support tariff and fee analyses. Additional experts in finance, legal and administration have been engaged as required to fulfill state federal and local regulatory and administrative requirements. Deb Lestitian discusses more fully PWSA's future plans to staff its administrative, engineering and field operations.

V. PWSA'S ACCOMPLISHMENTS SINCE INITIAL RATE CASE

A. Goals and Tracking

Q. YOU HAVE DISCUSSED THE SIGNIFICANT CHALLENGES FACING PWSA NOW AND IN THE FUTURE; WHAT IS PWSA DOING TO MEET THESE CHALLENGES?

A. As I explained in my direct testimony from PWSA's Initial Rate Case, PWSA is focused on becoming a more professional and customer centric public utility that delivers "best in class" drinking water, wastewater collection and stormwater related services. In October 2018, PWSA released "Pittsburgh's Water Future 2030 and Beyond" which sets forth a 12-year plan for Pittsburgh's water system. Included in this report is PWSA's vision for rebuilding and upgrading the drinking water, stormwater and sewer systems. The report details PWSA's goals including, *inter alia*, transparency, accountability, reliability, and affordability.[17] In 2019, PWSA issued an update which highlights some of PWSA's key projects – from lead line replacements to innovative stormwater management solutions to

[17] A copy of Pittsburgh's Water Future 2030 and Beyond is available at: https://www.pgh2o.com/sites/default/files/2020-01/PGH2o2030Plan%20-%20Smaller.pdf

customer assistance programs and community engagement initiates – and its accomplishments to date.[18]

Q. IS PWSA TRACKING ITS PERFORMANCE AND SHARING THIS INFORMATION WITH THE PUBLIC?

A. Yes. In January 2020, PWSA publicly unveiled "Headwaters" to measure PWSA's performance regarding five specific goals set forth in PWSA's 2017 "Focusing on the Future" Report.[19] These five goals are to: (1) protect the public health and the environment; (2) ensure customer and stakeholder satisfaction; (3) improve infrastructure reliability; (4) maintain a high-performing workforce; and, (5) be an efficient and effective organization. Each of these five goals includes: (1) a more full description about why the goal is important; (2) what areas in which PWSA will focus to achieve success; and, (3) a real-time progress report measuring PWSA's progress against expectations. For example, to improve infrastructure reliability, PWSA is dedicated to investing the necessary resources to elevate the condition of its infrastructure and minimize system failures by implementing enhanced maintenance practices and renewing aging/failing infrastructure. In terms of progress, by January 2020, PWSA repaired or replaced 16,068 water meters which exceeded expectations. Similar information about

[18] A copy of the 2019 Update is available at: https://pgh2o2030.com/2019-update

[19] See https://headwaters.pgh2o.com/#Goals

the other four goals is available at the website and below is a list of all the metrics currently available at the website:

Goal	Metrics	Report
Protect Public Health and the Environment	Number of Lead Service Line Replacements (PWSA Side)	5,963 as of January 2020 Exceeds Expectations
Ensure Customer and Stakeholder Satisfaction	Average Speed of Answer, Contact Center	1.45 minutes as of Dec 2019 Below Expectation
	Average Speed of Answer, Dispatch	.18 minutes as of Dec 2019 Exceeds Expectations
	% Social Media Inquiries Addressed in 3 Business Days	100% as of Jan 2020 Exceeds Expectations
	Voluntary Subscriptions to follow PWSA email, Twitter, Facebook	10,971 as of Dec 2019 Meeting Expectations
Improve Infrastructure Reliability	# of Water Meters Repaired or Replaced	16,068 as of Jan 2020 Exceeds Expectations
Become an Efficient and Effective Organization	Average Length of Service Disruption	3.70 hours as of Oct 2019 Exceeds Expectations

B. Infrastructure

Q. DID PWSA MAKE SIGNIFICANT PROGRESS REGARDING INFRASTRUCTURE PROJECTS IN 2019?

A. Yes. I am very pleased about the accomplishments of our diligent team of professionals in 2019 regarding crucial water, sewer and stormwater upgrades that provide a higher quality of service to customers. We invested over $100 million in infrastructure projects making 2019 one of our most productive capital investment years ever.

Q. WHAT ARE SOME OF HIGHLIGHTS REGARDING SEWER IMPROVEMENT INFRASTRUCTURE PROJECTS IN 2019?

A. In 2019, we lined nearly five miles of sewer which adds decades of life to the line by creating a new barrier, or sleeve, inside the old pipe. Additionally, over 1,700 storm catch basins were cleaned and 800 were replaced, ensuring that the sewers can properly channel stormwater away from streets, homes and businesses around the city. We plan to install liners into an additional 16 miles of sewers in 2020.

Q. WHAT ARE SOME OF THE HIGHLIGHTS REGARDING WATER SYSTEM INFRASTRUCTURE REHABILITATION PROJECTS IN 2019?

A. In 2019, we rehabilitated some of our larger water facilities, like the 135 Million Gallon Lanpher Reservoir. We are also in the process of renovating the Microfiltration Plan in Highland Park back into service. Ultraviolet disinfection systems have been added at the insistence of the PADEP and PWSA continues to upgrade the walkway, wall, and railing around the open reservoir in Highland Park under a PADEP Consent Order. For 2020, we are in the process of designing 15 miles of new water mains (our previous yearly average was less than two miles), focused on locations where there is a high probability of lead service lines.

Regarding PWSA's pump stations, we have focused on training our staff (rather than relying on private companies) to perform routine maintenance as well as to immediately resolve mechanical equipment breakdowns. These efforts have successfully enabled us to reduce the need for private contractors as our staff is now handling routine maintenance as well as the more complex repair and replacement projects. PWSA plans to continue to train in-house staff with the assurance of the PADEP and give all staff the opportunity to grow professionally.

PWSA's lab has undergone tremendous improvement over the last several years both in terms of training staff and investing in equipment and technology. With PWSA's partnering with CWM Environmental (CWM) in 2017, PWSA staff received valuable training to gain PADEP Laboratory accreditation to analyze water samples. PWSA's partnership with CWM will continue into 2020 as it takes its final steps to be certified. PWSA has also been investing in new equipment and technology to measure water

quality. I expect all of these improvements to continue into the future to ensure that we are providing customers with safe, reliable drinking water.

Q. PLEASE PROVIDE AN UPDATE REGARDING PWSA'S LEAD SERVICE LINE REPLACEMENT PROJECT IN 2019.

A. In 2019, PWSA surpassed the number of lead line replacements required by the DEP. PWSA replaced a total of 3,202 public lead service lines, to exceed the DEP requirement to replace 855 lead service lines between July 1, 2019 and June 30, 2020. More than 2,054 lead service lines were replaced in 2018. Since PWSA's lead service replacement program first began in 2016, over 6,100 public lead service lines have been removed from the water system. In addition to the replacements, PWSA distributed over 9,500 free lead water test kits, provided more than 5,000 certified lead water filters and pitchers, began adding orthophosphate to reduce lead levels, inspected 17,000 homes, secured agreements from over 6.400 property owners to replace their private lead lines for free, fielded over 27,000 phone calls, held over 6,040 pre-construction meetings with homeowners, fielded 7,890 emails, attend 39 community meetings, and performed more than 98% trenchless replacement techniques on replacement sites. PWSA's lead service line replacement program is expected to continue to replace more than 15 to 20 service lines per day until available PENNVEST funding is exhausted (subsequent programs to replace lead service lines are being implemented to ensure continual efforts to remove lead lines).

Q. WHAT ARE SOME OF THE 2019 HIGHLIGHTS REGARDING STORMWATER ISSUES?

A. Stormwater continues to be an on-going process of collecting data on the pattern of flooding, basement backups, and geological shifts caused by the increased number of heavy storm events. In 2019, we implemented stream bank restoration to reduce

sedimentation load in the local streams and rivers. We are in the process of designing 24 projects, some of which we intend to begin in 2020, in an effort to reduce the negative effects of increased stormwater in the area. These projects are an important part of reducing pollution in the waterways to meet Total Maximum Daily Load requirements (TMDL) to comply with Federal and State MS4 requirements.

C. Customer Service

Q. WHAT IS PWSA'S FOCUS REGARDING CUSTOMER SERVICE ISSUES?

A. PWSA sums up its goals for customer service in the phrase "Getting Stuff Done" or GSD. Our staff is dedicated to timely addressing customer issues and doing so in a professional and courteous manner. There are numerous examples from 2019 about how our staff has accomplished this. Issues include addressing leaks, assisting with the separation of water lines, resolving problems with curb boxes, assisting consumers with lead service line replacements, working with the City of Pittsburgh's 311 to resolve issues with storm drains, and repairing water main breaks. Most importantly, PWSA has restored public confidence in our Billing system, which has been the subject of several years of public concern.

Q. PLEASE DETAIL SOME OF THE INITIATIVES PWSA HAS UNDERTAKEN TO ENSURE THAT THE PUBLIC RECEIVES TIMELY AND USEFUL INFORMATION.

A. Perhaps one of the most significant initiatives in this regard, was the launching of PWSA's new website on December 11, 2019.[20] In developing the new website, we focused on improving navigation, decreasing the amount of "clicks" consumers had to use to access account information, providing better access to project and program

[20] See https://www.pgh2o.com/

summaries, and developing content that is easier to read and understand. The new website includes easy online forms, is accessible for customers with disabilities and includes a language translation feature. The website was also designed with responsive technology to allow for easy viewing on smartphones or tablets and optimizes the use of filters and search capabilities to access information quickly.

Q. PLEASE HIGHLIGHT SOME OF THE SECTIONS OF PWSA'S NEW WEBSITE INTENDED TO BETTER SERVE THE PUBLIC.

A. As part of the new website, we created a "Projects and Maintenance Section" which allows residents to complete a quick search and learn everything they need to know about construction happening on their street. The available project information includes traffic patterns, work schedules, project contracts and the percentage completion of the work. Other sections of the new website intended to provide the public timely and useful information include: (1) a "Planning and Future Projects" page which includes our Capital Improvement Plan and our 12-year organizational roadmap; (2) a "Tips, Maintenance & Prevention" page to provide education about detecting and repairing leaks, why discoloration may be present and what to do if a sewage backup is occurring; (3) an "online permitting services" section to streamline the permitting process necessary for new construction or renovations of an existing structure; and, (4) a "News & Events" section to get up-to-date information about community events.

Q. WHAT OTHER PROCESSES HAS PWSA IMPLEMENT TO ASSIST CONSUMERS?

A. Federal law requires commercial buildings to install a PWSA-approved backflow prevention device which must be tested annually with the results forwarded to PWSA for review. To assist with this process, PWSA implemented the SpryBackflow app on May 9, 2019. The app enables non-residential customers to submit their annual test results

online via PWSA's website. To date, 2,255 non-residential customers have enrolled and PWSA plans to continue on-boarding the remaining approximately 7,000 customers.

PWSA also launched a Customer Usage Portal on December 18, 2018. By leveraging this free service, customers will receive real time usage alerts via email or text to avoid costly water leaks in their property. They can set thresholds of their average usage to receive alerts immediately, rather than having to wait weeks to receive their bill. There is also an alert setting for vacations/snowbirds. Multiple users, such as tenants, can be added so that they also receive the alerts.

D. Information/Operational Support Systems, Cyber Security and Emergency Notification System

Q. HAS PWSA IMPLEMENTED VARIOUS TECHNOLOGY UPGRADES TO IMPROVE OPERATIONS?

A. Yes. In addition to hiring eight new employees to staff its information technology department (in contrast with the historical two or three employees), PWSA has implemented a number of technology upgrades to improve its operations:

- Mobile Work – PWSA deployed the web based application, SpryMobile, for meter and curb box service orders on September 11, 2018, converting the Plumbers and Field Technicians from paper and pen to iPad and app. This app provides Customer Service and Field Operations management personnel with line of sight to meter changes, MXU (remote reading device) replacements, and curb box turn on/turn off/maintenance. Each service order contains the field worker's notes and pictures of PWSA assets. PWSA is currently in the process of testing the app for use in work order and asset management and has trained an additional 50+ users from Field Operations Senior Managers to Utility Workers. Once GIS mapping integration is complete, the app will go-live for these additional users.
- Telephone System – On the evening of October 11, 2018, PWSA converted from its aged Toshiba telephone system to a state of the art Mitel system, complete with real time queue monitoring and MiCollab software and app, which enable users to view incoming calls and call histories, search for other users, make calls, and chat from their desk top or cell phones. The return on investment is evident in the queue monitoring alone, which has allowed management staff to bring the Contact Center's abandonment rate from a monthly average of 13% down to less than the 3% industry standard. From October 2018 through October 2019, the

Contact Center achieved a personal best by maintaining a spectacular record low abandonment rate of 2.6%. The 176,035 calls handled in this time period were responded to within an average of 1 minute and 9 seconds.

- Wireless Carrier Upgrade – Having identified intermittent connectivity issues while utilizing PWSA-issued iPads and mobile phones in the field, PWSA switched carriers from Sprint to Verizon in January 2019. We are currently employing Verizon's MaaS360 to manage these devices. We are able to push updates, make global permissions changes, and attempt to locate lost devices, disabling them remotely if not immediately recovered.

Q. PLEASE EXPLAIN PROGRESS IN 2019 IN THE AREA OF CYBERSECURITY.

A. In April 2019, PWSA engaged the services of the Department of Homeland Security's Cybersecurity and Infrastructure Security Agency (DHS CISA) to conduct a Cyber Resiliency Review. The resulting report identified that PWSA was lacking in established IT policies. PWSA has since attained board approval of four policies and has established the practice of accomplishing one policy per month. CISA is also conducting cyber hygiene scans, and PWSA is eliminating known vulnerabilities in its systems.

Q. HAS PWSA IMPLEMENTED NEW PROCESSES TO NOTIFY EMPLOYEES IN THE EVENT OF AN EMERGENCY?

A. Yes. PWSA partnered with AlertMedia to have the capability to send notifications to its employees in the event of an emergency. Notification of events such as active shooter, fire, weather, and utility outages can be communicated by PWSA to its employees via desk phone, email, cell phone, and the AlertMedia app. Employees were introduced to the service via a notification on November 15, 2019, and they were encouraged to update their profile in the app with their personal contact information as well.

E. <u>Recognition</u>

Q. HAS PWSA RECEIVED RECOGNITION FOR ITS EFFORTS?

A. Yes. Since the Initial Rate Case, PWSA's various efforts have been recognized as follows:

- July 2019 – PWSA received recognition as a Utility of the Future Today for 2019. The Utility of the Future Award is made possible through a partnership between the Water Environment Federation, the National Association of Clean Water Agencies, The Water Research Foundation, and the Water Reuse Association with input from the Environmental Protection Agency. All of these organizations promote research and innovation in the field of water and sewer management nationwide. PWSA's selection as a Utility of the Future Today was made by five peer utility general managers and executives in recognition of PWSA's commitment to building partnerships in the community, promoting watershed management, and making innovation a driving force for PWSA.
- October 2019 – PWSA received the e-Builder 2019 Innovators in Construction Award which recognizes organizations that demonstrate excellence in using technology to efficiently drive substantial building projects. PWSA utilized e-Builder to successfully implement its Capital Improvement Program.
- December 2019 – PWSA's Consulting Engineer released its 2019 Annual Report as required by the Amended and Restated Trust Indenture dated November 1, 2017 and effective December 28, 2017.[21] The conclusion of the annual report is that PWSA has made significant progress in 2019 to improve the water, sewer, stormwater and operational systems. PWSA has improved its project controls, financial controls, operational abilities, added key staff and worked to engage key customers and stakeholders. According to the opinion of the Consulting Engineer,

F. Path Forward

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

A. Yes. PWSA has spent a great deal of time over the past few years organizing its systems and setting up the processes needed to implement the improvements we want to achieve. I am very proud of the progress to date and much of the work that has been done – including staff training and expansion and development of standard operating procedures – will serve us well into the future. Our continuing work to transition to the Commission's requirements and expectations will also assist us in achieving our goals as the experience we are acquiring from working with the Commission and other stakeholders helps inform us on how to continue to improve our operations. Finally, the

[21] The report is available at: https://www.pgh2o.com/sites/default/files/2020-01/2019%20Consulting%20Engineers%20Annual%20Report%20FINAL%2012-11-19.pdf

wrapping up of various outstanding DEP regulatory issues and permits related to infrastructure projects has given us clearance to focus on getting these critical projects in process.

VI. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

VERIFICATION

I, Robert Weimar, hereby state that: (1) I am the Executive Director 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: 3/6/20

Robert Weimar
Executive Director
The Pittsburgh Water and Sewer Authority

TAB

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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

DEBBIE M. LESTITIAN

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:

STATUS OF VARIOUS CONTRACTS
PWSA STAFF RECRUITMENT EFFORTS

March 6, 2020

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TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Debbie M. Lestitian. My position with The Pittsburgh Water & Sewer Authority ("PWSA" or "Authority") is Chief Corporate Counsel and Chief of Administration.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

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

Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.

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

Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES WITH PWSA?

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

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

- Advising the Executive Director, the Deputy Director, and the heads of all departments as to legal questions affecting the Authority's interests;

- Supporting the Executive Director and the Deputy Director by acting in that role in their overlapping absences;
- Being responsible for working across all administrative departments to ensure that effective and efficient processes are in place to support those departments;
- Mentoring and coaching administrative staff, delegating work effectively and holding team members to a high standard of excellence;
- Improving processes and policies and managing administrative staff and long term organizational planning;
- Representing the Authority in all legal matters and proceedings in which the Authority is a party or interested, or in which any of its officers are officially interested;
- Representing the Authority in all collective bargaining, side-bar, and grievance matters;
- Developing strategies in preparation for litigation, arbitration, mediation, labor negotiations, financing transactions and administrative agency proceedings;
- Researching legal issues and preparing legal memorandum and correspondence;
- Managing matters referred to outside counsel;
- Managing the preparation of contracts, leases and internal policies for all Authority divisions;
- Assisting the Human Resources Department with internal investigations;
- Reviewing rules, policies, plans and forms prepared by other Authority personnel for compliance with applicable laws;
- Preparing and/or reviewing documents for construction projects and for the purchase, lease, or sale of goods, services and professional services including specifications, bid documents, requests for proposals, and requests for qualifications, bonds, and contractual documents; and
- Maintaining and developing knowledge about laws, regulations, and court decisions affecting the Authority.in PWSA's Initial Tariff and Rate Case (R-2018-3002645, R-2018-3002647).

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("COMMISSION" OR "PUC")?

A. Yes. On July 2, 2018, I submitted direct testimony in PWSA's first base rate proceeding before the Commission at Docket Nos. R-2018-3002645 and R-2018-3002657. Also, on October 26, 2018, I submitted rebuttal testimony, along with Jennifer Presutti, in that proceeding. In addition, in PWSA's combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement Plan ("LTIIP") proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-

3005039 (wastewater), I submitted direct testimony on February 14, 2019, rebuttal testimony on May 6, 2019 and supplemental direct testimony on August 2, 2019.

Q. HAVE YOU PRESENTED TESTIMONY IN OTHER PROCEEDINGS?

A. Yes. I have testified in several court proceedings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is two-fold. First, I will provide the status of various contracts, including (1) the Cooperation Agreement with the City of Pittsburgh ("City"); (2) the billing arrangement with the Allegheny County Sanitary Authority ("ALCOSAN"); (3) the billing arrangement with the Pennsylvania American Water Company ("PAWC"); and (4) the bulk and resale contracts. Second, I will provide additional information about PWSA's staff recruitment efforts to support our view that PWSA can get much closer to achieving full staffing for 2021 which is – in part – a reason we are seeking the requested rate increase.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am including as Exhibit DML-1 the Cooperation Agreement Between the City of Pittsburgh and The Pittsburgh Water and Sewer Authority dated October 3, 2019.

II. STATUS OF VARIOUS CONTRACTS

A. City Cooperation Agreement

Q. WHAT IS THE HISTORY OF THE COOPERATION AGREEMENT WITH THE CITY?

A. PWSA and the City originally entered into a Cooperation Agreement, effective January 1, 1995 ("1995 Cooperation Agreement"), under which the City provided certain ongoing services to the Authority, for which the Authority compensated the City. The 1995 Cooperation Agreement was amended on March 21, 2011. With unanimous Board

approval, PWSA gave the City notice as of February 4, 2019 that it was terminating the 1995 Cooperation Agreement in 90 days, effective May 5, 2019. At that time, PWSA and the City began to negotiate terms of a new Cooperation Agreement to replace the 1995 Cooperation Agreement. Upon resolution adopted by PWSA's Board, the termination of the 1995 Cooperation Agreement was extended until July 5, 2019 and again until October 3, 2019.

Q. HAS A NEW COOPERATION AGREEMENT BEEN NEGOTIATED?

A. Yes. PWSA's Board approved a new Cooperation Agreement on June 7, 2019 ("2019 Cooperation Agreement"), which was presented to City Council on June 11, 2019. Public hearings were held on the proposed Cooperation Agreement on July 9, 2019. City Council passed a resolution on July 24, 2019 authorizing a 2019 Cooperation Agreement between the City and PWSA to provide for the rights and obligations of each party with respect to the other, and for payments and capital cooperation between the parties. The resolution authorized the Mayor to enter the 2019 Cooperation Agreement, and provided that the 2019 Cooperation Agreement shall be in a form approved by the City Solicitor and shall, in addition to the terms and conditions specified therein, contain other terms and conditions that may be in the interest of the City. After additional negotiations, PWSA's Board approved a revised 2019 Cooperation Agreement on November 22, 2019, which was executed by the City on December 20, 2019. The effective date is October 4, 2019. A copy of the 2019 Cooperation Agreement is attached as PWSA Exh. DML-1.

Q. PLEASE DESCRIBE THE KEY PROVISIONS OF THE 2019 COOPERATION AGREEMENT.

A. The 2019 Cooperation Agreement, which is the product of months of negotiations and includes compromises by both PWSA's Board and the City, provides a transparent and

structured framework under which PWSA and the City have agreed to exchange services and payments. Notably, PWSA and the City entered into the 2019 Cooperation 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.

Q. HAS PWSA FILED ITS 2019 COOPERATION AGREEMENT WITH THE COMMISSION?

A. Yes. On December 20, 2019, PWSA filed the 2019 Cooperation Agreement with the Commission for review pursuant to Section 507 of the Public Utility Code[1] at Docket No. U-2020-3015258. Consistent with the Joint Petition for Partial Settlement[2] of its Compliance Plan Stage 1 proceeding,[3] PWSA requested that the Commission refer the

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1 66 Pa.C.S. § 507.

2 Joint Petition for Partial Settlement, § III.P.1, pg. 30.

3 Consolidated Docket Numbers: M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), P-2018-3005039 (wastewater), Recommended Decision issued October 29, 2019, which is available at: http://www.puc.state.pa.us/pcdocs/1642108.pdf.

2019 Cooperation Agreement to the Office of Administrative Law Judge for a formal on-the-record proceeding.

Q. WHAT IS THE CURRENT STATUS OF THE PROCEEDING IN WHICH THE 2019 COOPERATION AGREEMENT IS UNDER REVIEW?

A. Staff served data requests on PWSA on January 9, 2020, which PWSA responded to on January 23, 2020. Also, on January 16, 2020, the Commission issued a Secretarial Letter extending the 30-day statutory time period for reviewing the 2019 Cooperation Agreement until further order of the Commission.

Q. PENDING THAT REVIEW, ON WHAT BASIS IS PWSA INTERACTING WITH THE CITY?

A. Since October 4, 2019, PWSA has been following the terms of the 2019 Cooperation Agreement in its interactions with the City. However, certain payments that PWSA is required to make to the City under the 2019 Cooperation Agreement will not be made until December 2020. These payments include the City Payroll Tax in Paragraph 8 and the Public Utility Realty Tax in Paragraph 9.

Q. PLEASE DESCRIBE THE PROVISION IN THE 2019 COOPERATION AGREEMENT THAT ADDRESESS THE PAYMENT BY THE CITY FOR WATER USAGE.

A. Section 6.2 of the 2019 Cooperation Agreement provides that starting on January 1, 2020, the City will begin to pay normal PWSA charges on City-owned metered properties for all water usage and any fire hydrant usage. Under this provision, these payments will be phased in over a 5-year period, with the City paying 20% of the charges in 2020, 40% in 2021, 60% in 2022, 80% in 2023 and 100% of the total charges in 2024 and thereafter.[4]

[4] The City of Pittsburgh Municipal Accounts will be assessed under PWSA's Commercial customer class and the payment agreement set forth in Exhibit DML-1 is reflected in both PWSA's Proposed Water and Wastewater Tariff Supplements.

B. PAWC

Q. IN PWSA'S LAST BASE RATE PROCEEDING AND DURING THE COMPLIANCE FILING PROCEEDING, PARTIES HAVE RAISED AN ISSUE ABOUT PWSA'S BILLING ARRANGEMENT WITH PAWC. PLEASE DESCRIBE THAT BILLING ARRANGEMENT.

A. The City of Pittsburgh entered into an arrangement with PAWC in 1973 whereby the City pays a rate subsidy directly to PAWC that offsets PAWC's water rates for about 27,000 of PWSA's sewer only customers. The subsidy limits water charges for City residents served by PAWC, so that their out-of-pocket rates match PWSA prices. The 1995 Cooperation Agreement required PWSA to reimburse the City for this expense. In practice, PWSA paid the rate subsidy directly to PAWC.

Q. WHAT IS THE STATUS OF THIS BILLING ARRANGEMENT?

A. In the Joint Petition for Partial Settlement filed in the Compliance Plan Stage 1 proceeding, the parties agreed that the subsidy would be eliminated by December 31, 2019.[5] It was noted in the Joint Petition that based on May 2019 billing data, over 80% of residential customers were receiving a discount of $1 or less, over one-third of the residential customers are receiving no discount; and the average discount customers were receiving was less than 50 cents per month. By the Recommended Decision issued on October 29, 2019, the ALJs recommended approval of the Joint Petition. As of December 31, 2019, the subsidy was eliminated. However, PWSA made true-up payments to PAWC in January and February 2020.

[5] Joint Petition for Partial Settlement, § III.T.1., pg. 32.

C. Bulk Water and Bulk Resale Contracts

Q. PLEASE DESCRIBE PWSA'S BULK RESALE WATER CONTRACTS.

A. PWSA has contracts for the sale of bulk water to other water utilities or public authorities for resale to end-users. Part I, Section I (Sales for Resale) of PWSA's existing Water Tariff applies to these sales, and generally speaking, that schedule authorizes negotiated rates and terms.

Q. HAS PWSA RENEGOTIATED ANY OF THESE BULK RESALE WATER CONTRACTS SINCE THE CLOSE OF THE RECORD IN THE COMPLIANCE PLAN STAGE 1 PROCEEDING?

A. No.

Q. HAS PWSA NEGOTIATED ANY NEW BULK RESALE CONTRACTS?

A. PWSA has not negotiated any new bulk resale water contracts since the close of the record in the Compliance Plan Stage 1 proceeding.

Q. DID PWSA MAKE ANY COMMITMENTS IN THE JOINT PETITION FOR PARTIAL SETTLEMENT OF THE COMPLIANCE PLAN STAGE 1 PROCEEDING WITH RESPECT TO THE BULK RESALE WATER CONTRACTS?

A. Yes. In the Joint Petition, PWSA agreed to: (i) file all bulk water sales contracts with the Commission within 120 days of a final order in the Compliance Filing proceeding, as well as all future such contracts that it executes; (ii) propose a resale rate in this case that will be included in its tariff and charged to new bulk water sales; (iii) provide costs incurred to furnish these wholesale services as part of the cost of service for this rate case; and (iv) seek to update rates to reflect the current cost of service.[6]

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[6] Joint Petition for Partial Settlement, § III.R., pg. 31.

Q. HAS PWSA FULFILLED THESE COMMITMENTS?

A. As the final order in the Compliance Plan Stage 1 proceeding has not been entered, the date for filing bulk water sales contracts is not yet known. However, PWSA will timely fulfill this commitment. Through the direct testimony of Harold J. Smith, PWSA has proposed a resale rate to charge new bulk water resale customers and has provided costs incurred to furnish these wholesale services.[7] As to efforts to seek to update rates in existing contracts to reflect the current cost of service, PWSA will use this cost of service data to begin attempting to renegotiate these rates.

Q. DOES PWSA ALSO HAVE A BULK CONTRACT WITH A LARGE WATER USER?

A. Yes. PWSA has a bulk water contract with Riverbend Foods, which is a food processing plant. At present, Riverbend is consuming no water and thus PWSA has no data and is unable to calculate a cost-based rate at this time. Currently, Riverbend is in a Chapter11 bankruptcy proceeding in the Western District of Pennsylvania (Case No. 19-24114-GLT). In that proceeding, the U.S. Bankruptcy Court issued an order on November 18, 2019 directing that Riverbend be billed at the applicable industrial rate in PWSA's Commission-approved Tariff. As Riverbend is not consuming water, PWSA is charging the minimum allowance pursuant to the Industrial Rate, which is shown in Part I, Section A (Rates for Metered Service). Going forward, PWSA considers this contract to be terminated and PWSA will charge this or any other large water users either the Industrial Rate or a negotiated rate pursuant to Rider DIS – Demand Based Industrial Service

[7] The proposed Consumption Charge for Sales for Resale water contracts is reflected in Section I (page 16) of PWSA's Proposed Water Tariff Supp. No. 1.

("DBIS") under its existing Water Tariff if the customer can demonstrate that it qualifies for the DBIS rate.

Q. PLEASE DESCRIBE PWSA'S BULK WASTEWATER CONVEYANCE AGREEMENTS.

A. Pursuant to Ordinances, PWSA has bulk wastewater conveyance agreements with municipalities and other public utilities. Part I, Section B (Bulk Wastewater Conveyance) of the existing Wastewater Tariff applies to these sales, and generally speaking, that schedule authorizes negotiated rates and terms.

Q. DID PWSA MAKE ANY COMMITMENTS IN THE JOINT PETITION FOR PARTIAL SETTLEMENT IN THE COMPLIANCE PLAN STAGE 1 PROCEEDING REGARDING THE BULK WASTEWATER CONVEYANCE AGREEMENTS?

A. Yes. In the Joint Petition, PWSA agreed to: (i) file all bulk wastewater conveyance agreements, to the extent that it can locate them, with the Commission within 120 days of a final order in the Compliance Filing proceeding, as well as all future such contracts that it executes; (ii) propose a rate in this case that will be included in its tariff and charged to new bulk wastewater conveyance agreements; (iii) include rates in its tariff for any pre-existing bulk wastewater conveyance agreements that PWSA is unable to locate; and (iv) and notify the Commission if ALCOSAN assumes responsibility for any existing wastewater conveyance agreements.[8]

Q. HAS PWSA FULFILLED THESE COMMITMENTS?

A. As the Commission has not issued a final order in the Compliance Filing proceeding, the date for filing bulk wastewater conveyance agreements is not yet known. However, PWSA will timely fulfill that commitment by filing all of the agreements it has been able

[8] Joint Petition for Partial Settlement, § III.S., pg. 32.

to obtain.[9] With respect to the one agreement that has not been located, no need exists to include a rate in PWSA's tariff because no charges are associated with this agreement. Also, PWSA is not proposing a rate for new bulk wastewater conveyance agreements because it does not intend to enter into any such agreements. Instead, PWSA is in discussions with ALCOSAN for transferring assets associated with its multi-municipal lines. As ALCOSAN has not assumed responsibility for any existing wastewater conveyance agreements, no notification requirement has been triggered. However, the long-range plan continues to include the transfer of these obligations and assets to ALCOSAN.

III. PWSA STAFF RECRUITMENT EFFORTS

Q. PLEASE EXPLAIN PWSA'S STAFF RECRUITMENT EFFORTS.

A. Department directors provide job descriptions, which are posted on PWSA's website. Other venues are also used, including LinkedIn, Handshake, Twitter and professional network organizations, such as the Engineers' Society of Western Pennsylvania.

Q. WHY HAS PWSA BEEN UNSUCCESSFUL IN ACHIEVING FULL STAFFING?

A. A key reason for PWSA's inability to achieve full staffing has been the domicile policy adopted by the PWSA Board to follow the City of Pittsburgh's Home Rule Charter, which contains a requirement for persons employed by the City to live in the City (except for police officers who have been exempted by the Supreme Court of Pennsylvania.) PWSA's domicile policy applies to all employees except those specifically exempted from the residency requirements by PWSA's Executive Committee. The domicile

[9] To date, PWSA has been unable to locate the 1926 Sewer Maintenance Agreement between Brentwood Borough and the City of Pittsburgh. PWSA submitted a Right-to-Know request to the Borough of Brentwood but was informed that it, too, could not locate the agreement. All other known agreements have been located and will be filed.

requirements restrict PWSA's ability to attract and retain capable and talented individuals with the necessary skills. This is largely due to the fact that only 300,000 people live in the City, compared to 2.36 million people in the Pittsburgh metropolitan area. This means that PWSA only has access to less than 16 percent of this population, unless the individuals are willing to relocate to the City, which presents its own challenges, especially for families with school-age children. Due to economic conditions in Pittsburgh, skilled labor is particularly difficult to obtain.

In addition to the domicile policy, PWSA's efforts to achieve full staffing have been hampered by the mere fact of running a business. PWSA is obligated to provide safe, adequate and reliable service to its customers and to furnish customer service that meets the Commission's regulatory requirements. Those duties necessarily require PWSA to focus its resources on operations and service, which sometimes means that the hiring process is delayed. Even when hiring delays occur, PWSA continues to fulfill its regulatory obligations through reliance on contractors and consultants.

Q. WHY DOES PWSA BELIEVE IT WILL BE CLOSER TO ACHIEVING FULL STAFFING IN 2021?

A. PWSA has made a concerted effort, despite the challenges noted above, to achieve full staffing to ensure that sufficient human resources are available to fulfill all of its duties under the Commission's regulatory requirements. In 2019, PWSA added 77 new employees. Some were direct hires, while others were previously contractors. In addition, PWSA reached out to Community College of Allegheny County ("CCAC"), which agreed to implement an apprentice program. CCAC provides a basic foundation for the necessary skills and then PWSA accepts the students as apprentices, providing the additional training that is needed. PWSA is considering expanding this program so that

its contractors likewise have apprentices assigned to them. Once these individuals are fully trained, PWSA will take them as full-time employees, which should help to increase the pool of potential candidates. Another step that PWSA has taken is to hire a full-time recruiter. Additionally, PWSA has been successful in removing the domicile requirement for various positions.

IV. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

VERIFICATION

I, Debbie Lestitian, hereby state that: (1) I am the Chief Corporate Counsel and Chief of Administration 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: 3/6/20

Debbie Lestitian
Chief Corporate Counsel and Chief of Administration
The Pittsburgh Water and Sewer Authority

Exhibit DML-1

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

This Cooperation Agreement ("Agreement"), is made this 3rd 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:

Year	Percentage of Cost to be paid by City
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:

Year	Percentage of Usage Charged
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:

Year	% of PURTA Payment to be paid to the City
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, 14th 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:

CITY OF PITTSBURGH

Mayor

Reviewed by:

Assistant City Solicitor

Approved as to form:

City Solicitor

Countersigned by:

12-20-19

City Controller

53122

Department of City Controller
O.K.
12-17-19
M.W.B.
PITTSBURGH

ATTEST:

THE PITTSBURGH WATER AND SEWER AUTHORITY

Secretary

Chairman

TAB

3

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

JENNIFER PRESUTTI

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:
Support for Proposed Rate Increase
PWSA Budgeting Process
PWSA Financial Results
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March 6, 2020

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I. INTRODUCTION

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

A. My name is Jennifer Presutti and I am the Director of Finance for The Pittsburgh Water and Sewer Authority ("PWSA" or "Authority").

Q. WHEN DID YOU TAKE ON YOUR POSITION WITH PWSA?

A. I was appointed to my position on August 16, 2018 and assumed my duties with PWSA on September 17, 2018.

Q. MS. PRESUTTI, PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Master's Degree in Public Policy and Management from the University of Pittsburgh and a Bachelor of Science degree in Political Science from the San Francisco State University.

Q. MS. PRESUTTI, PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.

A. As noted, I have been at the Authority since September 2018. Prior to working at the Authority, I worked for the City of Pittsburgh. I joined the City in 2010 and was promoted to Office of Management and Budget ("OMB") Director in 2017. While at the City, I served as a budget analyst, senior budget analyst, capital budget manager, assistant director- capital and asset management, and finally director. Prior to working for the City, I was the Finance Administrator in the Department of Mechanical Engineering and Materials Science for the University of Pittsburgh from 2008 to 2010 and the Finance, Administration, and Operations Manager for Equality California and Equality California Institute from 2006 to 2009.

Q. MS. PRESUTTI, WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES WITH PWSA?

A. As the Director of Finance for PWSA, I am responsible for the creation, implementation, and monitoring of the Authority's operating budget. I also monitor the Authority's Construction Improvement Plan ("CIP"). I monitor cash flow as it relates to the budget, I monitor salaries and personnel as it relates to position control and operations, and I support my executives and the PWSA Board as needed. I am responsible for Project Controls, Procurement, and Fleet and Asset Management. I assist with monitoring our revenue stream and debt service. I oversee the performance management for the organization. Finally, I am also working with the PUC to ensure that PWSA is in compliance as it pertains to our financial reporting, communication, and conformity.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("PUC" OR "COMMISSION")?

A. Yes, along with Debbie M. Lestitian, PWSA's Chief Corporate Counsel, I submitted written rebuttal testimony in PWSA's Initial Tariff and Rate Case at Docket Numbers R-2018-3002645 (water) and R-2018-3002647 (wastewater). I also submitted written Direct, Supplemental Direct, and Rebuttal testimony in PWSA's combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement Plan ("LTIIP") proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater). (R-2018-3002645, R-2018-3002647).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: 1) provide the documentation and supporting methodology for the schedules and exhibits that are included in PWSA's base rate filing; 2) describe PWSA's financial results for the fully projected future test year ("FPFTY"),

which is comprised of the period from January 1, 2021 through December 31, 2021; and 3) provide support for PWSA's requested increase in existing annual base rates of $24.2 million. We are also requesting a Distribution System Improvement Charge ("DSIC")[1] that coupled with the requested base rate increase, would result in a total revenue increase of $43.8 million. PWSA is also requesting a second increase in annual base rates in fiscal year ("FY") 2022 of $12.6 million.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- **Exh. JP-1:** Exhibit JP-1 provides schedules showing PWSA's Income Statement, Cash Flow Statement, and Debt Service Coverage Statement at present rates for the HTY (FY 2019), FTY (FY 2020), FPFTY (FY 2021) and the Forecast Period (FY 2022 through FY 2023).
- **Exh. JP-2:** Exhibit JP-2 provides schedules showing PWSA's Income Statement, Cash Flow Statement, and Debt Service Coverage Statement at proposed rates for the HTY, FTY and FPFTY and the Forecast Period.
- **Exh. JP-3:** Exhibit JP-3 contains additional budget information.
- **Exh. JP-4:** Exhibit JP-4 contains the unaudited 2019 balance sheet
- **Exh. JP-5:** Exhibit JP-4 compares PWSA's actual FY 2019 with PWSA's projections for FY 2019 (as the FPFTY from 2018 base rate case).

[1] PWSA filed a Petition seeking approval of a DSIC on March 3, 2020 at Docket No. P-2020-3019019. PWSA is also requesting that the Commission consolidate the Petition with this proceeding.

II. BACKGROUND FOR CONSIDERATION OF RATE REQUEST

Q. PLEASE PROVIDE THE BACKGROUND OF PWSA'S CURRENT FINANCIAL CONDITION.

A. Since its first rate proceeding before the PUC, PWSA's financial strength continues to improve. PWSA ended FY 2019 in a positive cash position and continues to meet our financial metrics.

While PWSA did not meet its budgeted revenue projections, collections were strong, including prior year collections. Our total receipts for FY 2019 were 5.5% higher than the prior fiscal year. PWSA did lose a major industrial customer in FY 2019, but we are encouraged that new collections from the City of Pittsburgh and its affiliates will smooth that loss.

PWSA did not meet its budgeted operating expenses as well. Key expenditure classes that did not meet budget were salaries and associated benefits, professional services for Engineering and Operations, as well as PWSA's payment to the City of Pittsburgh for services. Budgeted line items that exceeded budget include equipment, inventory, and our Urgent Water, Urgent Sewer, and Surface Restoration line items. It is important to note that the Urgent Water, Urgent Sewer, and Surface Restoration line items are a direct response to the number and size of emergency breaks in our distribution and conveyance systems. As noted above, these line items well exceeded the FY 2019 allocation by 57%, 62%, and 17%, respectively. Please see Exhibit JP-5 for additional FY 2019 budget to actual comparisons.

PWSA has undertaken a number of significant capital projects to modernize its infrastructure, increase efficiency, increase safety and redundancy, and improve customer service. PWSA's capital program for FY 2019 has had the highest spend for the

Authority to date. PWSA had a total spend of $107M on capital projects related to the Water Treatment Plant, wastewater and stormwater conveyance system, pumping and storage, water distribution system, lead line removal, and green infrastructure. FY 2019 capital spending increased over the prior year by 58%. Almost all projects were funded with borrowed funds including revenue bonds or PENNVEST funding. PWSA did utilize a small amount of internally generated funds (referred to as "PAYGO") for capital expenditures with a shorter useful life. Continuing this spending trajectory will require an increase in PWSA's base rates to allow for additional debt service and the requested DSIC to allow for the planned projects outlined in the LTIIP.

However, PWSA's *proforma* results clearly demonstrate that a rate increase is needed if the Authority is going to maintain its financial status and current favorable bond ratings and be able to continue with its significant efforts to improve the safety, efficiency and reliability of its system and continue to work to improve customer service.

III. PWSA's NEED FOR RATE RELIEF

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

A. PWSA seeks an increase in the rates of its water operations and its wastewater operations that will produce additional annual operating revenues of $43.8 million (**including** the proposed DSIC), or approximately 25.4%, over its annualized total-Authority test year revenues at present rates.

PWSA is also seeking a second-year increase in the rates of its water operation and wastewater operation that will produce additional annual operating revenues of $12.6 million, or approximately 6.4%.

The requested relief can be broken down as follows:

Rate Revenue Increases	FPFTY FY 2021 (%)	FPFTY FY 2021 ($)	Forecast FY 2022 (%)	Forecast FY 2022 ($)
Water	15.9%	$17.5m	5.1%	$6.5m
Water + DSIC	27.4%	$30.2 m	--	--
Sewer	10.7%	$6.7m	8.7%	$6.1m
Sewer + DSIC	21.8%	$13.6m	--	--
Total Base Rates	14.0%	$24.2m	6.4%	$12.6m
Total + DSIC	25.4%	$43.8m	--	--

Q. WHY IS PWSA SEEKING RATE RELIEF AT THIS TIME?

A. Since its first rate proceeding before the Commission, the Authority has reduced costs where it is possible to do so. However, increased capital spending and the maintenance of the Authority's assets warrant a higher capital budget that needs support from rates. The Authority needs additional revenues to address unavoidable increases in operating costs in several areas. PWSA must also continue to achieve the financial metrics necessary to maintain our financial status, ensuring current favorable bond ratings and avoiding increased borrowing costs that customers would have to bear in the future if the rating agencies downgraded the Authority's bond rating.

Q. PLEASE SUMMARIZE THE MAIN DRIVERS FOR THE REQUESTED INCREASE OF $43.8 MILLION (INCLUDING DSIC).

A.

Total FPFTY Revenue Requirements	Required Revenue
O&M Expenses	$120.5 million
Debt Service	$ 75.4 million
CapEx and Transfers	$ 29.9 million
TOTAL	$ 225.8 million

The major FPFTY cost drivers are:

- **Salaries and associated benefits-** The PWSA has focused its recruitment effort to work to fill all budgeted positions by 2022. PWSA has assigned a full-time recruiter, engaged a temp-to-hire firm, and have been successful in removing the domicile requirement for various positions. In addition, we are entering our negotiations for a new union contract with three unions. We expect an increase in the cost of these contracts.
- **Debt service-** The debt and debt service for PWSA's capital needs in the FPFTY 2021 and the Forecast Period are explained by Edward Barca (PWSA St. No. 5). The PWSA has smoothed the approved 5-year Capital Improvement Program to be funded over a 7-year period. Even with that effort, it is expected that we will need to issue debt on an annual basis.
- **Operating contracts-** As noted previously in my testimony, our Urgent Water, Urgent Sewer, and Surface Restoration contracts have almost doubled year over year. These allocations are a direct response to emergency breaks in our distribution and conveyance systems. Surface Restoration also supports our lead-line replacement program. Another large contract in 2021 supports the CCTV work necessary on City infrastructure for compliance purposes.
- **Non-capital facility improvements-** The PWSA intends to make maintenance improvements at facilities such as painting, lighting, power washing, and façade improvements.

- **Systems upgrade**- The PWSA is on track to complete a major, and needed, upgrade to our SCADA system. In addition, we intend to have our new ERP system, with associated licenses, support, and maintenance in place by the end of 2021.

Q. PLEASE ELABORATE ON THE NEED FOR RATE RELIEF RELATED TO THE O&M BUDGET.

A. Without the requested rate relief, the Authority will be unable to meet its debt obligations, or continue to operate and maintain the system appropriately. The operating budget is expected to increase year over year and will result in annual increasing deficits without a rate increase.

Q. PLEASE ELABORATE ON THE NEED FOR RATE RELIEF RELATED TO DEBT SERVICE.

A. PWSA anticipates entering into a new low-interest loan agreement with PENNVEST in the FPFTY. This loan will increase PWSA's debt service in two ways. First, PWSA will need more revenue to pay back the loan. Second, PWSA will need more revenue to ensure that it satisfies its debt service coverage requirements. PWSA also anticipates issuing additional debt annually, as explained in the testimony of Edward Barca (PWSA St. No. 5).

Q. PLEASE ELABORATE ON THE NEED FOR RATE RELIEF RELATED TO FREE CASH FLOW.

A. It is important to have a healthy amount of operating cash on hand. The rating agencies use non-borrowed year-end cash, which may be referred to as "days cash on hand" or "DCOH," as a critical indicator of the financial stability of utility system. Adequate cash reserves allow systems to contribute to increasing capital projects, mitigate system disruptions, and fund unexpected operating expenses. As explained by Edward Barca of

PWSA and Thomas Huestis of Public Resources Advisory Group ("PRAG") (PWSA St. No. 6), PWSA is generally below national municipal utility medians for non-borrowed year-end cash. Increasing rates to provide cash flow will help to mitigate this concern.

IV. PWSA 2021 OPERATING BUDGET

Q. PLEASE DESCRIBE HOW PWSA'S OPERATING BUDGETS ARE CREATED.

A. Each of the fourteen departments within PWSA prepares budget requests for the upcoming fiscal year. Those requests are reviewed by the Finance Department for accuracy and adherence to the realistic expectations and/or projections. The Finance Department prepares a "roll-up" of initial funding and expense recommendations for the Executive Director. The Executive Director then may make recommendations on the initial budget requests. Any recommendations are discussed with the applicable department and, if accepted, results in a revised set of budget requests. Once satisfied, the Executive Director (with the assistance of the Finance Department) prepares an operating budget for review by the Board. The Board may accept or modify the operating budget. The final operating budget is approved by the Board. Typically, approval is received in November or December for the fiscal year commencing on January 1. If necessary, the Operating Budget can be revised during the fiscal year with Board approval.

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

A. In addition to an internal review and approval process by the PWSA executive team, PWSA is required to obtain final approval by PWSA's Board of Directors. The Board (whose members are nominated by the Mayor and confirmed by City Council) is the governing body of the Authority and is responsible for providing strategic direction and oversight to the PWSA management team, as well as adopting the Authority's annual

operating and capital budgets, approving contracts, and setting rates (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, or the FPFTY, 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 2020 to establish a fully developed FPFTY as the test year in this proceeding and as a base year of its two-year forecast. In addition, a FY 2022 budget was developed. Beyond FPFTY, and FY 2020, for 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 JP-2.

V. ***PROFORMA*** FINANCIAL RESULTS

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

A. Yes. Please see Exhibit JP-1 and Exhibit JP-2.

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

A. As permitted by Act 11 of 2012, PWSA has based its claimed revenue requirement on the fully forecasted 12 months ending December 31, 2021, referred to as the Fully Projected

Future Test Year ("FPFTY"). The Future Test Year ("FTY") is calendar year 2020, January 1, 2020 to December 31, 2020, and the Historical Test Year ("HTY") is calendar year 2019, January 1, 2019 to December 31, 2019. Those results are displayed on Exhibit JP-1. Each page of this exhibit shows data for: (1) the HTY, the 12 months ended December 31, 2019 or FY 2019; (2) the FTY, the 12 months ended December 31, 2020 or FY 2020; and (3) the FPFTY, the 12 months ended December 31, 2021 or FY 2021.

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

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

Q. IS PWSA PROPOSING TO ALLOCATE ANY OF ITS WASTEWATER COST OF SERVICE TO ITS WATER OPERATIONS?

A. No. There is no allocation of wastewater cost of service to PWSA's water operations. There are, however, shared services — such as Customer Service and Finance — that have been allocated between these operations and separately reflected in each cost of service. No subsidies are built into the model between water and wastewater, as explained by Harold Smith.

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

A. The HTY is the unaudited results for FY 2019. The audited results are not available at this time. I do not anticipate material differences between the unaudited results and the audited results, which should be available by April 24, 2020.

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

A. The FTY (FY 2020) and FPFTY (FY 2021) results were derived through a comprehensive Authority-wide budgeting process. PWSA uses a zero-based budgeting method to develop annual budgets. Previous year's budgets are referenced when developing the FPFTY budget, but each cost is individually considered when developing the budget. This is contrary to a traditional budgeting approach in which an escalation factor is applied for an anticipated increase in a specific type of cost. A traditional budgeting process, using escalation factors, is used to forecast the Forecast Period, the operating results for FY 2020 – FY 2023, shown on Exhibit JP-1.

On Exhibit JP-3, I have provided additional information concerning the budget process. This Exhibit shows the Operating Budgets for FPFTY (FY 2021) and FY 2022 as well as the anticipated Operating Expenses incurred in the FTY (FY 2020). The types of expenses incurred or projected for each department are also shown. Notably the largest portion of each Annual Operating Budget is for Labor and associated benefits.

In addition to the operating expenses, the capital costs related to existing debt service and debt service related to the additional borrowing described above, PWSA incurs several other costs.

For example, the Authority has an obligation under the Cooperation Agreement to make payments for services currently provided by the City of Pittsburgh to PWSA, as well as other negotiated responsibilities that PWSA pays for on behalf of the City. This obligation is discussed in greater detail by Debbie M. Lestitian in PWSA St. No. 2. These payments are included in the revenue requirements segregated by water and wastewater conveyance obligation. PWSA has budgeted for the following City services within the 2020 operating budget:

Permits	$639,000
Vehicle Repairs	$660,000
Fuel-Gasses	$300,000
City Indirect Costs	$4,015,531 *(Pension and taxes)*
TOTAL	**$5,614,531**

Additionally, the Authority carries bad debt expense for collections related to pass-through charges by the Allegheny County Sanitary Sewer Authority ("ALCOSAN"), the region's wastewater treatment provider. All of the wastewater collected and conveyed by the PWSA wastewater conveyance system is treated at the wastewater treatment facilities of ALCOSAN. PWSA bills customers on behalf of ALCOSAN for wastewater treatment service via a pass-through charge on PWSA bills. ALCOSAN's rates are established by ALCOSAN. This requested increase relates to the budgeted cost of uncollectibles on the ALCOSAN pass-through charges. There were large adjustments in FY 2017 which resulted in more being paid than expected in HTY (FY 2019) than were budgeted for the HTY, and an increase in FPFTY to reflect a budgeted increase in ALCOSAN's rates. The pass-through charges that are assessed to the Authority are based on billed volume, not collected revenue, and thus costs Authority customers approximately $1 million per year.

Exhibit JP-3 provides information regarding changes in budgeted levels from the HTY (FY 2019) to the FTY (FY 2020) and from the FTY (FY 2020) to the FPFTY (FY 2021) and FY 2022. While the primary focus of this rate filing is justifying the increase for the FPFTY, it is important for the Commission to understand the significant ramp up in costs for compliance with the mandates from the Pennsylvania Department of Environmental Protection, and an enhanced level of service for which PWSA proposes continuing in the FPFTY and FY 2022 budgets.

Q. HOW DO THE OPERATING RESULTS SHOWN ON THE ATTACHED EXHIBITS TREAT THE COOPERATION AGREEMENT WITH THE CITY?

A. PWSA's obligations under the Cooperation Agreement are shown as an expense of the Authority since PWSA is legally obligated by the Cooperation Agreement to make certain payments to the City. Accordingly, payments to the City under the Cooperation Agreement are treated as a "known and definite" expense in PWSA's operating results and resulting financial metrics. However, for purposes of calculating debt service coverage, Cooperation Agreement expenses are subordinate to the payment of debt service as discussed in Mr. Huestis' testimony.

The Authority's obligations under the Cooperation Agreement are discussed in greater detail by Debbie M. Lestitian in PWSA St. No. 2. These obligations are included in the revenue requirements segregated by water and wastewater conveyance obligation as previously stated in the amount of $5.6 million.

Q. DOES THE FPFTY INCLUDE COSTS RELATED TO AMOUNTS PAID BY THE AUTHORITY TO THE PENNSYLVANIA AMERICAN WATER COMPANY ("PAWC") TO PARTIALLY COVER WATER SERVICE CHARGES FOR WHICH CERTAIN PAWC CUSTOMERS, WHO ARE ALSO PITTSBURGH RESIDENTS, ARE RESPONSIBLE?

A. No. Under an arrangement between the City and PAWC, the City was required to pay a rate subsidy to the PAWC to partially cover charges for certain PAWC customers. The subsidy was the difference between the (higher) PAWC rates and the rates that these PAWC-Pittsburgh customers would otherwise pay if he/she were a PWSA customer. The subsidy was addressed in PWSA's Compliance Plan[2] and ended on December 31, 2019.

[2] Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater).

No amounts are included in the FPFTY for the subsidy, but there are small 'true-up' payments allocated in the FTY due to lags in billing cycles for PAWC.

In addition, the PWSA continues to pay for hydrants on behalf of the City to PAWC, West View Water, and Wilkinsburg Penn, which will be recovered in the annual payment to the City. PWSA anticipates that once a hydrant charge is established in this rate case, that those costs will be also be charged to the City at the annual phased-in amounts. This would not impact PWSA's projections for the FPFTY.

Q. ARE THE AMOUNTS SHOWING IN EXHIBIT JP-1 DIFFERENT THAN THOSE APPROVED BY PWSA'S BOARD?

A. There are no changes to the Board-approved budget.

Q. IS THE COST OF PWSA'S PLANS TO OBTAIN LONG-TERM FINANCING INCLUDED IN THE FPFTY AND FORECAST YEAR 2022?

A. Yes. The cost of PWSA's anticipated loan from PENNVEST in the FTY (FY 2020) as well as the other anticipated loans and issuances of revenue bonds in the FPFTY has been reflected in the FPFTY and forecast year FY 2022.

Q. IS THE COST OF LITIGATING THIS RATE CASE INCLUDED IN THE FPFTY?

A. Yes, PWSA has budgeted for this expenditure and is proposing to include it as projected in its revenue requirement rather than amortizing or "normalizing" these expenditures over some period of time. As a cash flow regulated municipal entity, PWSA's rates reflect what it actually incurs in a year and collecting those costs in rates over two or three years is not reasonable.

VI. CALCULATION OF REVENUE REQUIREMENT

A. Cash Flow Ratemaking

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

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

The Commission has directed that PWSA's revenue requirement will be determined using the "Cash Flow" method, the traditional method of determining just and reasonable rates for municipal utilities such as PWSA.[3] In PWSA's first base rate case,[4] PWSA's revenue requirement was determined using the "Cash Flow" method.

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

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[3] *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.

[4] *Pennsylvania Public Utility Commission v. PWSA*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

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

> (b) ... Included in that requirement [of establishing just and reasonable rates] is the subsidiary obligation to provide revenue allowances from rates adequate to cover [the utility's] reasonable and prudent operating expenses, depreciation allowances and debt service, as well as sufficient margins to meet bond coverage requirements and other internally generated funds over and above its bond coverage requirements, as the Commission deems appropriate and in the public interest for purposes such as capital improvements, retirement of debt and working capital.[5]

The Commission also stated that, in determining just and reasonable rate levels under the Cash Flow Methodology it would consider, among other relevant factors, the following financial factors:[6]

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

B. Justification for PWSA's Requested Increase In Rates

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

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5 52 Pa.Code § 69.2702.

6 52 Pa.Code § 69.2703.

A. PWSA's financial results — at present rates, after assuming the Operating Budget and projected revenues established for the FPFTY are shown on Exhibit JP-1. As can be seen, without a rate increase PWSA's key financial metrics would be inadequate in all areas. In the FPFTY, PWSA's end of year cash balance is projected to be a negative $6.9 million (or (21.2) days of cash); this negative position continues and gets worse throughout the Forecast Period (FY 2022 and FY 2023). Similarly, without rate relief, PWSA's debt service coverage levels fall below the Authority's minimum Rate Covenant requirements in the FPFTY (1.09 on Senior Debt, where the minimum is 1.25x, and 0.87x on total debt (which includes subordinate liens), when the minimum is 1.10x). Likewise, these coverage numbers get even worse in the Forecast Period. It should be obvious that PWSA must obtain substantial rate relief from the Commission as the alternative would be untenable.

PWSA does not currently create a balance sheet to accompany its Budget. Based on its last audited financial statements – 2018 – PWSA's Total bonds and loans payable of $883.6 million exceeded its total assets ($864.3 million) by $19.3 million. I have attached a copy of this Statement of Net Position from the Authority's audited financial statements as Exhibit JP-4.

C. Rate Increase Request

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

A. The operating results at present rates show that it is crucially important that PWSA obtain rate relief in order to repair these financial indicators, as well as to have sufficient cash in

order to prudently operate the Authority at the budgeted levels. A failure to improve these results with additional revenues would almost certainly result in a bond rating downgrade, which would raise the costs of borrowing and limit PWSA's access to capital markets. Moreover, a failure to approve the level of rate relief requested would seriously threaten PWSA's ability to pay its bills when due.

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

A. PWSA has determined that an increase of $43.8 million (inclusive of DSIC) would provide barely sufficient additional revenues to enable it to maintain its financial metrics at adequate levels and maintain its existing bond rating. Without a rate increase, the PWSA will need to put crucial capital projects on hold and would not be able to maintain its financial metrics.

Q. HAVE YOU CALCULATED PWSA'S FINANCIAL RESULTS IN THE FPFTY AS WELL AS IN THE FORECAST PERIOD IF ITS PROPOSED $43.8 MILLION RATE INCREASE IS GRANTED?

A. Yes, those results are shown on Exhibit JP-2. At $43.8 million (inclusive of DSIC), PWSA would have coverages on Senior Debt of 1.82x in the FPFTY. PWSA projects that the coverages in the Forecast Period would range from 1.67x to 1.49x. As indicated by Edward Barca and Thomas Huestis, coverages at this level are required to permit PWSA to have the funds it needs throughout the year to satisfy all of its obligations over and above its debt service.

The proposed rate increase would also result in approximately $37.2 million in year-end cash, or 113. DCOH, including Unrestricted and Operating Reserve Cash in the FPFTY (FY 2021). With the rate increase, PWSA is projecting an ending cash balance of $36.15 million in FY 2022 declining to $24.93 million in FY 2023, representing 111.3

and 74.7 end of year days cash hand for FY 2022 and FY 2023, respectively. While the FPFTY (FY 2021) cash position is positive compared to the projected cash using the existing rates forecast as explained by Edward Barca and Thomas Huestis, these are below the median levels of similarly rated municipal utilities as calculated by rating agencies.

Q. IS PWSA PROPOSING A FURTHER RATE INCREASE IN 2022?

A. Yes. As a result of the passage of Act 58 of 2018, the PUC is now authorized to approve alternative ratemaking methodologies, including "multiyear rate plans."[7] A multiyear rate plan is defined as

> A rate mechanism under which the commission sets base rates and revenue requirements for a multiyear plan period and authorizes periodic changes in base rates, including, but not limited to, adjustments to accounts for inflation and capital investments without the necessity for base rate proceedings during the approved plan period.

In accordance with this legislation, PWSA is proposing that the PUC authorize a second-year increase of $12.6 million or 6.4%. The increase in 2022 would cover solely the anticipated additional debt service and debt service coverage in 2022. The proposed rate increase for FY 2022 would also produce approximately $36.1 million in year-end Cash, or 111.3 DCOH.

Q. HOW IS THE PROPOSED 2022 RATE INCREASE CONSISTENT WITH ACT 2018-58?

A. The Act states that

> It is the policy of the Commonwealth that utility ratemaking should encourage and sustain investment through appropriate cost-recovery mechanisms to enhance the safety, security, reliability or availability of utility infrastructure . . . ."

[7] 66 Pa. C.S. § 1330(b)(1)(iv); (f).

PWSA's proposed FY 2022 rate increase would enhance these goals because it would ensure that PWSA will have sufficient cash to remit the incremental debt service and maintain debt service coverage at adequate levels in 2022. Without this modest increase it would be impossible for PWSA's rates to reflect this additional cost (without filing a new general rate case almost literally the moment after this proceeding is concluded). This multiyear plan is much more efficient because it will relieve PWSA and its ratepayers of the expense of engaging in another full general rate proceeding so soon after the conclusion of this case. By permitting PWSA to increase its rates to cover its anticipated 2022 debt issuance it will also ensure that PWSA will be able to continue with its aggressive infrastructure improvement program, including compliance projects (as reflected in the CIP).

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

A. The requested two-year increase, as well as the accompanying DSIC, will allow the Authority to maintain a level of service sufficient through the FPFTY (FY 2021) and FY 2022. The proposed rate increase for the FPFTY would produce approximately $37.2 million in year-end cash, or 113.4 DCOH, and debt service coverage is projected at 1.82x. The proposed rate increase for FY 2022 would produce approximately $36.1 million in year-end cash, or 111.3 DCOH, and debt service coverage is projected at 1.67x (on Senior Debt). These metrics are well within the range of reasonableness and the levels expected by the rating agencies, as explained by Mr. Huestis. If PWSA does not receive a rate increase, then PWSA will lack funds to meet sufficient operating and

capital metrics. In addition, year 2023 of the Forecast Period will require increased additional funds to meet sufficient operating and capital metrics.

VII. COMMITMENTS FROM OTHER PROCEEDINGS

A. Updates Related To Compliance Plan Stage 1 Settlement

Q. ARE YOU ADDRESSING ANY OF THE AUTHORITY'S COMMITMENTS IN THE COMPLIANCE PLAN STAGE 1 SETTLEMENT[8] ("CP SETTLEMENT")?

A. Yes. I am directly addressing Section III.A and III.B of the CP Settlement.

Q. PLEASE DISCUSS THE COMMITMENT IN SECTION III.A. OF THE CP SETTLEMENT.

A. Section III.A. of the CP Settlement relates to the requirements for system of accounts. PWSA agreed to convert its accounting system to full NARUC Uniform System of Accounts ("USOA") compliance in two phases:

For Phase I, which is already complete, PWSA manually mapped the PWSA Chart of Accounts ("COA") to the NARUC USOA so that completion of the 2020 operating budget will include the NARUC USOA to conform and comply with reporting requirements. While a manual process, PWSA is able to provide its budget and financials in the NARUC USOA. This means that all Commission required reporting for 2019 (and in the future) will use the NARUC USOA.

For Phase II, PWSA will fully convert (and therefore automate the process) to the NARUC COA during the implementation of a new Enterprise Resource Planning

[8] The Joint Petition for Partial Settlement in PWSA's combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement Plan proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater) can be found at: http://www.puc.state.pa.us/pcdocs/1636036.pdf.

("ERP") System. PWSA also agreed to make good faith efforts to complete installation of the Enterprise Resource Planning System by December 2021.

PWSA has been reporting on its progress on a quarterly basis in the PWSA Compliance Plan Progress Reports. The information and data for these Reports is collated and distributed by the Finance Department. As stated in the last report (January 30, 2020[9]), PWSA's progress towards Phase II remains on target.

Q. PLEASE DISCUSS THE COMMITMENT IN SECTION III.B. OF THE CP SETTLEMENT.

A. Section III.B. of the CP Settlement relates to requirements for the filing of annual depreciation reports. PWSA agreed to fully comply with the Commission annual depreciation reporting requirements by 2024 (for FY 2023). During the interim period and starting in 2020, PWSA agreed to file partial annual depreciation reports on the same schedule as full annual depreciation reports, detailing only known and newly constructed plant additions and retirements. The PWSA also agreed, during the interim period, to (1) solicit assistance with compliance and (2) work to hone and improve its asset list to allow for full reporting by 2024.

As I explained, PWSA has been reporting on its progress on a quarterly basis in the PWSA Compliance Plan Quarterly Progress Reports. As stated in the last report (January 30, 2020), PWSA's progress towards filing annual depreciation reports remains on target. Specifically, PWSA has engaged an outside consultant to perform a Service Life Study of the Authority's assets. This work started in the fourth quarter of 2019 and is on target to the upcoming deadline of June 2020 to file a partial depreciation report.

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9 The Compliance Plan Progress Report (January 30, 2020) can be found at: http://www.puc.state.pa.us/pcdocs/1654111.pdf.

PWSA has also engaged this consultant to provide best practices for the retirement of assets still outstanding on PWSA's books since its creation. The goal of the Department of Finance is to have this asset list in good order before our migration to a new ERP system.

Q. IS THERE ANYTHING ELSE YOU WANT TO ADDRESS REGARDING THE COMPLIANCE PLAN SETTLEMENT?

A. Yes, I would like to add the following:

- PWSA will be installing meters on City of Pittsburgh unmetered properties. PWSA anticipates some increase in revenue due to these new metered accounts, but as explained by Harold Smith, this projected increase in revenue was not incorporated into the FPFTY.
- The Water Distribution Master Plan is a useful tool for PWSA as we focus on our strategic planning and investment strategy. Moving forward with the results of the Water Distribution Master Plan will require additional dedicated funds to our distribution system, but these funds will now be directed in a more strategic, proactive approach. As explained by Barry King, certain projects under the Water Distribution Master Plan are part of PWSA's capital plans for the FPFTY.
- The PWSA is keenly aware of the non-revenue water challenges in its system. The PWSA is helping to mitigate these challenges through a new cooperation agreement with the City of Pittsburgh and its affiliates, to graduate them into full payment of water, conveyance, and wastewater treatment that directs the metering of all municipal properties, which will add to the Authority's understanding of our total consumption. The Cooperation Agreement is discussed in greater detail by Debbie M. Lestitian (PWSA St. No. 2). In addition, our meter replacement

program, district metering program, leak detection program, water audit, and increased analysis will allow the organization to address this issue. Please see Barry King's testimony for further explanation.

- Page 36 of the Compliance Plan Settlement instructs PWSA to make all performance metric results available. The Department of Finance oversees the performance improvement and data tracking of over 100 metrics for the organization. A majority of these metrics are tracked and reported through our Headwaters database (as described more fully in the testimony of Mr. Weimar). The PWSA is currently finalizing the additional agreed-upon metrics with the Bureau of Investigation and Enforcement. The PWSA also provides seven public-facing metrics on our website for our ratepayers to view and comment on.

B. PWSA's Rate Case Settlement

Q. ARE YOU ADDRESSING ANY OF THE AUTHORITY'S COMMITMENTS IN THE JOINT PETITION FOR SETTLEMENT IN PWSA'S FIRST BASE RATE CASE[10] ("INITIAL RATE CASE SETTLEMENT SETTLEMENT")?

A. Yes. I will address Paragraph III.A.2.f of the Initial Rate Case Settlement, which states that: "To the extent that PWSA's actual 2019 actual revenues net of expenses produce a surplus greater than its FPFTY projections …, PWSA agrees to use the excess in its discretion, to: i) add to its year end "days cash on hand"; ii) pay down its operating or construction line of credit; and/or iii) repay an item in PWSA's borrowing portfolio." That Paragraph further states that PWSA agreed to provide a report to the Parties detailing the amount of the excess, the use of the funds, and the rationale for the use of the funds no later than April 1, 2020.

[10] The Settlement in PWSA's first base rate proceeding at Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater) can be found at: http://www.puc.state.pa.us/pcdocs/1596546.pdf.

In satisfaction of those commitments, Exhibit JP-5 presents a comparison of PWSA's actual expenses and financial results for FY 2019 and the report detailing not only the use of the funds but also the rationale for the use of the funds.

Q. HAS THE AUTHORITY SATISFIED THE OTHER COMMITMENTS IT MADE IN THE INITIAL RATE CASE SETTLEMENT?

A. Yes, it has. Pages 7 through 29 of the Initial Rate Case Settlement set forth various commitments made by the Authority. To the best of my knowledge, the Authority has satisfied or is in compliance with all of those commitments. Reporting on these commitments is done as part of the Compliance Plan Progress Reports, which I previously explained.

VIII. ALLOCATION OF REVENUE REQUIREMENT BETWEEN WATER AND WASTEWATER CONVEYANCE

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

A. PWSA witness Harold Smith (PWSA St. No. 7), utilizing the results of his class cost of service study, made recommendations to PWSA for the allocation of the proposed rate increase. Upon review of those recommended increases, PWSA accepted those recommendations. PWSA's review indicated that Mr. Smith's recommendations made a reasonable attempt to establish rates for each customer class that were consistent with the class cost of service or moved toward that goal in a reasonable manner.

Q. HAS PWSA IDENTIFIED THE LEVEL OF PROJECTED STORMWATER COSTS FOR THE FPFTY?

A. Current stormwater efforts by the PWSA are allocated to the wastewater conveyance utility service revenue requirement as is appropriate. Current stormwater efforts by the PWSA focus on a reduction of Combined Sewer Overflow ("CSO") and Sanitary Sewer

Overflows ("SSO"), resulting in flooding and basement backups, and improving the wastewater conveyance system as a whole, as explained by Beth Dutton (PWSA St. No. 9).

As explained by Harold Smith (PWSA St. No. 7), stormwater costs were derived using the allocation factors in HJS-3. The allocation factors were applied to the total system revenue requirements in some cases and to only the wastewater conveyance costs in other cases, as shown in the allocation tables. The stormwater cost of service analysis will be updated at the time of a stormwater tariff filing that includes proposed fees/rates.

Additionally, the stormwater revenue requirement for the FPFTY does not include all the costs that would be necessary when a stormwater fee is implemented. For example, additional field operations labor and materials and/or capital costs are anticipated for the implementation of a fee. .

IX. PROPOSED RATES AND CHARGES

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

A. PWSA's proposed rates and charges are contained in the Proposed Water and Wastewater Tariff Supplement Number 1 included as PWSA Exhibits JAQ-1 to JAQ-4. Ms. Quigley also provides a discussion of the impacts of these proposed rates and charges, which are also shown in the Filing Requirements at 53.52(b)(3).

X. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

VERIFICATION

I, Jennifer Presutti, hereby state that: (1) I am the Director of Finance 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: 3/6/20

Jennifer Presutti
Director of Finance
The Pittsburgh Water and Sewer Authority

Exhibit JP-1

Pittsburgh Water and Sewer Authority
Statement of Income - Existing Rates

		FY 2019 HTY	FY 2020 FTY	FY 2021 FPFTY	FY 2022 Forecast	FY 2023 Forecast
	System Revenues					
1	Water Sales	$ 105,177,200	$ 109,105,947	$ 110,004,446	$ 110,517,153	$ 111,029,903
2	Wastewater Sales	60,241,387	61,956,157	62,526,017	62,841,011	63,156,012
3	Sale for Resale & Contract Sales	3,290,625	2,911,475	2,935,865	2,961,294	2,987,809
4	DSIC Revenues	-	-	-	-	-
5	Other Revenues	6,392,855	5,242,920	5,347,779	5,454,734	5,563,829
6	Penalties and interest	278,546	816,000	832,320	848,966	865,946
7	Prior Year Collections	1,670,728				
8	***Total: System Revenues***	**$ 177,051,340**	**$ 180,032,499**	**$ 181,646,427**	**$ 182,623,159**	**$ 183,603,500**
	System Revenue Requirements					
	Operating Expenses					
	Direct Operating Expenses					
9	Executive Director	$ 3,479,233	$ 2,504,143	$ 2,230,804	$ 2,349,836	$ 2,420,332
10	Customer Service	7,457,579	6,980,568	7,168,249	7,606,897	7,835,104
11	Management Information Systems	2,301,283	3,216,255	3,741,132	3,810,866	3,925,191
12	Finance	3,186,898	6,809,035	7,244,051	7,383,822	7,605,337
13	Procurement	370,556	-	-	-	-
14	Human Resources	951,558	1,150,036	1,258,809	1,312,364	1,351,735
15	Legal	3,616,831	4,751,354	4,518,704	4,440,621	4,573,839
16	Public Affairs	1,080,407	1,335,051	1,485,646	1,575,742	1,623,014
17	Environmental Compliance	1,491,438	2,739,522	4,103,460	4,215,176	4,341,632
18	Warehouse	663,281	572,896	606,703	621,746	640,399
19	Ops Capital Assets	24,939	-	-	-	-
20	Water Quality (Lab)	2,254,974	2,158,960	1,639,947	1,765,712	1,818,683
21	Water Treatment Plant	17,099,665	21,962,891	26,912,878	22,401,447	23,073,490
22	Sewer Operations	11,487,340	4,769,515	6,023,256	6,344,798	6,535,142
23	Water Distribution	25,251,612	13,937,335	15,132,271	15,959,300	16,103,844
24	Engineering & Construction	8,824,994	31,080,494	32,925,052	33,963,543	34,982,450
25	*Subtotal: Direct Operating Expenses*	$ 89,542,588	$ 103,968,054	$ 114,990,962	$ 113,751,871	$ 116,830,192
	Other Operating Expenses					
26	Loss / (Gain) on ALCOSAN Billings	$ (2,125,432)	$ 762,868	$ 770,497	$ 778,202	$ 817,112
27	City Services	4,600,474	5,614,531	4,292,000	4,397,000	4,450,910
28	Non-City Water Payments	1,404,861	472,707	475,975	475,975	475,975
29	*Subtotal: Other Operating Expenses*	$ 3,879,903	$ 6,850,106	$ 5,538,472	$ 5,651,177	$ 5,743,997
30	***Total: Operating Expenses***	**$ 93,422,491**	**$ 110,818,161**	**$ 120,529,434**	**$ 119,403,048**	**$ 122,574,190**
	Debt Service					
31	Senior Debt Service	$ 46,853,619	$ 54,366,856	$ 60,125,188	$ 75,500,574	$ 84,099,691
32	Subordinate Debt Service	9,688,546	10,334,746	12,238,977	13,518,860	13,112,883
33	Revolving Line of Credit Interest	2,737,601	2,700,000	3,000,000	3,500,000	3,500,000
34	***Total: Debt Service***	**$ 59,279,766**	**$ 67,401,602**	**$ 75,364,165**	**$ 92,519,434**	**$ 100,712,575**
	Capital Expenditures & Transfers					
35	Internally Generated Funds / PAYGO	$ 4,411,131	$ 26,977,306	$ 7,113,647	$ 5,098,794	$ 7,134,765
36	Internally Generated Funds / PAYGO (DSIC)	-	-	19,620,000	21,000,000	21,000,000
37	Other Transfers to Reserves	2,510,983	1,000,000	1,000,000	1,000,000	1,000,000
38	Reimbursements (Municipalities & Pennvest)	-	-	-	-	-
39	Remarketing & Liquidity Charges	-	-	-	-	-
40	A/R Collection / Bad Debt Expense	-	-	2,162,861	2,315,316	2,331,155
41	*Total: Capital Expenditures & Transfers*	$ 6,922,114	$ 27,977,306	$ 27,733,647	$ 27,098,794	$ 29,134,765
42	***Total: Systemwide Revenue Requirements***	**$ 159,624,370**	**$ 206,197,069**	**$ 225,790,107**	**$ 241,336,592**	**$ 254,752,684**
43	***System Revenue Surplus / (Deficit)***	**$ 17,426,970**	**$ (26,164,570)**	**$ (44,143,680)**	**$ (58,713,433)**	**$ (71,149,184)**

Pittsburgh Water and Sewer Authority
Projected Cash Flow - Existing Rates

	FY 2019 *HTY*	FY 2020 *FTY*	FY 2021 *FPFTY*	FY 2022 *Forecast*	FY 2023 *Forecast*
Operating Fund					
Beginning Balance	$ 46,919,598	$ 63,346,568	$ 37,181,998	$ (6,961,682)	$ (66,743,870)
Sources:					
Operating Surplus/(Deficit)	$ 17,426,970	$ (26,164,570)	$ (44,143,680)	$ (58,713,433)	$ (71,149,184)
Budgeted Contributions	2,510,983	1,000,000	1,000,000	1,000,000	1,000,000
Uses:					
Contributions to Rate Stabilization Fund	(1,000,000)	(1,000,000)	(1,000,000)	(1,000,000)	(500,000)
Contributions to Operating Reserve Fund	(2,510,983)	-	-	(1,068,755)	-
Ending Balance	$ 63,346,568	$ 37,181,998	$ (6,961,682)	$ (66,743,870)	$ (137,393,054)
Days Cash on Hand (Days O&M)					
Unrestricted Cash	**242.0**	**123.3**	**(21.2)**	**(205.4)**	**(411.9)**

Pittsburgh Water and Sewer Authority
Debt Service Coverage - Existing Rates

		FY 2019 *Actual*	FY 2020 *Proposed*	FY 2021 *COS*	FY 2022 *Forecast*	FY 2023 *Forecast*
	Revenues					
1	Operating Revenue	$ 177,051,340	$ 180,032,499	$ 181,646,427	$ 182,623,159	$ 183,603,500
2	ALCOSAN Collections	73,522,941	76,286,841	77,049,709	77,820,207	81,711,217
3	Unrestricted Cash on Hand	-	-	-	-	-
4	*Subtotal: Revenues*	$ 250,574,281	$ 256,319,340	$ 258,696,136	$ 260,443,366	$ 265,314,717
	Current Expenses					
5	Operating Expenses	$ (94,143,062)	$ (109,582,585)	$ (119,282,962)	$ (118,148,871)	$ (121,281,102)
6	ALCOSAN Charges	(71,397,509)	(77,049,709)	(77,820,207)	(78,598,409)	(82,528,329)
7	Non-City Water Payments	(1,404,861)	(472,707)	(475,975)	(475,975)	(475,975)
8	*Subtotal: Current Expenses*	$ (166,945,432)	$ (187,105,002)	$ (197,579,144)	$ (197,223,255)	$ (204,285,406)
9	Add: City Services	4,600,474	5,614,531	4,292,000	4,397,000	4,450,910
10	**Revenues Available for Debt Service**	**$ 88,229,323**	**$ 74,828,869**	**$ 65,408,993**	**$ 67,617,111**	**$ 65,480,220**
	Debt Service					
	Existing Debt					
11	Senior Debt	$ 46,853,619	$ 53,225,765	$ 50,904,703	$ 50,866,953	$ 50,940,453
12	Subordinate	5,956,444	4,877,900	4,877,900	4,877,900	4,877,900
13	Pennvest	3,732,102	4,766,977	5,081,510	5,041,633	4,651,903
14	Revolver Interest	2,737,601	2,700,000	3,000,000	3,500,000	3,500,000
15	*Subtotal: Existing Debt*	$ 59,279,766	$ 65,570,642	$ 63,864,113	$ 64,286,486	$ 63,970,256
	Future Debt					
16	Senior Debt	$ -	$ 1,141,091	$ 9,220,485	$ 24,633,621	$ 33,159,238
17	PENNVEST	-	689,869	2,279,567	3,599,327	3,583,080
18	*Subtotal: Future Debt*	$ -	$ 1,830,961	$ 11,500,052	$ 28,232,948	$ 36,742,318
19	*Subtotal: Debt Service*	$ 59,279,766	$ 67,401,602	$ 75,364,165	$ 92,519,434	$ 100,712,575
20	***Senior Debt Service Coverage***	**1.88**	**1.38**	**1.09**	**0.90**	**0.78**
21	*Minimum Requirement*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*
22	***Total Debt Service Coverage***	**1.49**	**1.11**	**0.87**	**0.73**	**0.65**
23	*Minimum Requirement*	*1.10*	*1.10*	*1.10*	*1.10*	*1.10*

Exhibit JP-2

Pittsburgh Water and Sewer Authority
Statement of Income - Proposed Rates

		FY 2019 HTY	FY 2020 FTY	FY 2021 FPFTY	FY 2022 Forecast	FY 2023 Forecast
	System Revenues					
1	Water Sales	$ 105,177,200	$ 109,105,947	$ 127,512,685	$ 134,989,895	$ 135,985,690
2	Wastewater Sales	60,241,387	61,956,157	69,235,858	75,657,030	76,066,340
3	Sale for Resale & Contract Sales	3,290,625	2,911,475	3,271,034	3,422,624	3,449,139
4	DSIC Revenues	-	-	19,620,227	20,978,580	21,090,387
5	Other Revenues	6,392,855	5,242,920	5,347,779	5,454,734	5,563,829
6	Penalties and interest	278,546	816,000	832,320	848,966	865,946
7	Prior Year Collections	1,670,728				
8	***Total: System Revenues***	**$ 177,051,340**	**$ 180,032,499**	**$ 225,819,903**	**$ 241,351,830**	**$ 243,021,331**
	System Revenue Requirements					
	Operating Expenses					
	Direct Operating Expenses					
9	Executive Director	$ 3,479,233	$ 2,504,143	$ 2,230,804	$ 2,349,836	$ 2,420,332
10	Customer Service	7,457,579	6,980,568	7,168,249	7,606,897	7,835,104
11	Management Information Systems	2,301,283	3,216,255	3,741,132	3,810,866	3,925,191
12	Finance	3,186,898	6,809,035	7,244,051	7,383,822	7,605,337
13	Procurement	370,556	-	-	-	-
14	Human Resources	951,558	1,150,036	1,258,809	1,312,364	1,351,735
15	Legal	3,616,831	4,751,354	4,518,704	4,440,621	4,573,839
16	Public Affairs	1,080,407	1,335,051	1,485,646	1,575,742	1,623,014
17	Environmental Compliance	1,491,438	2,739,522	4,103,460	4,215,176	4,341,632
18	Warehouse	663,281	572,896	606,703	621,746	640,399
19	Ops Capital Assets	24,939	-	-	-	-
20	Water Quality (Lab)	2,254,974	2,158,960	1,639,947	1,765,712	1,818,683
21	Water Treatment Plant	17,099,665	21,962,891	26,912,878	22,401,447	23,073,490
22	Sewer Operations	11,487,340	4,769,515	6,023,256	6,344,798	6,535,142
23	Water Distribution	25,251,612	13,937,335	15,132,271	15,959,300	16,103,844
24	Engineering & Construction	8,824,994	31,080,494	32,925,052	33,963,543	34,982,450
25	*Subtotal: Direct Operating Expenses*	$ 89,542,588	$ 103,968,054	$ 114,990,962	$ 113,751,871	$ 116,830,192
	Other Operating Expenses					
26	Loss / (Gain) on ALCOSAN Billings	$ (2,125,432)	$ 762,868	$ 770,497	$ 778,202	$ 817,112
27	City Services	4,600,474	5,614,531	4,292,000	4,397,000	4,450,910
28	Non-City Water Payments	1,404,861	472,707	475,975	475,975	475,975
29	*Subtotal: Other Operating Expenses*	$ 3,879,903	$ 6,850,106	$ 5,538,472	$ 5,651,177	$ 5,743,997
30	***Total: Operating Expenses***	**$ 93,422,491**	**$ 110,818,161**	**$ 120,529,434**	**$ 119,403,048**	**$ 122,574,190**
	Debt Service					
31	Senior Debt Service	$ 46,853,619	$ 54,366,856	$ 60,125,188	$ 75,500,574	$ 84,099,691
32	Subordinate Debt Service	9,688,546	10,334,746	12,238,977	13,518,860	13,112,883
33	Revolving Line of Credit Interest	2,737,601	2,700,000	3,000,000	3,500,000	3,500,000
34	***Total: Debt Service***	**$ 59,279,766**	**$ 67,401,602**	**$ 75,364,165**	**$ 92,519,434**	**$ 100,712,575**
	Capital Expenditures & Transfers					
35	Internally Generated Funds / PAYGO	$ 4,411,131	$ 26,977,306	$ 7,113,647	$ 5,098,794	$ 7,134,765
36	Internally Generated Funds / PAYGO (DSIC)	-	-	19,620,000	21,000,000	21,000,000
37	Other Transfers to Reserves	2,510,983	1,000,000	1,000,000	1,000,000	1,000,000
38	Reimbursements (Municipalities & Pennvest)	-	-	-	-	-
39	Remarketing & Liquidity Charges	-	-	-	-	-
40	A/R Collection / Bad Debt Expense	-	-	2,162,861	2,315,316	2,331,155
41	*Total: Capital Expenditures & Transfers*	$ 6,922,114	$ 27,977,306	$ 27,733,647	$ 27,098,794	$ 29,134,765
42	***Total: Systemwide Revenue Requirements***	**$ 159,624,370**	**$ 206,197,069**	**$ 225,790,107**	**$ 241,336,592**	**$ 254,752,684**
43	***System Revenue Surplus / (Deficit)***	**$ 17,426,970**	**$ (26,164,570)**	**$ 29,796**	**$ 15,238**	**$ (11,731,353)**

Pittsburgh Water and Sewer Authority
Projected Cash Flow - Proposed Rates

	FY 2019 *HTY*	FY 2020 *FTY*	FY 2021 *FPFTY*	FY 2022 *Forecast*	FY 2023 *Forecast*
Operating Fund					
Beginning Balance	$ 46,919,598	$ 63,346,568	$ 37,181,998	$ 37,211,793	$ 36,158,276
Sources:					
Operating Surplus/(Deficit)	$ 17,426,970	$ (26,164,570)	$ 29,796	$ 15,238	$ (11,731,353)
Budgeted Contributions	2,510,983	1,000,000	1,000,000	1,000,000	1,000,000
Uses:					
Contributions to Rate Stabilization Fund	(1,000,000)	(1,000,000)	(1,000,000)	(1,000,000)	(500,000)
Contributions to Operating Reserve Fund	(2,510,983)	-	-	(1,068,755)	-
Ending Balance	$ 63,346,568	$ 37,181,998	$ 37,211,793	$ 36,158,276	$ 24,926,923
Days Cash on Hand (Days O&M)					
Unrestricted Cash	**242.0**	**123.3**	**113.4**	**111.3**	**74.7**

Pittsburgh Water and Sewer Authority
Debt Service Coverage - Proposed Rates

		FY 2019 *Actual*	FY 2020 *Proposed*	FY 2021 *COS*	FY 2022 *Forecast*	FY 2023 *Forecast*
	Revenues					
1	Operating Revenue	$ 177,051,340	$ 180,032,499	$ 225,819,903	$ 241,351,830	$ 243,021,331
2	ALCOSAN Collections	73,522,941	76,286,841	77,049,709	77,820,207	81,711,217
3	Unrestricted Cash on Hand	-	-	-	-	-
4	*Subtotal: Revenues*	$ 250,574,281	$ 256,319,340	$ 302,869,612	$ 319,172,037	$ 324,732,548
	Current Expenses					
5	Operating Expenses	$ (94,143,062)	$ (109,582,585)	$ (119,282,962)	$ (118,148,871)	$ (121,281,102)
6	ALCOSAN Charges	(71,397,509)	(77,049,709)	(77,820,207)	(78,598,409)	(82,528,329)
7	Non-City Water Payments	(1,404,861)	(472,707)	(475,975)	(475,975)	(475,975)
8	*Subtotal: Current Expenses*	$ (166,945,432)	$ (187,105,002)	$ (197,579,144)	$ (197,223,255)	$ (204,285,406)
9	Add: City Services	4,600,474	5,614,531	4,292,000	4,397,000	4,450,910
10	**Revenues Available for Debt Service**	**$ 88,229,323**	**$ 74,828,869**	**$ 109,582,469**	**$ 126,345,782**	**$ 124,898,051**
	Debt Service					
	Existing Debt					
11	Senior Debt	$ 46,853,619	$ 53,225,765	$ 50,904,703	$ 50,866,953	$ 50,940,453
12	Subordinate	5,956,444	4,877,900	4,877,900	4,877,900	4,877,900
13	Pennvest	3,732,102	4,766,977	5,081,510	5,041,633	4,651,903
14	Revolver Interest	2,737,601	2,700,000	3,000,000	3,500,000	3,500,000
15	*Subtotal: Existing Debt*	$ 59,279,766	$ 65,570,642	$ 63,864,113	$ 64,286,486	$ 63,970,256
	Future Debt					
16	Senior Debt	$ -	$ 1,141,091	$ 9,220,485	$ 24,633,621	$ 33,159,238
17	PENNVEST	-	689,869	2,279,567	3,599,327	3,583,080
18	*Subtotal: Future Debt*	$ -	$ 1,830,961	$ 11,500,052	$ 28,232,948	$ 36,742,318
19	*Subtotal: Debt Service*	$ 59,279,766	$ 67,401,602	$ 75,364,165	$ 92,519,434	$ 100,712,575
20	***Senior Debt Service Coverage***	**1.88**	**1.38**	**1.82**	**1.67**	**1.49**
21	*Minimum Requirement*	*1.25*	*1.25*	*1.25*	*1.25*	*1.25*
22	***Total Debt Service Coverage***	**1.49**	**1.11**	**1.45**	**1.37**	**1.24**
23	*Minimum Requirement*	*1.10*	*1.10*	*1.10*	*1.10*	*1.10*

Exhibit JP-3

	Forecast Period 2022 Budget	*FPFTY* 2021 Budget	*FTY* 2020 Budget	*HTY* 2019 Actual	2018 Actual
Receipts					
Water	106,717,590	106,717,590	106,717,590	102,709,438	106,426,492
Sewage Conveyance	68,079,675	68,079,675	68,079,675	68,472,959	57,306,572
DSIC	-	-	-	1,485	(11,459)
ALCOSAN	77,820,207	77,049,709	76,286,841	73,522,941	69,376,086
Fees	4,272,198	4,188,430	4,106,303	5,156,829	3,700,379
Miscellaneous Revenue	1,182,536	1,159,349	1,136,617	710,629	823,049
Total Receipts	258,072,206	257,194,753	256,327,026	250,574,281	237,621,119
Operating Expenses					
Salaries	31,334,178	29,667,643	27,377,003	22,261,855	18,427,947
Benefits	8,474,413	7,890,349	7,043,650	6,730,702	5,899,887
Direct Operating	48,596,358	49,013,976	41,120,170	38,378,874	29,880,985
Inventory	2,064,739	2,006,939	1,799,520	2,048,723	1,482,595
General & Administrative	28,155,158	31,179,861	32,715,533	20,122,435	23,626,785
ALCOSAN	78,598,409	77,820,207	77,049,709	71,397,509	70,310,473
City Co-Op Payment				4,600,474	1,787,500
Non-City Subsidy and Other				1,404,861	4,131,689
Total Operating Expenses	197,223,255	197,578,975	187,105,585	166,945,433	155,547,861
Net Operating Income	**60,848,951**	**59,615,778**	**69,221,441**	**83,628,848**	**82,073,258**
Debt Service					
Debt Service - Principal	43,234,091	34,962,138	31,829,716	23,163,490	24,602,797
Debt Service - Interest	58,312,908	51,840,020	42,488,114	36,116,276	19,174,810
Total Debt Service	101,546,999	86,802,159	74,317,829	59,279,766	43,777,607
Total Costs	298,770,254	284,381,134	261,423,414	226,225,199	199,325,468
Net Cash Flow	**(40,698,048)**	**(27,186,380)**	**(5,096,388)**	**24,349,082**	**38,295,651**
Unrestricted Cash Balance- Beginning	(23,935,800)	31,250,581	64,346,968	46,920,000	
Net Cash Flow	(40,698,048)	(27,186,380)	(5,096,388)	24,349,082	
Operating Reserve	-	-	-	(2,510,983)	
Rate Stabilization Fund	(1,000,000)	(1,000,000)	(1,000,000)	-	
Capital Spending	(27,000,000)	(27,000,000)	(27,000,000)	(4,411,131)	
Unrestricted Cash Balance- End	**(92,633,848)**	**(23,935,800)**	**31,250,581**	**64,346,968**	

Exhibit JP-4

				12/31/2019	12/31/2018	
BS / P&L	Level 1 Category	Level 2 Category	Level 3 Category	Report Period Total	Comparison Period Total	Difference
Balance Sheet	Assets	Current Assets	Cash	$ 64,679,733.97	$ 46,919,597.85	$ 17,760,136.12
			Short-Term Investments	$ -	$ -	$ -
			Accounts Receivable	$ 21,079,127.98	$ 27,852,885.26	$ (6,773,757.28)
			Inventory	$ 1,597,707.10	$ 1,984,101.33	$ (386,394.23)
			Other Assets	$ 6,710,559.30	$ 7,779,812.64	$ (1,069,253.34)
		Current Assets Total		$ 94,067,128.35	$ 84,536,397.08	$ 9,530,731.27
		Trusteed Funds	Trusteed Funds	$ 39,316,355.48	$ 19,333,491.11	$ 19,982,864.37
		Trusteed Funds Total		$ 39,316,355.48	$ 19,333,491.11	$ 19,982,864.37
		Long-Term Assets	Construction.In.Progress	$ 139,334,274.27	$ 142,928,012.31	$ (3,593,738.04)
			Utility Assets	$ 998,895,442.46	$ 919,999,192.43	$ 78,896,250.03
			Accum Depr - Utility Assets	$ (308,927,374.05)	$ (307,939,499.27)	$ (987,874.78)
			Non.Utility Assets	$ 12,180,991.14	$ 23,817,579.49	$ (11,636,588.35)
			Accum Depr - Non.Utility Assets	$ (6,856,974.77)	$ (17,701,312.44)	$ 10,844,337.67
			Bond Issue Costs	$ (1,488.00)	$ (1,488.00)	$ -
		Long-Term Assets Total		$ 834,624,871.05	$ 761,102,484.52	$ 73,522,386.53
	Assets Total			$ 968,008,354.88	$ 864,972,372.71	$ 103,035,982.17
	Liabilities & Equity	Current Liabilities	Current Maturities of Long-Term Debt	$ (27,021,916.16)	$ (23,399,979.68)	$ (3,621,936.48)
			Accounts Payable	$ (4,046,876.81)	$ (3,624,836.24)	$ (422,040.57)
			Accrued Payroll	$ (989,879.43)	$ (1,373,273.02)	$ 383,393.59
			AP From Trusteed Funds	$ (9,618,129.74)	$ (4,629,019.87)	$ (4,989,109.87)
			AP Retainage	$ -	$ -	$ -
			Other Current Liabilities	$ (45,334,205.47)	$ (46,667,715.09)	$ 1,333,509.62
		Current Liabilities Total		$ (87,011,007.61)	$ (79,694,823.90)	$ (7,316,183.71)
		Long-Term Liabilities	Long-Term Debt	$ (874,200,587.10)	$ (783,702,618.72)	$ (90,497,968.38)
			Other LT Liabilities	$ (6,181,505.53)	$ (6,593,258.81)	$ 411,753.28
		Long-Term Liabilities Total		$ (880,382,092.63)	$ (790,295,877.53)	$ (90,086,215.10)
		Equity	Additional Paid-in Capital - Common	$ (5,277,000.00)	$ (5,277,000.00)	$ -
			Retained Earnings	$ 10,551,138.13	$ 49,750,907.92	$ (39,199,769.79)
		Equity Total		$ 5,274,138.13	$ 44,473,907.92	$ (39,199,769.79)
		Net (Profit) or Loss	Net (Profit) or Loss	$ (5,889,392.77)	$ (39,455,579.20)	$ 33,566,186.43
	Liabilities & Equity Total			$ (962,118,962.11)	$ (825,516,793.51)	$ (136,602,168.60)
Balance Sheet Total				$ -	$ 0.00	$ (0.00)

Exhibit JP-5

Pittsburgh Water and Sewer Authority
FPFTY 2019 COS & Rate Design
System Revenue Proof

	FY 2019 Budget	FY 2019 Actual
Revenues		
User Charge Revenues		
Water Sales		
Minimum Charges	$ 41,427,730	$ -
Volume Charges	72,349,522	-
	-	-
Subtotal: Water Sales	$ 113,777,252	$ 102,709,439
Wastewater Conveyance		
Minimum Charges	$ 19,202,856	$ -
Volume Charges	46,033,764	-
	-	-
Subtotal: Wastewater Conveyance	$ 65,236,620	$ 68,472,959
	-	-
Subtotal: User Charge Revenues	$ 179,013,872	$ 171,182,398
Other Operating Revenues		
Wholesale & Contract Revenues	$ 4,742,886	$ -
DISC - Water	-	1,485
DISC - Sewer	-	-
Other Misc. Operating Revenue	5,412,936	5,867,458
	-	-
Subtotal: Other Operating Revenues	$ 10,155,822	$ 5,868,943
	-	-
Total: Revenues	**$ 189,169,694**	**$ 177,051,341**
Revenue Requirements		
Operating Expenses		
Direct Operating Expenses	$ 109,472,608	$ 89,542,589
Loss / (Gain) on ALCOSAN Billings	3,699,738	(2,125,432)
Co-Op Agreement Op. Expenses - Water	4,150,000	4,600,474
Co-Op Agreement Op. Expenses - Sewer	3,000,000	-
Non-City Water Payments	4,800,000	1,404,861
Affordability Program Placeholder	-	-
	-	-
Subtotal: Operating Expenses	$ 125,122,347	$ 93,422,492
Debt Service		
Existing Debt	$ 52,086,284	$ 59,279,766
Future Debt	11,410,662	-
	-	-
Subtotal: Debt Service	$ 63,496,946	$ 59,279,766
Capital Expenditures & Transfers		
Rate Funded Capital (PAYGO)	$ 1,500,000	$ 4,411,131
DISC Deposit	-	-
Other Transfers to Reserves	5,700,000	2,510,938
Reimbursements (Municipalities & Pennvest	-	-
Remarketing & Liquidity Charges	-	-
Bad Debt Expense	-	-
	-	-
Subtotal: Capital Expenditures & Transfers	$ 7,200,000	$ 6,922,069
	-	-
Total: Revenue Requirements	**$ 195,819,292**	**$ 159,624,327**
Revenue Surplus / (Deficit)	**$ (6,649,599)**	**$ 17,427,014**

Pittsburgh Water and Sewer Authority
FPFTY 2019 COS & Rate Design
Debt Service Coverage - Proposed Rates

		FY 2019 FPFTY	FY 2019 Actual
	Revenues		
1	Operating Revenue	$ 189,169,694	$ 177,051,341
2	ALCOSAN Collections	79,756,694	73,522,941
3	Unrestricted Cash on Hand	-	-
4	*Subtotal: Revenues*	$ 268,926,388	$ 250,574,282
	Current Expenses		
5	Direct Operating Expenses	$ (109,472,608)	$ (89,542,589)
6	ALCOSAN Charges	(83,456,432)	(71,397,509)
7	City Co-Op Agreement Payments	-	-
8	Non-City Water Payments	(4,800,000)	(1,404,861)
9	*Subtotal: Current Expenses*	$ (197,729,041)	$ (162,344,959)
10	**Revenues Available for Debt Service**	**$ 71,197,347**	**$ 88,229,323**
	Debt Service		
	Existing Debt		
11	Senior Debt	$ 43,326,828.00	$ 46,853,691.00
12	Subordinate	4,855,310.00	5,956,444.00
13	Pennvest	3,904,145.76	3,732,102.00
14	Revolver Interest	1,686,120.49	2,737,601.00
15	*Subtotal: Existing Debt*	$ 53,772,404	$ 59,279,838
	Future Debt		
16	Senior Debt	$ 9,724,541.67	$ -
17	Subordinate	-	-
18	Pennvest	-	-
19	*Subtotal: Future Debt*	$ 9,724,542	$ -
20	*Subtotal: Debt Service*	$ 63,496,946	$ 59,279,838
21	***Senior Debt Service Coverage***	**1.34**	**1.88**
22	*Minimum Requirement*	*1.25*	*1.25*
23	***Total Debt Service Coverage***	**1.12**	**1.49**
24	*Minimum Requirement*	*1.10*	*1.10*

TAB
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-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:

CAPITAL PROJECTS
INFILTRATION COST REMEDIATION
HIGHLAND MEMBRANE FILTRATION PLANT

March 6, 2020

Table of Contents

TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Barry King and I am the Director of Engineering for The Pittsburgh Water and Sewer Authority ("PWSA").

Q. WHEN DID YOU ASSUME THIS ROLE?

A. I assumed this role in June 2016.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I received my Bachelor of Science in Environmental Engineering from Rensselaer Polytechnic Institute. I am currently completing my Master of Science in Environmental Engineering from Worcester Polytechnic Institute in 2020.

Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.

A. Over the last 25 years, I have been progressively responsible for engineering, project management, leadership, and administration in the fields of water supply, treatment, storage, and distribution; wastewater conveyance and treatment; and other civil/ environmental engineering-related projects and roles within both the public and private sectors. I have served in a range of capacities including Director of Engineering and Construction, Program Manager, Utilities Bureau Chief, Assistant Director of Public Works, Design Manager, Principal Engineer, Project Engineer, Design Engineer, Project Manager, and QA/QC Reviewer. With respect to employment in the public sector, I have over 10 years of experience working directly for water and sewer municipal authorities in primary leadership roles. I am a licensed Professional Engineer in the State of Pennsylvania, as well as current registrations in New York, Maryland, and Delaware. With specific respect to water and sewer infrastructure and facilities, I have performed, coordinated, managed, and/or supervised technical studies, evaluations, and site

assessments; planning; engineering conceptualization and design; cost estimating; permitting; bidding; construction project management and contract administration; water and sewer rate and fee studies and adoption; conducted public hearings and informational meetings; performed staff management and program administration; supported full proposal/bid procurement processes; and completed consultant and contractor selections.

Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES WITH PWSA?

A. Since 2016, I have been involved in the daily design and construction of PWSA's infrastructure projects, as well as coordinating staff and consultant activities. I utilize my extensive hands-on experience in the fields of water and wastewater to manage PWSA's engineering endeavors.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("PUC" OR "COMMISSION")?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: (1) describe PWSA's Capital Improvement Plan ("CIP"), with an emphasis on the total capital requirements of nearly $1.3 billion for fiscal years 2020-2024; and (2) provide updates regarding the prior rate case settlement on the topics of infiltration cost remediation and the Highland Membrane Filtration Plant ("HMFP").

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring Exhibit BK-1, which is the Capital Improvement Plan for 2020-2024; Exhibit BK-2, which is the 2019 Consent Order and Agreement issued by the Pennsylvania Department of Environmental Protection ("DEP"), and Exhibit BK-3, which is the Cost Benefit Analysis Memorandum relating to the HMFP.

II. CAPITAL PROJECTS

Q. PLEASE PROVIDE A GENERAL OVERVIEW OF PWSA'S CIP.

A. As a result of about 30 years of little to no investment in our water, sewer and stormwater systems, PWSA's CIP focuses on restoring and sustaining cost-effective operations that comply with all regulatory requirements, while optimizing the system's asset performance and life expectancy in accordance with accepted utility metrics. The 2020-2024 CIP invests in programs that balance risk and consequence of asset failure and levels of service benefits, with overall customer affordability. The CIP is attached as Exhibit BK-1.

Q. PLEASE DESCRIBE YOUR OVERALL VISION FOR PWSA'S SYSTEM.

A. My vision for PWSA is to build a sustainable program of operation, maintenance and capital activities and investments to sustain performance of safe, affordable and manageable water, sewer and stormwater systems for the City of Pittsburgh and surrounding populations. PWSA needs to restore full operational resiliency and redundancy of our water and sewer systems to meet our current and future challenges. PWSA's Engineering Department recognizes that we are responsible to provide our customers with safe, reliable, and uninterrupted water and sewer services that are in full compliance with quality and regulatory requirements. We will strive to build a team of dedicated Engineers, Scientists, and Project Managers to solidify a strong, competent, effective and stable work force with the requisite education, initiative and innovation to undertake this work either directly or as project managers, and identify projects that balance the cost of the project, ensuring just and reasonable rates, with the scope and outcome of the project. We will embrace technology, where appropriate and cost effective. With a considerable number of significant, complex, and large-scale projects

required over the next 5 to 7 years, we will seek to build the necessary technical and skilled workforce to undertake projects, and to complement the responsibilities and actions of other PWSA Departments

Q. PLEASE EXPLAIN PWSA'S PROCESS TO IDENTIFY CAPITAL PROJECTS THAT NEED TO BE COMPLETED.

A. PWSA's CIP process begins each year in the second quarter when project nominations are solicited from the entire organization. At the completion of the nomination period, the department group managers (engineering, finance, operations and executive departments) screen and evaluate the nominated projects and recommend which projects should be considered for further planning, design or construction. A Project Sheet is prepared to provide more detailed information on a project's potential scope, risks, schedule and preliminary cost estimate. This process takes several months and culminates with the presentation of the updated CIP to PWSA's Board of Directors. Projects that are not selected for implementation are re-assessed during the next year's CIP process.

Q. WHAT CRITERIA ARE USED TO EVALUATE AND PRIORITIZE CAPITAL PROJECTS?

A. Due to funding limitations and the need to renew or replace a significant amount of aging infrastructure, PWSA uses the following criteria to evaluate and prioritize capital projects:

1) Safety – Potential health and safety risks to personnel and the public if action is not taken;

2) Regulatory Compliance – Regulatory compliance schedule and potential fines for non-compliance;

3) Reliability/Operational Flexibility – Location, operational importance, age and condition of infrastructure and risk if action is not taken;

4) Capacity – Meets community health needs and growth;

5) Operations and Maintenance Efficiency – Potential for operating cost savings;

6) Regional Cooperation/Stewardship – Coordination with external stakeholders or meeting needs of customers and communities;

7) Level of Service – Improvements to customer service to comport with national standards; and

8) Sustainability – Ability to optimize facility useful life, energy efficiency and "green" approach to providing water supply and improving water quality.

Q. WHAT ARE PWSA'S FUNDING SOURCES FOR ITS CIP?

A. PWSA's CIP is funded through several primary sources to which specific programs and projects are allocated. These capital project funding sources basically result from revenues received through rates paid by PWSA's customers. Capital Funds for Capital works primarily originate from Authority market-solicited Bond indebtedness from leading institutions state and federal grants. Subsidized loans are also a component of our Bond portfolio, as well as cost shares with other utilities and public grants. PWSA is dedicated to identifying and pursuing funding from all potential sources to offset planned capital investments. More detail about funding is set forth in the direct testimony of Ed Barca, Deputy Director of Finance.

Q. HOW IS PWSA'S CIP ORGANIZED?

A. The CIP is organized into six project classes: 1) Water Treatment Plant; 2) Water Pumping and Storage; 3) Water Distribution System (including lead service line replacements); 4) Wastewater System; 5) Stormwater System; and 6) Other. The project class designated as "Other" consists of the following: acquisition, implementation, and/or upgrades of technical software systems, including the Computerized Maintenance Management System (CMMS), Geographic Information System (GIS), and Enterprise

Resource Planning (ERP) System; water and sewer system planning functions; Program Management costs; and costs associated with acquisition of Property, Vehicles, and Major Equipment; and Utility Cost Shares. Each project class is then made up of individual projects, which are defined based upon current information and range from annual allowances for asset renewal and/or replacement activities to major, multiple phase facility renewal projects.

Q. PLEASE DESCRIBE THE INFORMATION THAT IS PROVIDED FOR EACH PROJECT.

A. Each project is identified by type and a descriptive name is given to it. Other information includes the neighborhood/ward, status, priority, description, justification, risk, impact on operations, alternatives to the recommended action, estimated five-year cash flow summary and proposed funding sources. Once approved and opened in our project management software, unique project numbers are assigned to track the project from inception to completion.

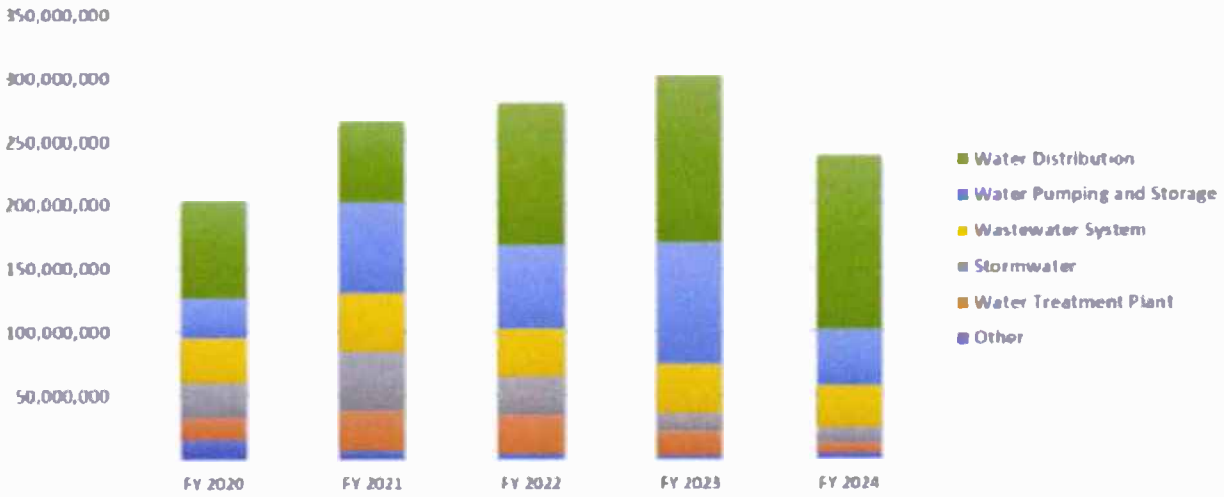
Q. FOR THE CAPITAL PROJECTS APPROVED BY THE BOARD, WHAT ARE PWSA'S TOTAL CAPITAL REQUIREMENTS FOR THE CIP FOR FISCAL YEARS 2020-2024?

A. The total capital requirements of nearly $1.3 billion are broken out by project class and by fiscal year, as shown on page 4 of the CIP and in the table below:[1]

[1] The CIP is a 5-year plan. However, for purposes of determining the needed rate increase, Mr. Barca is employing a different funding method for the same projects.

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Water Treatment Plant	$16,884,025	31,260,131	29,455,887	18,164,003	7,054,471	$102,818,518
Water Pumping and Storage	31,065,447	71,377,720	65,541,850	94,750,016	44,069,562	306,804,594
Water Distribution	77,597,135	63,277,796	112,385,623	131,689,581	136,347,581	521,297,717
Wastewater System	35,140,573	46,010,731	37,623,291	38,191,236	32,042,104	189,007,936
Stormwater	26,927,774	46,008,174	30,591,717	14,881,563	13,453,392	131,862,619
Other	16,650,000	7,634,500	5,200,000	4,000,000	5,200,000	38,684,500
Total Capital Requirements	**$204,264,954**	**265,569,052**	**280,798,368**	**301,676,400**	**238,167,110**	**$1,290,475,883**

The yearly capital cash flow by project class in shown in the chart below:



Q. PLEASE IDENTIFY THE PROJECTS THAT HAVE BEEN APPROVED FOR 2020.

A. The approved capital projects for 2020 are set forth on pages 5-7 of the CIP, which is attached as Exhibit BK-1.

Q. PLEASE IDENTIFY ALL OF THE PROJECTS THAT HAVE BEEN APPROVED.

A. The entire list of projects approved by the 2020-2024 CIP are listed on pages 9-101 of the CIP, which is attached as Exhibit BK-1.

Q. HOW DOES PWSA PRIORITIZE ITS CAPITAL PROJECTS?

A. PWSA prioritizes its capital projects based on legal mandates such that it places the highest priority on non-negotiable regulatory requirements. Three directives issued by DEP have established PWSA's priorities in recent years. On October 25, 2017, DEP issued an Administrative Order ("Safe Drinking Water Order"), requiring PWSA to take actions by specific deadlines in order to resume operation of the Highland 1 Reservoir, restore the Lanpher Reservoir to service, address reliability deficiencies at the Bruecken Pump Station, and establish a schedule for other capital improvements to the system. On November 17, 2017, DEP issued a Consent Order and Agreement ("Lead Consent Order") containing a series of mandates related to lead service line replacement. PWSA has fulfilled most of these requirements established by the Safe Drinking Water Order and the Lead Consent Order. On September 6, 2019, DEP issued a Consent Order and Agreement ("2019 COA"). The 2019 COA, which is attached as Exhibit BK-2, fully resolved a DEP investigation and avoided litigation.

Q. WHAT ARE PWSA'S SPECIFIC OBLIGATIONS UNDER THE COA?

A. Under the 2019 COA, PWSA is required to construct a treated water bypass system to enable it to remove the existing outdated and compromised clearwell from service and replace it with a new redundant storage system. PWSA is obligated to submit a construction permit to DEP on or before January 1, 2023 and to complete construction of

a clearwell bypass system within two years of DEP's issuance of a construction permit.[2] As a result of the existing single clearwell basin condition and design, a clearwell bypass system is essential to ensure uninterrupted water supply service if the existing clearwell should prematurely fail PWSA is also required by the 2019 COA to: (i) rehabilitate or replace Rising Main #3 to PWSA's Highland 2 Reservoir;[3] (ii) rehabilitate or replace Rising Main #4 to PWSA's Highland 2 Reservoir;[4] (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;[5] (iv) replace the cover and liner of the Highland 2 Reservoir to comply with existing regulatory standards, and facilitate the clearwell bypass system construction;[6] and (v) replace or rehabilitate the existing Aspinwall and Bruecken pump stations.[7]

Q. DOES THE 2019 COA ALSO ADDRESS CROSS-CONNECTIONS?

A. Yes. PWSA is required by the 2019 COA to investigate the locations where valves, blow-offs, meters or other such appurtenances that connect 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"). Further, PWSA must submit to DEP a report detailing the findings including the number and locations of all such cross-connections within PWSA's system. Finally, PWSA is obligated to submit

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2 2019 COA Ordering ¶ 3.a.-b.

3 2019 COA Ordering ¶ 3.c.-d.

4 2019 COA Ordering ¶ 3.e.-f.

5 2019 COA Ordering ¶ 3.g.-h.

6 2019 COA Ordering ¶ 3.i.-j.

7 2019 COA Ordering ¶ 3.k.

a plan and proposed schedule for eliminating any and all cross-connections and to take the necessary steps to eliminate them as soon as is practicable.[8]

Q. WHAT ARE THE CONSEQUENCES THAT PWSA WILL FACE IF IT DOES NOT COMPLY WITH THE 2019 COA?

A. If PWSA does not comply in a timely manner with any term or provision of the COA, it will be required to pay a civil penalty in the amount of $100.00 per day for each violation. It is also subject to the imposition of additional penalties.[9] As Mr. Barca explains, if PWSA is not permitted to raise its rates as proposed in this proceeding, it will be unable to fulfill these obligations. The result is that PWSA would be subject to the payment of these penalties. Since PWSA does not have investors, this burden would be the responsibility of its ratepayers, which would further exacerbate the PWSA's ability to implement the required project improvements.

Q. PLEASE DESCRIBE THE CONSTRUCTION PROJECTS THAT PWSA MUST UNDERTAKE PURSUANT TO THE 2019 COA.

A. PWSA has assigned the following names to the projects that are required by the 2019 COA:

- Rising Main 3 – Rehabilitation OR
  - Rising Main 3 – Replacement
- Highland No. 2 Reservoir Improvements (Liner and Cover Replacement)
- Rising Main 4 – Rehabilitation OR
  - Rising Main 4 – Replacement
- Aspinwall WTP High Service Pumping OR
  - Aspinwall Pump Station Improvements
  - Bruecken Pump Station Improvements
- Aspinwall WTP Clearwell Bypass (Emergency Response)
- Aspinwall WTP Clearwell Improvements (Replacement)
- Aspinwall Pump Station to Lanpher Reservoir Rising Main

[8] 2019 COA Ordering ¶ 3.q.-t.

[9] 2019 COA Ordering ¶ 4.

1 These projects are shown in the table below:

Description	PWSA Project Name	PWSA Project Number	DEP Construction Permit Submittal	DEP COA Requirement: Construction Complete
PROJECTS SPECIFICALLY STATED IN COA				
Aspinwall WTP Clearwell Bypass (Emergency Response)	Clearwell Emergency Response Project	2017-323-100-0	1/1/2023	2 years after receipt of construction permit
Rising Main 3 – Rehabilitation or	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	9/1/2020	1 year after receipt of construction permit
Rising Main 3 – Replacement	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	3/1/2021	1 year after receipt of construction permit
Rising Main 4 – Rehabilitation or	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	6/1/2021	2 years after receipt of construction permit
Rising Main 4 – Replacement	2019 Large Diameter Water Main Improvements (Rising Main 3 & 4)	2019-325-103-0	6/1/2021	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	12/30/2020	2 years after receipt of construction permit
Highland No. 2 Reservoir Improvements Liner and Cover Replacement	Highland No. 2 Reservoir Improvements Liner and Cover Replacement	2019-323-102-0	6/30/2020	18 months after receipt of construction permit
Aspinwall Pump Station Improvements	Aspinwall Pump Station Improvements	2017-323-104-0	1/1/2021	2 years after receipt of construction permit
Bruecken Pump Station Improvements	Bruecken Pump Station Improvements	2017-323-106-0	1/1/2021	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

PROJECTS NECESSARY TO SUPPORT COA PROJECTS (Not Stated in COA)				
Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	2017-322-100-0		
Highland Reservoir Pump Station and Rising Main	Highland Reservoir Pump Station and Rising Main	2017-323-101-0		

Q. WHAT ARE THE TOTAL COSTS ASSOCIATED WITH THE CONSTRUCTION PROJECTS THAT ARE NECESSARY TO COMPLY WITH THE COA?

A. PWSA's total commitment for the construction projects that are necessary to comply with the 2019 COA is $248,866,343. The Clearwell Improvements project totals $67,062,343 and the Clearwell Emergency Response project totals $27,670,000.

Q. DO YOU WISH TO HIGHLIGHT ANY OTHER CAPITAL PROJECTS TO WHICH PWSA HAS COMMITTED?

A. PWSA is transitioning the 2017 COA Lead Service Line Replacement ("LSLR") program to our ongoing water main replacement program. The small diameter water main program is being implemented to address the fragile condition and constant failures of these water mains throughout the service areas. These pipes are prematurely failing due to uncontrollable external pipeline corrosion. The corrosion related pipeline failures have become acute in the past several years, which adds substantially to the PWSA operations expenses. Specifically, beginning in April 2020, PWSA will transition the obligations for 2017 COA-required LSLRs being performed under the LSLR Program to the annual Small Diameter Water Main Replacement Project. This approach will allow PWSA to complete the replacement of the publicly owned portions of the individual lead service lines ("LSLs") concurrent with the replacement of aging water distribution mains,

improving the related costs and efficiency for completion of the 2017 COA-required LSLRs and the resulting surface restoration activities. Additionally, the private portion of identified LSLs will also be replaced, where identified, during the completion of the Small Diameter Water Main Replacement Project.

Another critical project is the annual Sewer Rehabilitation Project. This project rehabilitates sewers (combined, sanitary and storm) through the trenchless installation of airtight, watertight cured-in-place pipe lining on the inside of aging sewer pipes. This approach affords PWSA with an approach that minimizes the impact to residents through a more cost-effective way of extending the life of the sewer system than replacing it with new pipe. This sewer lining program improves the reliability and service provided to our customers. In response to the increasing rate of failure of sewer assets that are located under or adjacent to structures (e.g., buildings, bridges, railroads, or major utilities) or located on steep slopes (due to limited accessibility), PWSA has developed a Sewers Under Structures Program for the proactive replacement, rehabilitation, or realignment and abandonment of this aging infrastructure.

III. UPDATE REGARDING PRIOR RATE CASE SETTLEMENT ISSUES

A. Infiltration Cost Remediation

Q. DID PWSA MAKE A COMMITMENT IN THE SETTLEMENT OF ITS RATE CASE IN 2018 REGARDING INFILTRATION COST REMEDIATION?

A. Yes. In the settlement of its 2018 rate case, PWSA agreed to submit a plan in this rate case "to address infiltration cost remediation, to the extent such costs are known and

relevant" and "to provide data to allocate infiltration costs to customer classes in future cost of service studies."[10]

Q. WHAT WAS THE CONTEXT IN WHICH THIS ISSUE AROSE?

A. Testifying on behalf of the Office of Small Business Advocate, Mr. Brian Kalcic addressed PWSA's proposal to allocate wastewater conveyance and collection costs to classes on the basis of water consumption. He testified that because wastewater systems typically collect and convey a significant amount of infiltration and inflow volumes, it is necessary to estimate the total volumes that enter the system and assign each class responsibility for such volumes. His recommendation was that PWSA be required to submit a plan to address infiltration cost remediation in its next rate case and that the plan be designed to provide the data that is necessary to allocate such costs to customer classes.[11]

Q. WHAT HAS PWSA DONE TO ADDRESS INFILTRATION COST REMEDIATION?

A. PWSA can identify the costs and allocate them to customer classes. However, PWSA cannot determine or estimate volumes for allocation by customer class. Over 70% of the wastewater system is combined. Combined systems were historically constructed to allow for infiltration and inflow, which was intended to sustain flow during dry periods (to flush out sewerage and solids). Direct stream inflows are the dominant flows in these combined sewers, significant groundwater infiltration has not been observed. In the separated sewersheds, areas of significant infiltration and inflow ("I/I") have been

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10 Joint Petition for Settlement, III.B.8., as approved in *Pennsylvania Public Utility Commission v. Pittsburgh Water and Sewer Authority*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

11 OSBA Statement No. 1 at 19-20 (2018 Rate Case).

identified by our systemwide model. In 2020, two sewer pipes with known infiltration and inflow will be cured-in-place lined and cross connected catch basins will be removed to reduce these flows. PWSA will also continue to include targeting areas of known I/I in the small and large diameter sewer rehabilitation programs.

B. Highland Membrane Filtration Plant

Q. DID PWSA ALSO MAKE A COMMITMENT IN THE 2018 RATE CASE SETTLEMENT REGARDING THE HMFP?

A. Yes. In the 2018 rate case settlement, PWSA committed to provide a cost/benefit analysis of operating the HMFP in lieu of covering and placing a physical barrier around Highland No. 1 Reservoir. Under the terms of the settlement, the analysis must include a detailed cost comparison of operating and capital costs, an evaluation of operating, costs and other consequences if the HMFP is no longer operated, as well as any other relevant legal, technical and policy analyses. PWSA's agreement to provide this information was not to be construed as PWSA's endorsement of a cost comparison analysis.[12]

Q. IN WHAT CONTEXT DID THIS ISSUE ARISE IN THE 2018 RATE CASE?

A. Testifying for the Bureau of Investigation and Enforcement, Mr. Ethan Cline explained that the Highland Park No. 1 Reservoir is an uncovered distribution system reservoir that provides partially treated water to the HMFP. He further noted the HMFP was taken out of service by a Field Order issued by DEP until PWSA either provides specific repairs and upgrades to the HMFP or installs a cover on the Highland No. 1 Reservoir and provides adequate security with a physical barrier. Mr. Cline correctly stated that PWSA chose to implement the HMFP upgrade and repair options. He recommended that PWSA

[12] Joint Petition for Settlement, III.H.i.(d).

provide the estimated annual cost of operating and maintaining the HMFP, as well as the estimated cost of placing a physical barrier around Highland No. 1 Reservoir.[13]

Q. HAS PWSA PERFORMED A COST/BENEFIT ANALYSIS OF THESE OPTIONS?

A. Yes. The Cost Benefit Analysis Memo is attached as Exhibit BK-3.

Q. PLEASE DESCRIBE THE RESULTS OF THIS COST/BENEFIT ANALYSIS.

A. Acknowledging it has taken three years to complete the modifications and repairs required for the restoration of operation of the HMFP, it was and still is considered the most expeditious route to providing the necessary resiliency and redundancy in the water supply for the Highland 1 Supersystem. The HMFP was the only identified alternative that would support the timing for the completion of several necessary and critical projects, including the necessary and DEP COA mandated replacement of the clearwell as well as other critical water supply infrastructure repairs, that are currently awaiting the restoration of the operation of the HMFP.

Without the HMFP, the existing Highland Reservoir No. 1 Supersystem cannot continuously maintain adequate water supply. Therefore, the HMFP is needed to supplement flow into the Highland 1 Supersystem. Without it, temporary water bypass pumps are required at the Highland 2 Reservoir to pump from the Highland 2 supersystem to supply demands in the Highland 1 Supersystem. These temporary pumps are only available to address Highland No. 1 Supersystem failures or equipment outages; PWSA is constructing a new pump station to replace these temporary pumps which will be available in about 2 years. Additionally, when considering the full breadth of

[13] I&E Statement No. 3 at 3-5 (2018 Rate Case).

significant issues that have been identified with the covering of the existing Highland No. 1 Reservoir, including political, structural, dam safety elements, water quality, hydraulics, regulatory compliance, and covered facility operations and maintenance, the reservoir covering option can no longer be considered to be a viable alternative.

As such, the only constructible alternative to the continued use of the HMFP is the construction of a new storage tank. Considering factors such as property acquisition (the surrounding area is designated city park land), design, construction, and cost, this alternative could not reasonably be implemented sooner than a 10-year period within our CIP. To clarify the issues with the constructability of covering the existing Highland No. 1 Reservoir, several significant issues with the configuration and construction of the existing Highland No. 1 reservoir structure have been identified in the course of completing the preparation of the DEP-required Dam Safety Permit for the existing reservoir. While completing the inspections, analyses, and documentation for the Dam Safety Permit, the Consultant has verified that the existing facility does not meet the minimum requirements necessary for permitting the structural upgrades necessary to enable the covering of this existing reservoir. Additionally, the existing hydraulic grade and size of the reservoir are deemed inefficient for current usage and demands in the Highland No. 1 Supersystem.

Typically, storage should be sized for average day demand, which is approximately 28 MGD. The Highland 1 Reservoir is over 100 Million Gallons, although the entire reservoir is not available to satisfy system pressure requirements. Also, since the reservoir was constructed a century ago, pressure requirements for the distribution system have changed. As a result, only a small bandwidth of the reservoir is

actually usable storage (meeting the service pressure requirements). Such a limited usable percentage of the total storage volumehas been shown to be a detriment to potable water quality. While it is accepted that operating the HMFP is not an economic long-term solution, it is deemed necessary in the short-term (10 years). Until a new storage facility can be constructed, operating the HMFP remains the most practical means of continuously supplying safe and potable water to the users. It was on this basis that the DEP approved restoration and upgrades to the system in the intervening 10 years.

Q. DOES PWSA PROPOSE TO CHANGE ITS COURSE BASED ON THESE RESULTS?

A. No. The return of the HMFP to service is needed to deliver water supply while we complete the Bruecken Pump Station DEP Administrative Order Project, several DEP Consent Order Projects, as well as several urgent Distribution System Maintenance Projects. Also, whether to cover the Highland No. 1 Reservoir is not a decision that can be based solely on costs. As noted above, the feasibility of covering the existing Highland No. 1 Reservoir is not reasonable in terms of constructability, water quality, and cost. As a side note, it should be acknowledged that in 1997, public and political forces prevented the solution of constructing a covered reservoir due to the apparent history and perceived beauty of the reservoir. While not a basis for the current analysis, the public and political forces would likely take a similar approach and a similar outcome would result if covering the reservoir would be pursued again. Even though continuing to operate the HMFP is not the most economic long-term decision, it is a necessary short-term solution. The long-term solution is to construct a storage tank at an appropriate elevation in the vicinity of Highland No. 1 Reservoir and turn the existing reservoir over

to the City for their use. Therefore, PWSA has received DEP approval to continue operating the HMFP until the long-term water storage solution can be implemented.

IV. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

VERIFICATION

I, Barry King, hereby state that: (1) I am the Director of Engineering and Construction 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 3/6/20

Barry King
Director of Engineering and Construction
The Pittsburgh Water and Sewer Authority

Exhibit BK-1

The Pittsburgh Water and Sewer Authority

2020 – 2024 Capital Improvement Plan

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The Pittsburgh Water and Sewer Authority Board of Directors

Paul Leger, Chairperson
Margaret L. Lanier, Vice Chairperson
James Turner, Secretary
Deborah Gross, Assistant Secretary
Chatón Turner, Member
Michael L. Domach, Member

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Pittsburgh Water & Sewer Authority

Table of Contents

Introduction

The Pittsburgh Water and Sewer Authority ("**the Authority**") 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.

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 and facilities for generating surplus power.

The System provides water to approximately 81,000 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 306,000 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 26 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, 29,000 manholes, 30,000 catch basins and inlets, 38 combined sewer overflow outfalls, 185 storm outfalls, and four 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

PWSA's Capital Improvement Program focuses on sustaining cost-effective operations, while optimizing the system's asset performance and life expectancy. The 2020-2024 Capital Improvement Program invests in programs which consider risk and consequence of asset failure and levels of service benefits.

Development and Approval Process

PWSA's CIP process begins each year in January when project nominations are solicited from the entire organization. At the completion of the nomination period, the Planning Department screens and evaluates the nominated projects using

a predefined scoring system and recommends which projects should be considered for further planning. 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 development of a preliminary 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:

- Safety - Potential health and safety risks to personnel and the public if action is not taken
- Regulatory Compliance – Regulatory compliance schedule and potential fines for non-compliance
- Reliability/Operational Flexibility – Location, age, and condition of infrastructure and risk if action is not taken
- Capacity – Meets community health needs and growth, as needed
- Operations and Maintenance Efficiency – Potential for operating cost savings
- Regional Cooperation/Stewardship – Coordination with external stakeholders or meeting the communities needs
- Level of Service – Improvement to customer service
- Sustainability – Energy efficiency and "green" approach to improving water quality

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, PWSA Future Capital Bond Authorizations, cost shares with other utilities, and grants. PWSA is dedicated to identifying and pursuing funding from all potential sources to offset planned capital investments.

Capital Improvement Plan Organization

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

- Water Treatment Plant
- Water Pumping and Storage
- Water Distribution System, which includes lead service line replacements
- Wastewater System
- Stormwater System
- Other

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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The following information is provided for each project:

Project Class – Type of project.

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.

Neighborhood/Ward – Project location(s) based within the City of Pittsburgh.

Status – Phase in the project life-cycle (i.e. assessment/design/construction).

Priority – Criteria utilized to prioritize the 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.

Risk(s) - Outlines the risk(s) to PWSA if the project is delayed or is not selected.

Impact on Operations – Describes the anticipated impact to PWSA's operations when the project is completed.

Alternatives to the Recommended Action – Lists the alternatives that were considered or evaluated.

Cash Flow Summary* – Estimated five-year cash flow for the project.

Funding Source(s) – Proposed funding source(s) for the project.

*The Cash Flow Summary includes contingencies.

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2020-2024 Capital Improvement Program

The figures below illustrate the proposed breakdown of the project classes, funding sources, and yearly cash flows for the 2020 to 2024 CIP.

Figure 1. Proposed Yearly Capital Cash Flow by Project Class

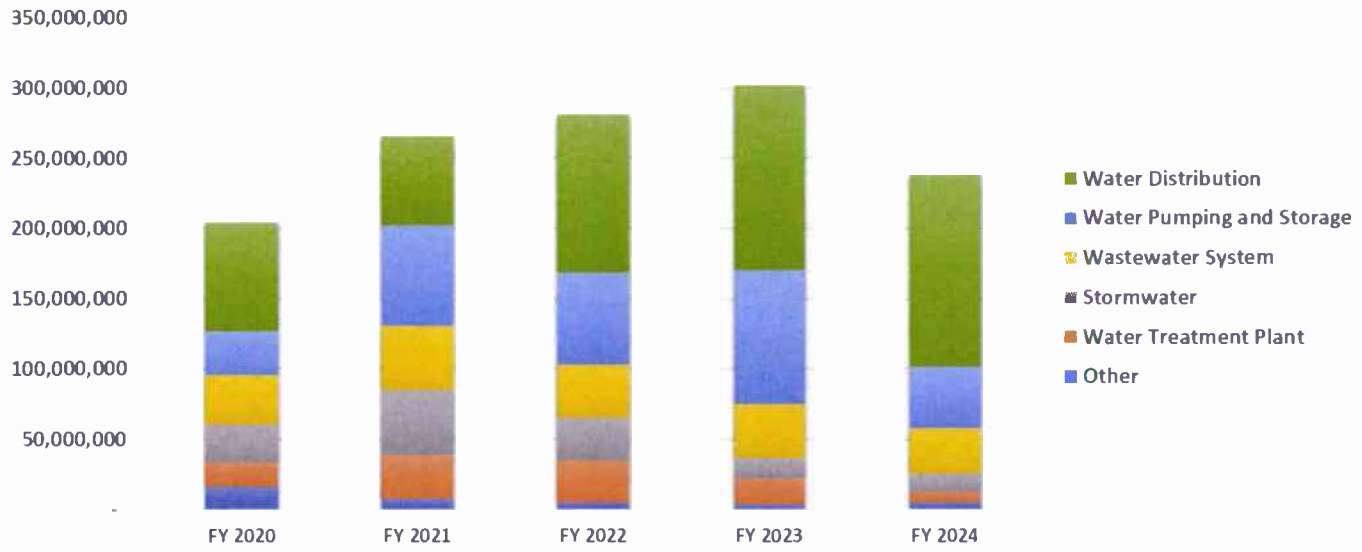

Figure 2. Capital Requirements

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Water Treatment Plant	$ 16,884,025	31,260,131	29,455,887	18,164,003	7,054,471	$ 102,818,518
Water Pumping and Storage	31,065,447	71,377,720	65,541,850	94,750,016	44,069,562	306,804,594
Water Distribution	77,597,135	63,277,796	112,385,623	131,689,581	136,347,581	521,297,717
Wastewater System	35,140,573	46,010,731	37,623,291	38,191,236	32,042,104	189,007,936
Stormwater	26,927,774	46,008,174	30,591,717	14,881,563	13,453,392	131,862,619
Other	16,650,000	7,634,500	5,200,000	4,000,000	5,200,000	38,684,500
Total Capital Requirements	$ 204,264,954	265,569,052	280,798,368	301,676,400	238,167,110	$ 1,290,475,883

Figure 3. Funding Sources

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Debt (Revenue Bonds)	$ 149,026,299	238,835,405	254,699,574	273,541,635	211,491,887	$ 1,127,594,800
Cash (PAYGO)	26,977,306	26,733,647	26,098,794	28,134,765	26,675,223	134,619,734
PENNVEST	28,261,349	-	-	-	-	28,261,349
Federal Funds	-	-	-	-	-	-
Other Grants	-	-	-	-	-	-
Total Funding Sources	$ 204,264,954	265,569,052	280,798,368	301,676,400	238,167,110	$ 1,290,475,883

2020 Project Summary

Page	Project Name	2020 Budget
Project Class: Water Treatment Plant		
9	Aspinwall and Membrane Filtration Plant Fiberglass Reinforced Plastic Chemical Tank Inspections	4,691
10	Aspinwall Water Treatment Plant Raw Water Intakes	2,304,856
11	Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements	4,596,583
12	Aspinwall Water Treatment Plant Electrical and Backup Power Improvements	1,082,568
13	Clearwell Emergency Response Project	4,800,000
14	Corrosion Control Chemical Storage & Feed Systems	390,748
15	Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance	300,000
16	Highland Park Membrane Filtration Plant UV System	2,100,000
17	Highland Park Membrane Filtration Module Replacement Program	1,132,731
18	Membrane Filtration Plant Assessment and Critical Process Improvements	171,848
Total: Water Treatment Plant		**16,884,025**
Project Class: Pumping and Storage		
20	Ross Pump Station	2,184,432
21	Clearwell Improvements	3,159,375
22	Aspinwall Pump Station to Lanpher Reservoir Rising Main	4,468,239
23	Bruecken Pump Station Valve Vault	31,485
24	Aspinwall Water Treatment Plant High Service Pumping	2,794,262
25	Chlorine Booster Station Improvements	1,090,090
26	Highland Reservoir Pump Station and Rising Main	1,563,260
27	Inline Pump Station (Coral and Pacific) Improvements	53,000
28	Lanpher Reservoir Improvements	3,716,026
29	Highland No. 2 Reservoir Improvements	4,965,756
30	Herron Hill Reservoir Improvements	3,864,000
31	Garfield Tank Improvements	-
32	Lincoln Tank Improvements	-
33	Spring Hill Tank Improvements	-
34	Mission Pump Station Improvements	-
35	Herron Hill Tank Pump Station Improvements	-
36	Herron Hill Pump Station Improvements	-
37	Howard Pump Station Improvements	-
38	Lincoln Pump Station Improvements	331,061
39	Saline Pump Station Improvements	359,848
40	2019 Large Diameter Water Main Improvements - Rising Mains 3 & 4	2,484,612
Total: Pumping and Storage		**31,065,447**
Project Class: Water Distribution		
42	Lead Service Line Replacement	36,780,128
43	Lead Service Identification Program	3,000,000
44	Private Lead Service Line Reimbursement Program	1,000,000
45	Small Diameter Water Main Replacement	13,459,161
46	Large Diameter Water Main Replacement	1,292,197
47	Curb Box Inspections	278,081
48	Water Relay	2,317,816
49	Valve Replacement	3,888,977
50	Hydrant Replacement	1,899,892
51	Small Meter Replacement	785,775
52	Large Meter Replacement	847,000
53	Unmetered and Flat Rate Properties	3,078,419
54	Surface Restoration (Capital Only)	3,564,474
55	Low Pressure Area Remediation	1,029,259

Page	Project Name	2020 Budget
Project Class: Water Distribution (Con't)		
56	Bus Rapid Transit (BRT) Water Distribution	700,000
57	Bates Street Waterline Relay	160,000
58	District Water and Pressure Meters	1,731,143
59	West Ohio Street Bridge Replacement	289,250
60	Fort Duquesne Bridge Water Air Release Valve Repair	1,495,563
Total: Water Distribution		**77,597,135**
Project Class: Wastewater System		
62	Small Diameter Sewer Rehabilitation	13,469,310
63	Sewers Under Structures	7,251,959
64	Sewer Reconstruction	1,700,668
65	Large Diameter Sewer Rehabilitation	3,847,000
66	31st Ward Sewer System	4,000,000
67	Maytide Storm and Sanitary Sewer System Improvements	3,013,907
68	Browns Hill Road Sewer Pump Station Replacement	-
69	Larimer Avenue Sewer and 28th Street Slope Stabilization	583,400
70	Mellon Terrace Sewer System Improvements	340,000
71	M-29 Outfall Improvements	934,329
Total: Wastewater System		**35,140,573**
Project Class: Stormwater		
73	Catch Basin and Inlet Replacement	5,689,061
74	Saw Mill Run MS4 Compliance Projects	-
75	Tide Gate Installations	-
76	Overbrook Middle School Pollution and Flood Reduction	2,625,058
77	Queenston Stormwater Infrastrucutre Improvements	750,000
78	Volunteer's Field Stormwater Infrastructure Improvements	854,185
79	Saw Mill Run Stream Bank Restoration Stormwater Infrastructure Improvements	876,204
80	Lawn and Ophelia	275,375
81	Wightman Park Stormwater Infrastrucutre Improvements	2,515,715
82	Woods Run Stream Removal Stormwater Infrastrucutre Improvements	2,570,000
83	Maryland Avenue Stormwater Infrastructure Improvements - Phase 1	2,401,200
84	Four Mile Run Stormwater Infrastructure Improvements	3,000,000
85	Woodland Drive Stormwater Infrastructure Improvements	-
86	Thomas and McPherson Stormwater Infrastructure Improvements - Phase 1	250,000
87	Southside Stormwater Infrastructure Improvements	590,180
88	St. Johns Stormwater Infrastructure Improvements	2,973,230
89	Spring Garden Stream Stormwater Infrastructure Improvements	-
90	Martin Luther King Field Stormwater Infrastructure Improvements	1,200,000
91	AMG Capital Funds - As-Needed Sewer Flow Monitoring	102,500
92	Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements	255,065
Total: Stormwater		**26,927,774**
Project Class: Other		
94	Computerized Maintenance Management System	1,250,000
95	Enterprise Resource Planning	1,250,000
96	Property Acquisition / Facility Upgrades	9,000,000
97	Park Maintenance / Upgrades	1,000,000
98	GIS System Upgrades: Water	800,000
99	Facility Standby Power	750,000
100	Utility Cost Shares	500,000
101	Vehicle and Major Equipment	2,100,000
Total: Other		**16,650,000**

Water Treatment Plant

Water Treatment Plant

Aspinwall and Membrane Filtration Plant Fiberglass Reinforced Plastic Chemical Tank Inspections and Repairs/Replacement

PROJECT NUMBER: 2017-322-102-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Assessment/Construction

PRIORITY:
Safety, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Inspection and rehabilitation and/or replacement of the fiberglass reinforced plastic chemical tanks

PROJECT JUSTIFICATION:
Based on the age, service, and visual observations of the tanks, rehabilitation is needed to maintain the integrity of the tanks. Known repairs include the replacement of the 300 gallon sodium hypochlorite day tank and repair/modification of the vent piping on the caustic tank.

RISK(S):
Failure of a chemical storage tank poses a significant health and safety risk to personnel. Failure exposes the Authority and the Highland No. 1 Service Area to a potentially deficient or non-complaint water supply, where emergency/unplanned repairs will typically add 30% to 50% to the capital expenses required.

IMPACT ON OPERATIONS:
Increased flexibility and reliability and improved safety conditions for staff.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$294,000	4,691	0	0	0	0	$4,691	

*Includes contingencies

Water Treatment Plant

Aspinwall Water Treatment Plant Raw Water Intakes

PROJECT NUMBER: 2018-322-100-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Preliminary Design

PRIORITY:
Water Quality/Regulatory

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):
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.

IMPACT ON OPERATIONS:
Modernization of systems will require less time spent in operations and maintenance of these facilities.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$45,000,000	2,304,856	7,435,574	12,421,380	11,921,380	7,054,471	$41,137,661	Debt (Revenue Bonds)

*Includes contingencies

Water Treatment Plant

Aspinwall Treatment Plant Pretreatment Chemical System and Clarification Improvements

PROJECT NUMBER: 2017-322-101-0/-1/-2/-3/-4/-5/-6
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regultory Compliance, Reliability/Operational Flexibility, Operations and Maitenance Efficiency

PROJECT DESCRIPTION:
Improvements to pretreatment chemical and clarification systems to provide improved water treatment capabilities. This project is the parent project for all of the clarification and pre-treatment related projects.

PROJECT JUSTIFICATION:
Chemical treatment systems are a critical component to producing safe drinking water. Components of the chemical treatment systems can no longer be operated in a safe, effective, or reliable manner to meet water quality requirements. Many bulk water treatment chemicals present safety hazards to staff. The storage and pumping systems associated with these chemicals have reached the end of their useful life. Failures resulting in dust creation and chemical spills can place operators in unsafe working conditions and can cause physical damage to equipment and structures, as well as environmental contamination.

RISK(S):
Inefficient operation of chemical systems results in increased operating costs, including chemical consumption, labor, solids generation and disposal, and wear on equipment. Failure of a chemical system poses a significant health and safety risk to personnel as well as an increased risk to water quality compliance.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$28,505,990	4,596,583	5,623,596	8,763,546	0	0	$18,983,725	

*Includes contingencies

Water Treatment Plant

Aspinwall Water Treatment Plant Electrical and Backup Power Improvements

PROJECT NUMBER: 2017-322-100-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Improvements to electrical systems at 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. Electrical panels do not meet current safety standards, including lack of arc flash protection. Additionally, the Water Treatment Plant does not have redundant power systems or a means for stand-by power for critical pumping and treatment systems.

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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$26,520,000	1,082,568	8,270,961	8,270,961	6,242,623	0	$23,867,114	

*Includes contingencies

Water Treatment Plant

Clearwell Emergency Response Project

PROJECT NUMBER: 2017-323-100-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Preliminary Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Long-term bypass of the existing 108 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.

PROJECT JUSTIFICATION:
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.

RISK(S):
Clearwell failure will cease all potable water delivery to all the Authority's customers (residential, commercial, industrial, institutional, bulk rate customers, public health and safety providers, fire protection, governmental facilities, other water distributors, etc.), creating a public health emergency. Existing temporary bypass measures could cause failure of the existing pumps due to insufficient suction pressure.

IMPACT ON OPERATIONS:
Ability to meet system reliability and water quality regulations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$27,670,000	4,800,000	9,700,000	0	0	0	$14,500,000	

*Includes contingencies

Water Treatment Plant

Corrosion Control Chemical Storage & Feed Systems

PROJECT NUMBER: 2017-322-107-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Water Quality/Regulatory

PROJECT DESCRIPTION:
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.

PROJECT JUSTIFICATION:
Required in order to lower lead levels in water.

RISK(S):
The existing corrosion control system was not adequate to maintain lead levels below the PA DEP action limit.

IMPACT ON OPERATIONS:
In order to prevent algae growth in the open Highland No. 1 Reservoir, treatment must occur at three major locations with 6 injection points. This requires additional maintenance of treatment facilities at satellite locations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Abandon Membrane Filtration Plant and the Highland No. 1 Reservoir and add orthophosphate at the Water Treatment Plant or use another less effective corrosion control method.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$9,142,035	390,748	0	0	0	0	$390,748	Debt (Revenue Bonds)

*Includes contingencies

Water Treatment Plant

Aspinwall Water Treatment Plant Security Fence, Lighting, and Surveillance

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety

PROJECT DESCRIPTION:
Install new fencing, lighting, and surveillance around the Water Treatment Plant.

PROJECT JUSTIFICATION:
The fencing and security infrastructure around the Water Treatment Plant is in need of upgrades.

RISK(S):
Increases the likelood of security issues.

IMPACT ON OPERATIONS:
Increased security around the Water Treatment Plant.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the implementation of the security upgrades.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$530,000	300,000	230,000	0	0	0	$530,000	Cash (PAYGO)

*Includes contingencies

Water Treatment Plant

Highland Park Membrane Filtration Plant UV System

PROJECT NUMBER: 2017-322-106-0/-1
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of a UV treatment system and appurtenances at the Membrane Filtration Plant to comply with the 1 log inactivation of Giardia cysts and the PA DEP Administrative Order dated October 25, 2017.

PROJECT JUSTIFICATION:
PA DEP determined that additional disinfection was required.

RISK(S):
Membrane Filtration Plant cannot operate without additional disinfection measures.

IMPACT ON OPERATIONS:
Membrane Filtration Plant cannot operate without this project.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a clearwell in lieu of a UV system, eliminate Membrane Filtration Plant and provide additional potable water storge. Neither of these options are viable in the timeframe that is needed to provide adquate supply to the system.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$6,697,381	2,100,000	0	0	0	0	$2,100,000	Debt (Revenue Bonds)

*Includes contingencies

Water Treatment Plant

Highland Park Membrane Filtration Module Replacement Program

PROJECT NUMBER: 2017-322-105-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Replace membrane modules. The Membrane Filtration Plant includes a total of 10 racks, each with 80 modules.

PROJECT JUSTIFICATION:
Membrane modules have reached the end of their useful life and are beginning to fail at an increasing rate.

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

IMPACT ON OPERATIONS:
Increase operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no short term practical alternatives to the recommended action. Long term alternative is providing covered finished water storage for the Highland No. 1 Service Area and eliminating the Membrane Filtration Plant.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,289,711	1,132,731	0	0	0	0	$1,132,731	Cash (PAYGO)

*Includes contingencies

Water Treatment Plant

Membrane Filtration Plant Assessment and Critical Process Improvements

PROJECT NUMBER: 2017-322-104-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level of Service

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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Provide covered system storage for the Highland No. 1 Service Area and eliminate the microfiltration plant.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,417,622	171,848	0	0	0	0	$171,848	Cash (PAYGO)

*Includes contingencies

Water Pumping and Storage

Water Pumping and Storage

Ross Pump Station

PROJECT NUMBER: 2018-323-101-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Design

PRIORITY:
Water Quality/Regulatory

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. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$43,000,000	2,184,432	5,653,015	8,632,569	12,438,916	10,438,916	$39,347,848	

*Includes contingencies

Water Pumping and Storage

Clearwell Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of the existing 108 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. Considering the age and condition of the clearwell, it is the water system's weakest link as there are no practical means to deliver water by bypassing the clearwell, while maintaining the required volume, quality, and contact time.

RISK(S):
Clearwell failure will cease all water delivery to all the Authority's customers (residential, commercial, industrial, institutional, wholesale customers, public health and safety providers, fire protection, governmental facilities, other water distributors, etc.), creating a public health emergency.

IMPACT ON OPERATIONS:
Ability to meet system reliability and water quality regulations.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$67,062,343	3,159,375	4,134,375	3,359,102	31,229,284	25,180,207	$67,062,343	

*Includes contingencies

Water Pumping and Storage

Aspinwall Pump Station to Lanpher Reservoir Rising Main

PROJECT NUMBER: 2018-323-100-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

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

PROJECT JUSTIFICATION:
The existing 60-inch rising main that supplies the Lanpher Reservoir is a 150 year old riveted steel pipe, has several tap connections to critical and bulk customers, and has experienced recent pipe failures. The new 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-inch supply main.

RISK(S):
Failure of the rising main could impact up to half of the Authority's customers, including St. Margaret's Hospital, and other wholesale customers, including Aspinwall, Blawnox, Etna, Sharpsburg, Fox Chapel, and Shaler.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing 60-inch supply main and construction of a parallel main in sections that cannot currently be isolated to clean, inspect, or rehabilitate.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$49,454,000	4,468,239	11,463,520	8,730,659	8,036,963	0	$32,699,381	Debt (Revenue Bonds)

*Includes contingencies

Water Pumping and Storage

Bruecken Pump Station Valve Vault

PROJECT NUMBER: 2013-323-175-0/1/2
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level 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 the Authority to higher capital costs to address emergency facility failures and its customers to a potentially deficient water supply. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$9,697,952	31,485	0	0	0	0	$31,485	

*Includes contingencies

Water Pumping and Storage

Aspinwall Water Treatment Plant High Service Pumping

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Capacity, Operations and Maintenance Efficiency, Level 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:
Both pump stations are 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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$53,620,000	2,794,262	10,653,269	18,303,263	21,869,206	0	$53,620,000	Debt (Revenue Bonds)

*Includes contingencies

Water Pumping and Storage

Chlorine Booster Station Improvements

PROJECT NUMBER: 2019-323-101-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Planning

PRIORITY:
Safety, Regulatory Compliance, Reliability

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

PROJECT JUSTIFICATION:
The Authority boosts chlorine residual at a majority of its storage facilities. Recent changes to PA DEP 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$10,090,000	1,090,090	6,117,915	2,556,409	0	0	$9,764,414	Debt (Revenue Bonds)

*Includes contingencies

Water Pumping and Storage

Highland Reservoir Pump Station and Rising Main

PROJECT NUMBER: 2017-323-101-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Capacity, Level 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 compliant water supply for the Highland No. 1 Service Area currently flows through the Highland No. 1 Reservoir and the Membrane Filtration Plant. 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), Membrane Filtration Plant, or Bruecken Pump Station would result in the loss of compliant water supply to approximately 40% of the Authority's customer base.

IMPACT ON OPERATIONS:
Increased operation and maintenance labor and expenses. Increased operating flexibility in the future.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new clearwell at the site of the existing west sedimentation basin. However, a previous study still recommended the addition of these assets as part of the Clearwell Replacement project.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$37,130,000	1,563,260	3,614,929	11,731,087	10,320,724	0	$27,230,000	Debt (Revenue Bonds)

*Includes contingencies

Water Pumping and Storage

Inline Pump Station (Coral and Pacific) Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Bloomfield/8

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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. Staff members may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$600,000	53,000	487,833	59,167	0	0	$600,000	

*Includes contingencies

Water Pumping and Storage

Lanpher Reservoir Improvements

PROJECT NUMBER: 2017-323-105-0/1/2/3
NEIGHBORHOOD/WARD: North Side/25

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level 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 PA DEP 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$30,890,182	3,716,026	6,465,302	0	0	0	$10,181,328	

*Includes contingencies

Water Pumping and Storage

Highland No. 2 Reservoir Improvements

PROJECT NUMBER: 2019-323-102-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Planning

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

PROJECT DESCRIPTION:
Replacement of existing reservoir liner and cover and associated reservoir rehabilitation. Replacement of existing chlorine injection system. Upgrade of 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 ugraded to meet PA DEP regulatory requirements for distribution chlorine residual. Existing reservoir outlet structure must be upgraded to accommodate new Highland Reservoir Pump Station.

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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$27,510,000	4,965,756	11,743,206	0	0	0	$16,708,962	

*Includes contingencies

Water Pumping and Storage

Herron Hill Reservoir Improvements

PROJECT NUMBER: 2019-323-100-0
NEIGHBORHOOD/WARD: Upper Hill/5

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level 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 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$5,520,000	3,864,000	1,656,000	0	0	0	$5,520,000	

*Includes contingencies

Water Pumping and Storage

Garfield Tank Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Garfield/9

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

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 PA DEP'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 the Authority's 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Do nothing and risk catastrophic failure of the tank. Postpone replacement or full rehabilitation until a later date through short-term rehabilitation.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$4,050,000	0	0	528,235	2,026,807	1,462,605	$4,017,647	

*Includes contingencies

Water Pumping and Storage

Lincoln Tank Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Lincoln-Lemington/12

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing tank, which may be a larger investment than replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$4,195,000	0	0	1,215,910	2,327,815	332,255	$3,875,980	

*Includes contingencies

Water Pumping and Storage

Spring Hill Tank Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: City View, Spring Hill, Spring Garden, Troy Hill/24,26

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability, Capacity, Level of Service

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 may require rehabilitation due to corrosion. The existing shell ladder, ladder cage, and rolling roof ladder do not meet current OSHA dimensional requirements.

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. Additionally, it exposes the Authority's staff and contractors to safety issues.

IMPACT ON OPERATIONS:
Increased flexibility and reliability and system compliance.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Rehabilitation of the existing tank, which may be a larger investment than replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$2,125,000	0	0	164,545	642,154	1,233,541	$2,040,241	

*Includes contingencies

Water Pumping and Storage

Mission Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Sheradan, Elliott, West End, Westwood, Ridgemont, Duquesne Heights, South Shore, Mount Washington, Allentown, Southside Slopes/16, 17, 18, 20

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$16,865,000	0	0	995,714	1,054,286	2,202,270	$4,252,270	Cash (PAYGO)

*Includes contingencies

Water Pumping and Storage

Herron Hill Tank Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Upper Hill/5

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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 customers to a potentially deficient water supply. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$1,110,000	0	0	0	115,152	366,189	$481,340	

*Includes contingencies

Water Pumping and Storage

Herron Hill Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Squirrel Hill, Regent Square, Point Breeze, Greenfield/14

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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 the Authority to higher capital costs to address emergency failures and customers to a potentially deficient water supply. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$10,960,000	0	0	0	891,429	1,574,532	$2,465,961	Cash (PAYGO)

*Includes contingencies

Water Pumping and Storage

Howard Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Brighton Heights, California Kirkbride, Marshall- Shadeland, Northview Heights, Perry, Pineview, Spring Garden, Summer Hill/21, 24, 25, 26, 27

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$18,650,000	0	0	0	404,762	1,279,048	$1,683,810	

*Includes contingencies

Water Pumping and Storage

Lincoln Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Lincoln-Lemington/12

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$1,374,898	331,061	1,043,838	0	0	0	$1,374,898	

*Includes contingencies

Water Pumping and Storage

Saline Pump Station Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Glen Hazel, Hazelwood, Squirrel Hill South, Swisshelm Park/ 14, 15

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level 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 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. Staff may be exposed to electrical arc flashes due to the age of the electrical systems.

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

ALTERNATIVES TO THE RECOMMENDED ACTION:
Construction of a new facility to replace the existing pump station.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$1,491,995	359,848	1,132,147	0	0	0	$1,491,995	

*Includes contingencies

Water Pumping and Storage

2019 Large Diameter Water Main Improvements - Rising Mains 3 & 4

PROJECT NUMBER: 2019-325-103-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Planning

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Condition assessment and rehabilitation or replacement of Rising Mains 3 and 4. Replacement or rehabilitation depending upon existing condition of rising mains.

PROJECT JUSTIFICATION:
Rising Mains 3 and 4 feed the Highland 2 Pump Station. The capacity of these rising mains may need to be increased to accodomate additional flow during the bypass of the clearwell. These mains will need to accommodate demand from both Highland No.1 and Highland No. 2 reservoirs during the bypass of the clearwell as well as to supply a redundant feed to the Highland No. 1 reservoir.

RISK(S):
The consequences of failure for larger mains are much greater than for smaller distribution mains. Consequences typically include significant service outages (larger area and longer time frame impacts), as well as property and roadway damage.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$23,550,000	2,484,612	7,212,370	9,265,188	3,392,519	0	$22,354,689	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution

Water Distribution System

2018-2019 Lead Service Line Replacement Program

PROJECT NUMBER: 2018-325-100-0/1/2/3/4/5, WSI9-325-100-0/1/2/3
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Replacement of 7% of lead service lines per year.

PROJECT JUSTIFICATION:
Due to the exceedance of the action levels from compliance tests for lead and copper, the PA DEP required the Authority to perform additional distribution system water quality monitoring, and the optimization of corrosion control treatment, public education, and lead service line replacement.

RISK(S):
Failure to comply will result in regulatory fines and poses a public health risk.

IMPACT ON OPERATIONS:
Reduction in service line failure due to replacing with new infrastructure, reducing demands on operations repair crews.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$90,460,234	36,780,128	0	0	0	0	$36,780,128	Debt (Revenue Bonds) & PENNVEST

*Includes contingencies

Water Distribution System

2019-2021 Lead Service Line Identification Program

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements.

PROJECT JUSTIFICATION:
Understanding where the lead service lines are within the water system will allow the Authority to more efficently replace all lead service lines.

RISK(S):
Failure to indentify all lead service lines could slow the rate in which they are replaced.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$13,434,666	3,000,000	3,138,667	4,737,334	2,558,667	0	$13,434,667	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2020-2024 Private Lead Service Line Reimbursement Program

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Reimbusrement of private line lead service line costs.

PROJECT JUSTIFICATION:
Replacing both private and public lead service lines is required to eliminate lead in the water system.

RISK(S):
Failure to replace private lead service lines poses a public health risk.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$5,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	$5,000,000	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2018-2024 Small Diameter Water Main Replacement Program

PROJECT NUMBER: 2017-325-103-0, 2019-325-101-0, 2019-325-102-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Regional Cooperation/Stewardship, Level of Service

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 initially focus on replacing existing 4-inch and 6-inch unlined cast iron mains and mains with a history of frequent breaks.

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 for firefighting activities.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$430,410,000	13,459,161	32,788,975	79,928,673	99,429,521	100,527,383	$326,133,714	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2020-2024 Large Diameter Water Main Replacement Program

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
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.

PROJECT JUSTIFICATION:
The Authority's water system has approximately 122 miles of large diameter water mains. By maintaining a proactive approach to asset management, efforts can be directed towards remedying assets before their failure, thus resulting in cost savings. Typically, large diameter pipe is not readily available and has a 6 to 8 week lead time for delivery. A large percentage of the Authority's large diameter mains are riveted steel, which cannot be easily repaired without the use of field fabricated specialty fittings

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), as well as property and roadway damage. This is especially true for the Highland No. 1 Pressure District and all districts fed by the Highland No. 1 reservoir.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$70,763,030	1,292,197	3,790,379	6,990,879	14,120,545	20,299,809	$46,493,809	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2018 Curb Box Inspections

PROJECT NUMBER: 2017-325-106-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Non-Construction

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Locating lead service lines allows the Authority to identify both individual service lines to replace and waterlines that have a particularly high amount of lead service lines that can be replaced to facilitate the lead service line replacements.

PROJECT JUSTIFICATION:
Understanding where the lead service lines are within the water system will allow the Authority to more efficently replace all lead service lines.

RISK(S):
Failure to indentify all lead service lines could slow the rate in which they are replaced.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$2,980,174	278,081	0	0	0	0	$278,081	

*Includes contingencies

Water Distribution System

2018-2024 Water Relay

PROJECT NUMBER: 2018-325-101-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of existing water mains, valves, fittings, service connections, and hydrants due to emergency situations.

PROJECT JUSTIFICATION:
The existing water distribution system is aging and updates are required to address failures that could be significant public safety hazards.

RISK(S):
Customers will be subject to service outages or inadequate pressure for firefighting activities until break is addressed.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all upgrades. This would require an increase in operations expenses for both personnel and equipment.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$14,595,767	2,317,816	1,727,500	1,757,000	1,869,000	1,880,000	$9,551,316	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2017-2024 Valve Replacement Program

PROJECT NUMBER: 2017-325-104-0, 2018-325-105-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of defective or non-operational valves on transmission and distribution mains throughout the water distribution system, excluding valves replaced during waterline relays.

PROJECT JUSTIFICATION:
Increasing the number of operable valves in the system will reduce the number of number of valves that would need to be closed during emergency conditions, and therefore the number of customers that may be impacted.

RISK(S):
A larger number of customers may be subject to service outages.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all repairs. This would require an increase in operation expenses for both personnel and equipment.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$25,209,208	3,888,977	3,230,652	2,995,000	3,208,198	4,993,997	$18,316,824	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2017-2024 Hydrant Replacement Program

PROJECT NUMBER: 2017-325-102-0, 2018-325-104-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Replacement of broken hydrants throughout the water distribution system. The goal of the program is to replace a minimum of 100 hydrants per year, excluding hydrants replaced during waterline relays.

PROJECT JUSTIFICATION:
Increasing the number of operational hydrants provides better fire protection for the City of Pittsburgh.

RISK(S):
Customers will be subject to inadequate pressure for firefighting activities.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all repairs. This would result in an increase in operating expenses for both personnel and equipment.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$10,007,574	1,899,892	1,539,725	1,450,000	1,524,314	1,575,000	$7,988,931	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

2019-2024 Small Meter Replacement Program

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Annual replacement of water meters one inch or less.

PROJECT JUSTIFICATION:
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

RISK(S):
Failure to replace meters annually could result in lost revenue or violate regulatory requirements.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$4,985,915	785,775	857,000	867,000	877,000	887,000	$4,273,775	

*Includes contingencies

Water Distribution System

2019-2024 Large Meter Replacement Program

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Annual replacement of water meters larger than one inch.

PROJECT JUSTIFICATION:
Ensure capture of all revenue. As meters age, they typically underestimate the amount of water consumed.

RISK(S):
Failure to replace meters annually could result in lost revenue.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$5,190,000	847,000	857,000	867,000	877,000	887,000	$4,335,000	Cash (PAYGO)

*Includes contingencies

Water Distribution System

2019-2021 Unmetered and Flat Rate Properties

PROJECT NUMBER: 2019-325-104-0, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Metering unmetered and flat rate properties as required by regulations.

PROJECT JUSTIFICATION:
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.

RISK(S):
Failure to comply with PUC regulations and the potential of lost revenue.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$8,840,000	3,078,419	3,266,087	1,744,698	527,947	0	$8,617,151	Cash (PAYGO)

*Includes contingencies

Water Distribution System

2019-2024 Surface Restoration

PROJECT NUMBER: 2019-325-106-0, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Operations and Maintenance Efficieny

PROJECT DESCRIPTION:
Resurfacing of streets as a result of other capital projects.

PROJECT JUSTIFICATION:
Adequately restoring street surface conditions is a requirement for all applicable capital projects.

RISK(S):
Customers could experience temporary street closures as a result of street resurfacing work.

IMPACT ON OPERATIONS:
Increased system reliability and improved system management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$25,911,333	3,564,474	4,158,926	4,097,387	4,197,390	4,297,393	$20,315,569	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

Low Pressure Area Remediation

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Fix chronically low pressure areas by either extending neighboring higher pressure districts into the area, booster pump stations, or household booster pumps.

PROJECT JUSTIFICATION:
This project is in response to the low pressure monitors required by the October 2017 Administrative Order.

RISK(S):
Customers may experience temporary service outages as a result of the work on this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,393,358	1,029,259	1,193,445	170,654	0	0	$2,393,358	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

Bus Rapid Transit (BRT) Water Distribution

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Uptown & Oakland/ 1 & 4

PHASE:
Not Started

PRIORITY:
Regional Cooperation/ Stewardship and Level of Service

PROJECT DESCRIPTION:
The City 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. However, first a study should be completed to ensure proper size of these mains as they could be oversized.

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, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the replacement of the required watermains and risk damange to the water system resulting from the project.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$11,730,000	700,000	3,750,000	5,780,000	1,500,000	0	$11,730,000	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

Bates Street Waterline Relay

PROJECT NUMBER: 2019-325-111-0
NEIGHBORHOOD/WARD: Oakland/4

PHASE:
Not Started

PRIORITY:
Regional Cooperation/ Stewardship and Level of Service

PROJECT DESCRIPTION:
PennDOT is repaving this critical road in 2020. The existing 8-inch and 12-inch mains have had multiple breaks which cause significant delays to traffic. This line must be replaced prior to repaving.

PROJECT JUSTIFICATION:
This main will continue to break and must be replaced before final paving by PennDOT.

RISK(S):
Replacement of a high-risk main would result in less frequent loss of water service due to breaks.

IMPACT ON OPERATIONS:
Increased system reliability, reliability, and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the replacement of the watermain and risk the increased change of breaks.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$1,151,000	160,000	991,000	0	0	0	$1,151,000	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

District Water and Pressure Meters

PROJECT NUMBER: 2017-325-114-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Procurement

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of water meters and pressure monitors in the distribution system to determine water usage and loss, and pressure loss.

PROJECT JUSTIFICATION:
This project will help determine areas of water loss in the water system. This information can then be used to develop an action plan to mitgage water loss.

RISK(S):
Customers may experience temporary service outages as a result of the work on this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,835,000	1,731,143	985,524	0	0	0	$2,716,667	Cash (PAYGO)

*Includes contingencies

Water Distribution System

West Ohio Street Bridge Replacement

PROJECT NUMBER: 2019-325-112-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reegional Cooperation/Stewardship, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Relocate and upgrade water infrastructure attached to the West Ohio Street Bridge as part of the City of Pittsburgh's plan to relocate the bridge.

PROJECT JUSTIFICATION:
This project provides for a cost share opportunity to relocate water infrastrucuture attached to the West Ohio Street Bridge.

RISK(S):
Unforseen costs could be required in relocating the water infrastructure.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$289,250	289,250	0	0	0	0	$289,250	Debt (Revenue Bonds)

*Includes contingencies

Water Distribution System

Fort Duquesne Bridge Water Air Release Valve Repair

PROJECT NUMBER: 2017-325-100-0
NEIGHBORHOOD/WARD: North Shore & Central Business District/1,22

PHASE:
Construction

PRIORITY:
Safety, Reliability/Operational Flexibility, Regional Cooperation/Stewardship, Level of Service

PROJECT DESCRIPTION:
Perform transient analysis along existing 30-inch water main that is suspended from the Fort Duquesne Bridge. Design and construct new pipe supports and thrust restraint based on the results of the analysis. Includes the replacement of the existing air-release valve on the 30-inch water main, including insulation or heat tracing to reduce the potential for freezing and cracking of the valve.

PROJECT JUSTIFICATION:
A recent PENNDOT inspection of the Fort Duquesne Bridge identified priority code 1 defects in the support of the existing 30-inch diameter water main. Additionally, the existing 2-inch diameter air-release valve located on the main has a history of failure. The water main is located below the lower deck of the Fort Duquesne Bridge and serves as an emergency interconnection between pressure gradients and is a vital component to the system operation.

RISK(S):
Customers may be subject to service outages or the potential for inadequate pressure for firefighting activities.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,850,000	1,495,563	2,916	0	0	0	$1,498,479	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

Wastewater System

2018-2024 Small Diameter Sewer Rehabilitation

PROJECT NUMBER: 2018-424-100-0, 2019-424-100-0/1, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Proactive, trenchless rehabilitation of sewer mains with less than 36-inch diameter 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$111,170,000	13,469,310	21,359,629	19,300,000	20,300,000	21,300,000	$95,728,939	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

2018-2023 Sewers Under Strucutres

PROJECT NUMBER: 2017-424-110-0, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Rehabilitation, relocation, and abandonment, if applicable, of existing sewer infrastructure located under or adjacent to buildings, bridges, or railroads or located on steep slopes.

PROJECT JUSTIFICATION:
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.

RISK(S):
Failure of this asset type could result in significant property/structure damage, increased replacement cost, and increased service outages or bypass pumping.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$52,790,000	7,251,959	10,394,090	8,036,803	7,651,474	7,925,668	$41,259,993	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

2018-2024 Sewer Reconstruction

PROJECT NUMBER: 2017-424-111-0, 2019-424-102-0, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level 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 to address failures that could be significant public safety hazards.

RISK(S):
Customers may be subject to basement backups or overflows may occur due to collapsed pipes. 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform all repairs. This would result in an increase to labor, equipment, and related operating expenses.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$12,100,000	1,700,668	2,274,105	1,751,488	1,834,762	1,859,167	$9,420,190	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

2020-2024 Large Diameter Sewer Rehabilitation

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Proactive, trenchless rehabilitation of 36-inch 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Perform excavated point repairs to address defective sections of pipe, replace segment in its entirety, or continue to extend asset life until failure.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$21,320,000	3,847,000	4,529,000	4,320,000	4,054,000	397,270	$17,147,270	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

31st Ward Sewer System

PROJECT NUMBER: 2017-424-100-0
NEIGHBORHOOD/WARD: Lincoln Place/31

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Regional Cooperation/ Stewardship, Level 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):
The Authority may be subject to fines due to sanitary sewer overflows caused by pump station system failures or excessive infiltration and inflow in the system.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Abandonment of the existing pump stations and installation of a new gravity main to convey flows to the West Mifflin Sanitary Authority.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$13,730,000	4,000,000	1,300,000	4,215,000	4,115,000	0	$13,630,000	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

Maytide Storm and Sanitary Sewer System Improvements

PROJECT NUMBER: 2017-424-109-0
NEIGHBORHOOD/WARD: Carrick/29

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Reconstruction of storm infrastructure from Merritt Avenue to the storm interceptor on Ravilla Avenue and the realignment of the 10-inch 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-inch 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. Customers may be subject to basement backups, or overflows may occur due to collapsed pipes.

IMPACT ON OPERATIONS:
Increased operating reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$6,520,000	3,013,907	3,013,907	0	0	0	$6,027,814	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

Browns Hill Road Sewer Pump Station Replacement

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Glen Hazel, Hazelwood/ 15

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level 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-inch force main (approx. 790 l.f.) constructed in 2007, but was 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the construction and risk pump or wet well failures.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$1,500,000	0	0	0	236,000	560,000	$796,000	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

Larimer Avenue Sewer and 28th Street Slope Stabilization

PROJECT NUMBER: 2016-424-102-0
NEIGHBORHOOD/WARD: Strip District/2

PHASE:
Planning

PRIORITY:
Safety, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Evaluation of rerouting storm laterals, sewer televising, geotechnical investigations, and slope stabalization to address a structurally deficient 18-inch combined sewer that has severely eroded the ground surface on the slope below Brereton Street and above the Port Authority of Allegheny County's East Busway.

PROJECT JUSTIFICATION:
Provides a solution to sufficently reroute infrastructure while stabilizing the slope in the applicable area.

RISK(S):
The slope may continue to erode prior to the completion of this project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$695,901	583,400	0	0	0	0	$583,400	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

Mellon Terrace Sewer System Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Highland Park/11

PHASE:
Not Started

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Regional Cooperation/ Stewardship, Level of Service

PROJECT DESCRIPTION:
Realignment of approximately 665 linear feet of 24-inch combined sewer main on Mellon Terrace.

PROJECT JUSTIFICATION:
Repairs were issued on previous annual contracts; however, were not performed due to depth and soil conditions. Additionally, the City of Pittsburgh's Department of Public Works is planning to repair/rebuild the roadway.

RISK(S):
Customers may be subject to basement backups, or overflows may occur due to collapsed pipes. 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 reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Utilize Authority staff and equipment to perform the repairs. This would result in an increase to labor, equipment, and related operating expenses.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,030,000	340,000	1,690,000	0	0	0	$2,030,000	Debt (Revenue Bonds)

*Includes contingencies

Wastewater System

M-29 Outfall Improvements

PROJECT NUMBER: 2018-424-103-0
NEIGHBORHOOD/WARD: Hazelwood/15

PHASE:
Design

PRIORITY:
Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Modifying diversion chamber, rehabilitating culvert, contructing an endwall, and installing flapgate associated with the M-29 outfall structure

PROJECT JUSTIFICATION:
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.

RISK(S):
The M-29 outfall structure could fail prior to completion of the project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$1,868,659	934,329	1,450,000	0	0	0	$2,384,329	Debt (Revenue Bonds)

*Includes contingencies

Stormwater

Stormwater System

2018-2024 Catch Basin and Inlet Replacement

PROJECT NUMBER: 2018-424-101-0/1, 2019-424-107-0, Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Construction

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level 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. Exposes Authority to potential fines and penalties for not meeting the annual requirements listed in the Minimum Control Measures under the NPDES permit.

IMPACT ON OPERATIONS:
Increased operating reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Continue to extend utility component life until a high failure rate justifies replacement.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$67,687,500	5,689,061	11,651,535	8,953,599	9,453,594	9,953,392	$45,701,180	Debt (Revenue Bonds) & Cash (PAYGO)

*Includes contingencies

Stormwater System

Saw Mill Run MS4 Compliance Projects

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Overbrook,Carrick/32&29

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance

PROJECT DESCRIPTION:
Identifying and completing projects related to 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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$8,500,000	0	0	0	1,000,000	2,500,000	$3,500,000	Debt (Revenue Bonds)

*Includes contingencies

Stormwater System

Tide Gate Installations

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency, Level of Service

PROJECT DESCRIPTION:
Installation of tide gates at 44 combined sewer overflow diversion chamber locations to assist in preventing river water intrusion.

PROJECT JUSTIFICATION:
Will prevent the intrusion of sewage into river water during heavy wet weather events.

RISK(S):
The length of time to installl the tide gates could result in sewage overflowing into river water prior to the completion of the project.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$4,500,000	0	0	0	0	1,000,000	$1,000,000	Debt (Revenue Bonds)

*Includes contingencies

Stormwater System

Overbrook Middle School Pollution and Flood Reduction

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Overbrook/32

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level 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/SSO's.

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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$6,500,000	2,625,058	3,874,942	0	0	0	$6,500,000	Debt (Revenue Bonds)

*Includes contingencies

Stormwater System

Queenston Stormwater Infrastrucutre Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Overbrook/32

PHASE:
Not Started

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility, Level of Service

PROJECT DESCRIPTION:
Development of alternatives, selection, design and construction of preferred alternative to address flooding issues impacting residents on Yale Drive, Lucina Street, Queenston Street, and Walton Avenue due to collasped storm sewers.

PROJECT JUSTIFICATION:
This project will help to mitgage flooding issues resulting from collasped storm sewers.

RISK(S):
Flooding issues will continue until the project is completed.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$1,500,000	750,000	750,000	0	0	0	$1,500,000	

*Includes contingencies

Stormwater System

Volunteer's Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-104-0
NEIGHBORHOOD/WARD: Carrick/29

PHASE:
Procurement

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the Carrick neighborhood of the City of Pittsburgh and is tributary to Saw Mill Run. Installation of GI BMPs within the Park to reduce sediment and other pollutant loads along with stormwater volume and peak flow reduction.

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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$1,714,942	854,185	0	0	0	0	$854,185	

*Includes contingencies

Stormwater System

Saw Mill Run Stream Bank Restoration Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-107-0
NEIGHBORHOOD/WARD: Overbrook,Carrick/32&29

PHASE:
Procurement

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Stream restoration of approximately 1,500 linear feet of the Saw Mill Run Creeks to reduce pollutants in the impaired waterway. This project is required to comply with the MS4 NPDES permit application submitted to the PA DEP.

PROJECT JUSTIFICATION:
This is required in order to comply with certain regulatory obligations.

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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$1,385,000	876,204	0	0	0	0	$876,204	

*Includes contingencies

Stormwater System

Lawn and Ophelia

PROJECT NUMBER: 2017-424-104-0
NEIGHBORHOOD/WARD: Oakland/4

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the South Oakland neighborhood in the City of Pittsburgh and is 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):
Customers within the service area of this project may experience stormwater related issues prior to the completion of this project.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$785,000	275,375	0	0	0	0	$275,375	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$313,900 ALCOSAN GROW grant funding secured

Stormwater System

Wightman Park Stormwater Infrastrucutre Improvements

PROJECT NUMBER: 2017-424-105-0
NEIGHBORHOOD/WARD: Squirrel Hill/14

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
Project is located in the Squirrel Hill neighborhood of the City of Pittsburgh and is 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):
Customers may be subject to basement backups or overflows may occur due to collapsed pipes. 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.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay construction which will increase the risk of sewer basement backups.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$4,332,000	2,515,715	1,047,025	0	0	0	$3,562,740	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$368,300 ALCOSAN GROW grant funding secured

Stormwater System

Woods Run Stream Removal Stormwater Infrastrucutre Improvements

PROJECT NUMBER: 2017-424-108-0
NEIGHBORHOOD/WARD: Woodsrun/26

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

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 the 36-inch diameter PWSA combined sewer on Mairdale Avenue

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 in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$10,476,000	2,570,000	525,641	2,816,929	3,739,430	0	$9,652,000	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$412,300 ALCOSAN GROW grant funding secured

Stormwater System

Maryland Avenue Stormwater Infrastructure Improvements - Phase 1

PROJECT NUMBER: 2017-424-101-0
NEIGHBORHOOD/WARD: Point Breeze/7

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Permeable paver based GSI project to manage appximately 7 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):
Progress to CSO compliance goals (with targets of reducing volume and frequency of overflows and water quality impacts) and continued flooding in A-22 sewershed.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Implementing stormwater management projects at less cost-effective locations.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$2,658,000	2,401,200	0	0	0	0	$2,401,200	

*Includes contingencies

Stormwater System

Four Mile Run Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-102-0
NEIGHBORHOOD/WARD: Hazelwood/15

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

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 in issues during wet weather events.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$30,000,000	3,000,000	13,500,000	13,500,000	0	0	$30,000,000	Debt (Revenue Bonds)

*Includes contingencies

Stormwater System

Woodland Drive Stormwater Infrastructure Improvements

PROJECT NUMBER: 2018-GI-108-0
NEIGHBORHOOD/WARD: Squirrel Hill/14

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Bioretention based GSI project to manage appx. 3 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 Rd. Design activities include field investigations (site survey, geotech), development of design documents for construction and pre-construction flow monitoring.

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):
Progress to CSO compliance goals (with targets of reducing volume and frequency of overflows and water quality impacts) and continued flooding in A-22 sewershed.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Implementing stormwater management projects at less cost-effective locations.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$1,965,000	0	1,695,395	0	0	0	$1,695,395	

*Includes contingencies

Stormwater System

Thomas and McPherson Stormwater Infrastructure Improvements - Phase 1

PROJECT NUMBER: 2018-GI-106-0
NEIGHBORHOOD/WARD: Point Breeze/7

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

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 tributary to the A-42 combined sewer outfall.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the 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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$4,901,000	250,000	4,651,000	0	0	0	$4,901,000	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$1,517,800 ALCOSAN GROW grant funding secured

Stormwater System

Southside Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-100-0
NEIGHBORHOOD/WARD: Southside,St.Clair/16&17

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Regional Cooperation/Stewardship

PROJECT DESCRIPTION:
The Southside Green / Stormwater project is located in the M-16 sewershed, which discharges approximately 103MG of combined sewer overflows (CSOs) in typical year as it is defined in the current system model. Additionally, there are 15 known surface streams 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 and downstream through the S. 21st Street corridor and to the outfall at the Monongahela River. The project will look at separating the stormwater runoff from the park and road right-of-way areas through a new storm sewer discharge to the Monongahela, and detaining and slowly returning the stormwater runoff to the combined sewer system.

PROJECT JUSTIFICATION:
This project will help with complying with the Consent Order Agreement (COA) 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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$6,155,000	590,180	1,994,000	2,877,500	0	0	$5,461,680	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$1,489,900 ALCOSAN GROW grant funding secured

Stormwater System

St. Johns Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-424-101-0
NEIGHBORHOOD/WARD: Brighton Heights/27

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Evaluating cost-effective opportunities for managing stormwater runoff from the surrounding drainage area around the St. John's site and implementing appropriate stormwater mitigation practices.

PROJECT JUSTIFICATION:
This project will help to improve stormwater mitigation around the St. John's site.

RISK(S):
Flooding issues could continue until the project is completed.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$5,309,000	2,973,230	1,803,665	0	0	0	$4,776,895	

*Includes contingencies

Stormwater System

Spring Garden Stream Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-101-0
NEIGHBORHOOD/WARD: Woodsrun/26

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Construct a stormwater storage BMP to be located near the Spring Garden direction stream inflow along with approximately 11,000-ft of separate storm sewer system to convey flow from the BMP to the Allegheny River.

PROJECT JUSTIFICATION:
This project will help to improve stormwater mitigation near the Spring Garden.

RISK(S):
Flooding issues could continue until the project is completed.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$13,752,000	0	1,000,000	479,000	0	0	$1,479,000	

*Includes contingencies

Stormwater System

Martin Luther King Field Stormwater Infrastructure Improvements

PROJECT NUMBER: 2019-GI-104-0
NEIGHBORHOOD/WARD: Schenley Heights,Oakland/4&5

PHASE:
Design

PRIORITY:
Safety, Regulatory Compliance, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
Installation of regenerative step pools, rain gardens, and underground detention facilities to capture and detain impervious acres from the adjacent streets and upstream separate storm sewers, which currently discharging into the combined sewer located in M-19. This project will also explore retrofitting 100' of an abandoned 60-inch sewer to be utilized as a detention and slow release system.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the 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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$3,348,276	1,200,000	2,148,276	0	0	0	$3,348,276	Cash (PAYGO)& ALCOSAN Grow Grant

*Includes contingencies
**$855,270 ALCOSAN GROW grant funding secured

Stormwater System

AMG Capital Funds - As-Needed Sewer Flow Monitoring

PROJECT NUMBER: 2019-424-105-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Non-Construction

PRIORITY:
Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Pre-construction flow monitoring services through the existing As-Needed Sewer Flow Monitoring contract with AMG Environmental. Pre-construction flow monitoring services are capitalized and budgeted under each individual stormwater / sewer project.

PROJECT JUSTIFICATION:
This project will be used as needed for pre-construction flow monitoring services.

RISK(S):
The demand for as-needed flow monitoring services could be greater than the amount that was budgeted.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$102,500	102,500	0	0	0	0	$102,500	Debt (Revenue Bonds)

*Includes contingencies

Stormwater System

Bus Rapid Transit (BRT) Stormwater Infrastructure Improvements

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Uptown,Oakland/1&4

PHASE:
Not Started

PRIORITY:
Safety, Regional Cooperation/Stewardship, Reliability/Operational Flexibility

PROJECT DESCRIPTION:
A cost share with the City's Department of Mobility and Infrastructure on the redesign of Forbes Avenue and Fifth Avenue to accommodate bus rapid transit from downtown to Birmingham Bridge. This project will include the installation of permeable paving, underground storage, and bioretention plantings and is tributary to the M-05 and M-19 outfall.

PROJECT JUSTIFICATION:
This project will help slow or reduce runoff into the 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 sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$4,274,988	255,065	1,366,695	1,964,689	688,539	0	$4,274,988	Debt (Revenue Bonds)

*Includes contingencies

Other

Other

Computerized Maintenance Management System

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Implement a new computerized maintenance system that will maintain a database of information about the Authority's maintenance operations.

PROJECT JUSTIFICATION:
The implementation of a computerized maintenance management system is required to improve Authority operations.

RISK(S):
The Authority staff will have additional responsbilities during implementation to ensure all workflows are properly designed.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,500,000	1,250,000	1,250,000	0	0	0	$2,500,000	Cash (PAYGO)

*Includes contingencies

Other

Enterprise Resource Planning

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Implement a new enterprise resource planning system that will enable more efficent Authority operations.

PROJECT JUSTIFICATION:
The implementation of a enterprise resource planning system is required to improve Authority operations.

RISK(S):
The Authority staff will have additional responsbilities during implementation to ensure all workflows are properly designed.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$2,500,000	1,250,000	1,250,000	0	0	0	$2,500,000	Cash (PAYGO)

*Includes contingencies

Other

2020-2024 Property Acquisition / Facility Upgrades

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project will fund all future property/building acqusitions and facility upgrades.

PROJECT JUSTIFICATION:
The current facilities of the Authority are in need of upgrades. In addition, new properties may be aquired to fill the need of increased staffing and equipment levels.

RISK(S):
Deferred maintenance on current facilities and limited space will impact operations.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$13,000,000	9,000,000	1,000,000	1,000,000	1,000,000	1,000,000	$13,000,000	Debt (Revenue Bonds)

*Includes contingencies

Other

2020-2024 Park Maintenance / Upgrades

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project will fund water and sewer infrastrucutre upgrades within City of Pittsburgh parks.

PROJECT JUSTIFICATION:
The water and sewer infrastrucutre within City of Pittsburgh parks is in need of upgrades.

RISK(S):
Deferred maintenance of water and sewer infrastructure could have negative impacts on the functionality of City of Pittsburgh parks.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

		CASH FLOW SUMMARY						FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Debt (Revenue Bonds)
Total	$5,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	$5,000,000	

*Includes contingencies

Other

GIS System Upgrades: Water

PROJECT NUMBER: 2019-325-107-0
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Planning

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Rescan water record books, input material, update valve layer, and pipe age into geographic information system.

PROJECT JUSTIFICATION:
Having this information updated and readily available improves the efficency of operations.

RISK(S):
Some of the records that need updated could be unreadable or missing.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay upgrading the information within the geogrphic information system, which could have a negative impact on operations.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$1,400,000	800,000	600,000	0	0	0	$1,400,000	Cash (PAYGO)

*Includes contingencies

Other

Facility Standby Power

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Safety, Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
This project will fund future standby power needs at the Water Treatment Plant and potentially other facilities.

PROJECT JUSTIFICATION:
Standby power must be installed at all facilities to ensure continued functions in all operations.

RISK(S):
Facilities without standby power could be at risk if a power outage occurs.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
There are no practical alternatives to the recommended action.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$750,000	750,000	0	0	0	0	$750,000	

*Includes contingencies

Other

Utility Cost Shares

PROJECT NUMBER: 2017-424-112-0, 2018-WS-103-0, 2018-WS-102-0, 2013-424-220-0, 2013-424-162-0

NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Regional Cooperation/ Stewardship

PROJECT DESCRIPTION:
This project will fund future cost sharing projects.

PROJECT JUSTIFICATION:
Cost sharing projects can provide a savings to the Authority.

RISK(S):
Cost sharing projects have the potential to be delayed due to coordination issues.

IMPACT ON OPERATIONS:
Increased operating flexibility and reliability.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Complete projects without cost sharing agreements.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	
Total	$4,300,000	500,000	800,000	1,000,000	1,000,000	1,000,000	$4,300,000	Debt (Revenue Bonds)

*Includes contingencies

Other

2020-2024 Vehicle and Major Equipment

PROJECT NUMBER: Unidentified
NEIGHBORHOOD/WARD: Systemwide

PHASE:
Not Started

PRIORITY:
Reliability/Operational Flexibility, Operations and Maintenance Efficiency

PROJECT DESCRIPTION:
Replacement of vehicles and other major equipment.

PROJECT JUSTIFICATION:
Vehicles and major equipment must be replaced after the useful life to ensure reliable operations without large maintenance costs.

RISK(S):
Failure to properly replace vehicles and major equpiment could result in interuptions to operations and increase costs.

IMPACT ON OPERATIONS:
Increased system reliability and improved sytem management.

ALTERNATIVES TO THE RECOMMENDED ACTION:
Delay the purchase of vehicle and major equipment, which could have a negative impact on operations.

	CASH FLOW SUMMARY							FUNDING SOURCE(S)
	Total Budget (Prior Years Included)	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Cash (PAYGO)
Total	$9,234,500	2,100,000	1,734,500	2,200,000	1,000,000	2,200,000	$9,234,500	

*Includes contingencies

Exhibit BK-2

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 6th 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:

Rence Diehl
Environmental Program Manager
Bureau of Safe Drinking Water

Gail Guenther
Assistant Counsel
Southwest Office of Chief Counsel

APPENDIX A

PGH2O

BOARD RESOLUTION ITEM

Originating Department:	Engineering and Construction	Phone:	412.255.8800-2291
Department Contact:	Barry King	E-mail:	BKing@pgh2o.com
Date:	09.06.2019		

Resolution No: 163 Authorize the Executive Director to Sign a PA Department of Environmental Protection Consent Order and Agreement To Restore Functionality and Water System Resiliency as well as Modernize The Authority's Facilities

STATEMENT OF THE ISSUE: The Pennsylvania Department of Environmental Protection in its role of Public Water Supply Oversight and Regulatory Compliance Has Determined that PWSA's facilities must be restored and modernized to comply with their regulations. The Executive Director requests Board Approval to execute a Consent Order and Agreement (COA) to establish the specific requirements and schedule for these improvements.

FINAL BOARD APPROVAL:
ADOPTED SEPTEMBER 6, 2019

James Turner, Secretary

Exhibit BK-3

Pittsburgh Water & Sewer Authority

MEMO

To: Barry King, P.E., Director of Engineering and Construction

From: Sarah Bolenbaugh, P.E., Bradley McShane, and Anthony Gallina

Date: March 4, 2020

Subject: Cost/Benefit Analysis of Operating the Highland Membrane Filtration Plant Versus Covering Highland No. 1 Reservoir (and Constructing a Physical Barrier)

Purpose

On January 31, 2017, the PADEP issued a Field Order prompting PWSA to take the Highland Microfiltration Plant (HMFP) out of service, until PWSA either provided specific repairs to the HMFP or installed a cover and provided adequate security with a physical barrier for Highland Reservoir No. 1. In the 2018 rate case settlement, PWSA committed to provide a cost/benefit analysis of operating the HMFP instead of covering and placing a physical barrier around Highland Reservoir No. 1.

Highland Microfiltration Plant

The capital cost of renovating and updating the HMFP over the past several years has been spread over several projects. The scope of work included in these projects includes installation of a new ultraviolet (UV) disinfection system subsequent to the existing microfiltration system, component replacements and updates to the microfiltration system, numerous electrical equipment updates, repairs and upgrades to pumps, valves, flowmeters, and monitoring equipment, updates to the SCADA and reporting systems, assessment and repair of storage tanks, repairs to the building heating system, installation of a security monitoring system at the plant and around the reservoir, and replacement of the parapet wall around the top of the reservoir. The total capital cost to date of all of these direct and related improvements in support of restoration of the MFP Facility is approximately $14,500,000.00.

Annual operation and maintenance (O&M) costs of the microfiltration plant include the following considerations: energy, chemical, equipment and maintenance, and staffing. Historical usage and current design operating parameters are used as the

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cost estimates basis. The estimated annual O&M cost of the microfiltration plant is $1,625,929.25 for the first year, and $1,199,215.25 annually for years 2 through 10 of operation. The table below breaks down the cost of each category for year 1.

Operation and Maintenance		
Energy	$	394,620.65
Chemicals	$	102,345.60
Equipment and Maintenance	$	447,249.00
Staffing[1]	$	681,714.00
Annual Total[1]	**$**	**$1,625,929.25**

Footnotes:
1. The staffing cost of $681,714 presented hereon is the cost for first (and only) year of contracted operational staffing of MFP (via contract with CWM). Subsequent annual staffing cost is estimated at $255,000.00, and will reduce the total annual Operation and Maintenance cost to $1,199,215.25. in years 2 through 10.

Highland Reservoir No. 1 Floating Cover Option

Highland Reservoir No. 1 would require an estimated 975,718 square feet of both liner and cover. This estimated area was calculated using costs from a previous lining contract and record drawings of the Highland 1 Reservoir to provide dimensions.

The cost estimate for covering Highland Reservoir No. 1 was developed using the cost of lining and covering Lanpher Reservoir. The construction cost of the Lanpher cover and liner, including the rainwater management system (electrical contract), equated to $12.44 per square foot. An additional $277,000 would be required for construction of a fence around the Highland Reservoir, a necessitated security measure. Including construction costs plus contingency (30%), project management (1.5%), design (15%), construction management (5%), construction inspection (7%), and design services during construction (2%) the total estimated cost of covering and securing Highland Reservoir No. 1 would be approximately $21,100,000. This estimate is solely based on the costs associated with the actual installation of a new liner and cover, and does not account for contingency costs associated with:

- uncertainties about the existing reservoir structural/physical concrete conditions, and

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- modifications to the reservoir's deficient "dam-related" physical elements that have been identified in the course of completing the preparation of the PADEP-required Dam Safety Permit for the existing reservoir (Note, while completing the inspections, analyses, and documentation for a PADEP Dam Safety Permit submittal, PWSA's Consultant has verified that the existing facility does not meet the minimum requirements necessary for permitting an modifications and upgrades that would be necessary to enable the covering of this existing reservoir)

Floating Cover Implications

Aside from the cost implications and comparisons between continued operation and maintenance of the HMFP versus covering the reservoir, there are several engineering, water quality, and logistical issues that must be considered:

Hydraulics-

The reservoir offers limited usable storage capacity, as the elevation of the reservoir required to meet the minimum pressure requirement (35 psi) at peak hour is only a few feet from the high level of the reservoir As a result, only the top few feet of the reservoir provide available storage requiring almost constant operation of pumps to maintain an adequate elevation in the reservoir. This affects the reservoir's ability to turnover which can lead to stagnation and water quality issues.

Water quality-

The capacity of the Highland Reservoir No. 1 is 130.5 MG, at an average day demand of 28 MGD the reservoir would have a retention time of 4.7 days (the criteria for the required storage is 1 day's average demand). This excessive storage capacity leads to increased water age, potentially causing water quality deterioration problems.

Structural Safety

A dam safety assessment, conducted by a PWSA consultant, identified issues that would need rectified in order to operate Highland Reservoir No. 1 as a water storage facility long-term:

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Trees and unsuitable vegetation would need removed from the embankment around the reservoir. This requires a tree study by a professional arborist and dam safety professional, as well as an engineered design for tree removal.

The embankment would need regraded to a uniform slope. The effects of regrading the embankment slope would result in other cost implications associated with necessary modifications to the park surrounding the reservoir (roadway modifications, disturbance to the historical structures (steps) around the reservoir, etc.)

Public Acceptance

Along with engineering challenges, there is strong political and public opposition to covering the reservoir. The reservoir is in a popular city park, situated in a community that prizes the historical significance and beauty of the reservoir. City Council even forbid a floating cover at Highland Reservoir #1 in 1993. It is not likely that public sentiment has or would change.

Operation and Maintenance

PWSA maintains a total of three covered storage reservoirs. The replacement schedule for these covers is every 15-20 years and requires constant maintenance of the cover pumps to ensure that no standing water is on the cover. The high replacement cost and O&M considerations for these reservoirs, as well as the fact that the reservoirs are oversized based on current standards, is leading PWSA to lean towards replacing these reservoirs with structural tanks with a capacity that is more in line with present and future demand.

Alternative Solution: New Storage

Considering the issues involved with covering Highland Reservoir No. 1 and the expense of operating the HMFP, an ideal long-term solution would be a 30-40 MG storage tank. This tank would be placed at an elevation providing the necessary minimum pressures to the system. Although an area had been identified for this storage tank in the 1990s, when the topic of covering the reservoir first arose, the area required would require acquiring city property for the tank as well as some major piping modifications to the system's rising and supply mains. As such, the

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timeline for a new tank would exceed the three years required to bring the MFP back online.

Conclusions

Although it took three years to complete the modifications and repairs required for the HMFP, it was likely the most expeditious route considering the issues involved in covering the reservoir or building new storage. It is accepted that operating the HMFP is not an economic long term solution. However, covering the reservoir is not practically feasible due to the prior mentioned concerns. Until a new storage facility can be constructed, operating the HMFP remains the most practical means of continuously supplying safe and potable water to the users.

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TAB

5

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

EDWARD BARCA

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos. R-2020-3017951 (Water)
and R-2020-3017970 (Wastewater)

TOPICS:
Support for Proposed Rate Increase
Capital Improvement Plan
Distribution System Improvement Charge Justification
The PWSA's Debt Portfolio
The PWSA's Financial Metrics

March 6, 2020

Table of Contents

TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Edward Barca and I am the Deputy Director of Finance/Treasurer for The Pittsburgh Water and Sewer Authority ("PWSA" or "Authority").

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

A. I was appointed the Authority's Treasurer on June 5, 2018 and assumed my duties with the Authority on August 6, 2018.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

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

Q. PLEASE PROVIDE A SUMMARY OF YOUR RELEVANT EXPERIENCE.

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

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

Before starting with the City, I had prior work experience as a Financial Planning Analyst for the Allegheny Financial Group and as a Financial Services Representative for E*TRADE Financial. In addition, since November 2015, I have owned and operated a business — Barca Tax Services, LLC — that provides tax preparation services.

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

A. In my present position, I am responsible for the treasury and certain accounting and budgeting functions. As part of my job, I prepare, modify, and monitor the Authority's annual capital budget and five-year capital improvement plan and work with the Director of Finance to develop five-year financial projections. I also manage the Authority's (a) cash and liquidity to ensure that sufficient funds are available to process payments, invest in infrastructure, and service debt while preserving principal and thereafter maximizing return on cash and investments; and (b) debt portfolio, which includes assessing opportunities for financing and refinancing, securing additional debt capital from both bank and capital markets and maintaining all credit support vehicles. I further help to ensure compliance with all trust indentures, loan agreements, bond covenants, and filing deadlines.

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

A. No. However, I was directly involved in the following financial proceedings before the Pennsylvania Public Utility Commission ("PUC" or "Commission"): (1) Petition of the Authority Waiver of Chapter 19 with Request for Expedited Review (P-2018-3003636) regarding changes in interest rate formulas and time periods under the prior bonds of the PWSA; (2) the issuance of a securities certificate for the Authority's increase in its Capital Line of Credit from $80,000,000 to $150,000,000 (S-2018-3003524); (3) the issuance of an abbreviated securities certificate for a PENNVEST Loan (S-2019-3007162) for the financing of certain public and private lead service lines in specified neighborhoods; and, (4) the issuance of a securities certificate for indebtedness (revenue bonds by the Authority) in an amount not to exceed $305,000,000 (S-2019-3008797).

Q. PLEASE EXPLAIN THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: 1) explain how the Authority's capital budget spending will be recovered from ratepayers; 2) explain the justification and development of the Authority's requested Distribution System Improvement Charge ("DSIC"); and 3) provide support for the PWSA's requested increase in existing annual base rates of $24.200 million. We are also requesting a Distribution System Improvement Charge ("DSIC") that, coupled with the requested base rate increase, would result in a total revenue increase of $43.800 million. The PWSA is also requesting a second increase in annual base rates in year 2022 of $12.600 million.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- **Exh. EB-1:** Exhibit EB-1 contains a copy of the Financial Management Policy.
- **Exh. EB-2:** Exhibit EB-2 contains copies of the Debt and Swap Portfolio Summary.
- **Exh. EB-3:** Exhibit EB-3 contains a copy of the most recent ratings reports from the two rating agencies that rate the PWSA's Revenue Bonds.

II. The PWSA's CAPITAL NEEDS AND SOURCES OF FUNDING

Q. PLEASE PROVIDE A GENERAL OVERVIEW OF THE PWSA'S CAPITAL NEEDS IN THE FULLY PROJECTED FUTURE TEST YEAR (FPFTY).

A. The principal drivers of capital needs for the PWSA's FPFTY (FY 2021) and Forecast Period (FY 2022) are to fund: (1) the PWSA's Operating Budget for 2021; and, (2) the PWSA's Capital Improvement Plan ("CIP").

Q. WILL YOU BE ADDRESSING ISSUES RELATED TO THE OPERATING BUDGET?

A. No, Ms. Presutti will be addressing operating budget issues in her testimony.

Q. PLEASE EXPLAIN THE PWSA'S CIP.

A. The PWSA Board of Directors approved the 2020-2024 CIP on September 27, 2019.[1] The CIP, which includes over $1 billion in capital improvements, is a result of years of deferred maintenance and lack of capital investment. The CIP includes detailed information about the PWSA's construction projects related to the Water Treatment Plant, Water Pumping and Storage, Water Distribution, Wastewater, Stormwater, and Miscellaneous Projects (i.e., vehicles replacements, software upgrades, etc.). As discussed in Mr. King's testimony, the projects within the CIP must be completed in order to maintain adequate levels of service. Delays in completing these projects could result in poor water quality or a complete failure to deliver water to the service area.

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

In addition, as discussed in Mr. King's testimony, the CIP includes funding for projects that are related to two Consent Order and Agreements ("COA") and one

[1] The approved 2020-2024 CIP is available at: https://www.pgh2o.com/sites/default/files/2019-12/2020%20-%202024%20CIP%20-%20FINAL.pdf.

Administrative Order issued by the Pennsylvania Department of Environmental Protection ("PA DEP"). Below is a summary of the referenced regulatory requirements.

Consent Order and Agreement	Required Projects	Effective Date
Violations of the Pennsylvania Safe Drinking Water Act and the Rules and Regulations Promulgated Pursuant Thereto Regrading the Lead and Copper Rule	1) 2018 and 2019 Lead Service Line Replacement Program 2) 2019 and 2020 Small Diameter Water Main Replacement 3) 2020 and 2021 Lead Service Identification Program	November 17, 2017
Violations of the Pennsylvania Safe Drinking Water Act and the Rules and Regulations Promulgated Pursuant Thereto	1) Replacement of the Clearwell 2) Clearwell Bypass 3) Replacement of Highland 2 Reservoir Cover and Liner 4) Rising Main #3 and #4 Rehabilitation or Repair 5) Aspinwall Pump Station to Lanpher Rising Main 6) Aspinwall Pump Station and Bruecken Pump Station Rehabilitations	September 6, 2019
Administrative Order	**Required Projects**	**Effective Date**
Violations of the Safe Drinking Water Act and the Rules and Regulations Promulgated Pursuant Thereto	1) Highland 1 Reservoir and Membrane Filtration Plant (MFP) Upgrades 2)Lanpher Reservoir Cover and Liner Replacement 3) Bruecken Pump Station Upgrades 4) Pressure Sensor Installation	October 25, 2017

Revenue requirements for the Administrative Order effective October 25, 2017 is not included in this tariff filing as it is anticipated that the PWSA will have met all the obligations by the end of FY 2020.

Revenue requirements for the two COA's are included in this tariff filing. The COA entered into on November 17, 2017 requires the inventory and replacement of lead service lines within the PWSA. In addition, it requires the PWSA to replace 7 percent of the lead service lines in the water system on an annual basis, until the PWSA has met the 90th percentile lead action level during two consecutive rounds of 6-month monitoring.

The COA entered into on September 6, 2019, among other things, requires the replacement of the Clearwell at the Aspinwall Water Treatment Plant. It will take the PWSA multiple years to meet the obligations of this COA as replacing the Clearwell is a

major project with many subproject components. This COA has strict deadlines which the PWSA must adhere to in order to meet all required obligations.

Failure to fund the projects related to both COA's would result in public health issues as well as fines and/or disciplinary actions.

Q. WHAT ASPECTS OF THE CIP ARE YOU ADDRESSING?

A. My testimony focuses on funding the capital needs as identified in the CIP. Mr. King's testimony will focus on the construction projects.

Q. WHAT ARE THE PWSA'S FPFTY 2021-2023 PROJECTED CAPITAL REQUIREMENTS?

A. Below is a summary of the FPFTY 2021-2023 capital requirements, which is less than what is included in the 2020-2024 CIP. These were calculated for the purposes of determining PWSA's revenue requirement needs and are lower than the CIP amounts for the following reasons: 1) unexpected weather patterns that have negatively impacted construction schedules; 2) difficulty filling vacant positions; and 3) delays in obtaining appropriate permits. Accordingly, the below table shows the capital requirements that PWSA believes can realistically be completed in the years indicated, assuming the Authority receives the requested rate increase.[2]

[2] As noted, these amounts differ from those projected in PWSA's LTIIP. Once the Commission rules on PWSA's rate increase request PWSA will reevaluate its capital expenditure experience and submit revised projections either in its next Annual Asset Optimization Plan or, if deemed material, as a proposed amendment to its approved, 2019-2023 LTIIP.

Capital Requirements	FY 2021	FY 2022	FY 2023	Total
Water Treatment Plant	$ 22,328,665	21,039,919	18,164,003	61,532,587
Water Pumping and Storage	50,984,086	46,815,607	94,750,016	192,549,709
Water Distribution	45,198,426	80,275,445	131,689,581	257,163,452
Wastewater System	32,864,808	26,873,779	38,191,236	97,929,823
Stormwater	32,862,981	21,851,226	14,881,563	69,595,770
Other	5,453,214	3,714,286	4,000,000	13,167,500
Total Capital Requirements	**189,692,180**	**200,570,262**	**301,676,399**	**$ 691,938,841**

As previously mentioned, the PWSA has two outstanding COAs. The costs associated with these COAs represent approximately a) $118.010 million (or 62%) of the capital requirements in FPFTY 2021, b) $115.922 million (or 58%) of the capital requirements in the FY 2022 Forecast Period, and c) $50.588 million or (17%) of the capital requirements in the FY 2023 Forecast Period. This funding must be available to comply with the COAs. Failure to do so will result in public health issues as well as fines or other disciplinary actions.

The majority of the remaining capital requirements in FPFTY 2021-2023 includes funding for annual replacement costs associated with meters, water lines, sewer lines, valves, hydrants, vehicles, catch basins, replacements of lead service lines and aged small diameter water lines, and stormwater costs as it relates to combined sewer overflows (CSOs). These projects must also be funded in order to, replace aged infrastructure, implement annual asset replacement cycles, and address the ongoing CSO issue as it relates to stormwater.

Q. WHAT ARE THE PWSA'S FPFTY 2021-2023 PROJECTED FUNDING SOURCES?

A. Below is a summary of the FPFTY 2021-2023 funding sources.

Funding Sources	FY 2021	FY 2022	FY 2023	Total
Debt (Revenue Bonds)	131,556,065	158,770,235	273,541,634	563,867,934
PENNVEST	31,402,468	15,701,233	-	47,103,701
Pay-As-You-Go	7,123,647	5,098,794	7,134,765	19,357,206
DSIC Funds	19,610,000	21,000,000	21,000,000	61,610,000
Total Funding Sources	**189,692,180**	**200,570,262**	**301,676,399**	**$ 691,938,841**

The main sources of funding are the PWSA's capital line of credit which is regularly converted into long-term debt (i.e. revenue bonds), loans from the Pennsylvania Infrastructure Investment Authority ("PENNVEST"), internally generated funds ("PAYGO"), and Distribution System Improvement Charge ("DSIC"). This balanced funding approach is designed to match project life cycles with appropriate funding sources (i.e., debt vs. PAYGO), increase financial flexibility, reduce financial risk, and obtain the cheapest possible financing costs.

Virtually all the funds needed to finance the CIP come from ratepayers or from borrowing. The cost of borrowing also must be paid by ratepayers. Therefore, the required rates and charges are determined by the appropriate levels of capital expense, debt service, cash reserves, debt service coverage and other financial metrics necessary to enable the Authority to pay its bills and maintain efficient access to the capital markets at reasonable rates.

Q. PLEASE EXPLAIN HOW THE AUTHORITY PLANS TO FUND THE CIP IN FPFTY 2021-2023.

A. The Authority plans to complete roughly $691.939 million in capital improvements in FPFTY 2021-2023. A Draw Down Capital Line of Credit (the "Facility") will be utilized to interim finance $563.868 million of capital improvements. The total amount of credit of the Facility is $150.000 million. Revenue bonds will be issued to replenish the Facility as it nears capacity.

\$47.104 million will be funded by PENNVEST. This funding is related to the Small Diameter Water Main Replacements, which includes lead and non-lead water main replacements. The PWSA also plans to fund \$80.967 million with internally generated funds ("PAYGO"), which will be made up of \$19.357 million from ratepayer funded capital and \$61.610 million from the Distribution System Improvement Charge ("DSIC").

The planned revenue bond issuances as well as funding related to PENNVEST, PAYGO, and the DSIC is included in the FPFTY 2021-2023 funding source summary previously shown. Without PUC authority to raise its rates and to begin to charge a DSIC at 10% PWSA will not be able to satisfy its aggressive capital improvement spending obligations.

Q. DOES THE PWSA HAVE ACCESS TO SHORT TERM BORROWING THAT IT COULD USE FOR CAPITAL SPENDING TO MANAGE THE TIMING MISMATCH BETWEEN CAPITAL DISBURSEMENTS AND BORROWINGS?

A. The Authority utilizes a Draw Down Line of Credit (the "Facility") to interim finance all capital projects not funded by PENNVEST, PAYGO, or the DSIC. Revenue bonds are issued, from time to time, to repay and reduce the utilized portion of the Facility as it nears capacity. The total amount of credit capacity on the Facility is \$150.000 million.

Q. PLEASE EXPLAIN INTERNALLY GENERATED FUNDS (PAYGO).

A. Internally generated funds ("PAYGO") funding is a capital funding mechanism which finances capital expenditures with current year revenues. PAYGO funding is often utilized in the place of long-term debt to fund capital assets that have a short useful life (less than 10 years). Capital assets financed through long-term debt should have a minimum useful life no shorter than average maturity of the debt being issued. Failure to

do so can result in an "overleveraged" debt position, which would limit the ability and increase the cost to borrow and fund capital projects.

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

Before the PWSA's first base rate case, the PWSA was almost entirely reliant on long term debt in order to fund capital projects. As part of that case, the PWSA established a baseline of approximately $27.000 million annual PAYGO funding, of which approximately $7.000 million would be recovered through rates and the remaining amount of approximately $20.000 million would be recovered through a DSIC, as explained below.

Q. DOES THE AUTHORITY HAVE A FINANCIAL POLICY WHICH ESTABLISHES AN ANNUAL PAYGO FUNDING GOAL?

A. Yes. The Financial Management Policy included in exhibit EB-1 requires financial performance to be evaluated on an annual basis with the goal of funding at least 10% of capital expenditures not supported by grants or intergovernmental aid from PAYGO funding as measured on a five-year basis.

Q. IS THE PWSA SEEKING AN ADDITIONAL AVENUE TO FINANCE ITS CIP AS PART OF THIS RATE CASE?

A. Yes. The PWSA is proposing to recover a portion of the costs of its CIP through implementation of a DSIC. DSIC funding will be a source of PAYGO to complete the projects identified within the Long-Term Infrastructure Improvement Plan ("LTIIP").

Q. PLEASE EXPLAIN THE FUNDING AVAILABLE THROUGH PENNVEST.

A. In March 2019, the PWSA closed on a funding offer from PENNVEST in the amount of $49.128 million for the purposes of funding public and private lead service line replacements. $13.687 million of the funding offer was a grant and the remaining $35.441 million was a 1% loan. As of January 1, 2020, the PWSA spent approximately $21.000 million of the funding award and will spend the remaining amount in FY 2020.

The Authority has a long history of working with PENNVEST to fund critical capital projects. Since 2000, the Authority has received 17 funding awards in the total amount of $102.888 million. It is expected that this strong working relationship will continue with the recent PENNVEST funding award announced on January 29, 2020. The funding award includes a $65.220 million loan at 1% for the purpose of funding the 2019 and 2020 Small Diameter Water Main Replacement Programs. These water main replacement programs include the replacement of both lead and non-lead water mains. It is anticipated that the loan closing for this funding offer will occur in March or April of 2020.

Q. WHAT PLANS DOES THE PWSA HAVE TO APPLY FOR ADDITIONAL STATE AND FEDERAL FUNDING?

A. It is a priority to obtain the lowest possible financing costs. Thus, the Authority continually pursues state and federal funding programs through PENNVEST, the Department of Community and Economic Development ("DCED"), and the United States Environmental Protection Agency ("EPA") to help reduce ratepayer costs. Future funding awards from these agencies are not included in the CIP Funding because they are not guaranteed. Any funding awarded would substitute a portion of the revenue bonds included in the CIP Funding.

The Authority submitted an H2O PA grant application through the DCED in December 2019 for the purpose of funding the 2019 and 2020 Small Diameter Water Main Replacement Programs. The requested amount of the grant application was $20.000 million. As previously mentioned, the Authority received funding from PENNVEST for the purpose of funding the 2019 and 2020 Small Diameter Water Main Replacement Programs. Any funding received as part of the H20 PA grant application will substitute the loan funding provided by PENNVEST.

The Authority plans to submit another PENNVEST funding application in 2020 for the purpose of funding the small and large sewer rehabilitation projects. In addition, the Authority plans to submit a PENNVEST funding application in 2021 for the purpose of completing the next phase of the Small Diameter Water Main Replacement Program.

The Authority is also considering applying for Water Infrastructure Finance and Innovation Act ("WIFIA") funding that is administered through the United States Environmental Protection Agency. There are many capital projects within the Authority's CIP that would be eligible for WIFIA funding.

Q. WHAT IMPACT WOULD IT HAVE ON THE AUTHORITY IF IT FAILED TO OBTAIN THE APPROPRIATE REVENUE INCREASES IN FUTURE YEARS TO FUND THE CIP AS WELL AS TO MEET REGULATORY REQUIREMENTS?

A. Failure to obtain the appropriate revenue increases in future years will force the Authority to stop current capital projects due to funding limitations. This will have a negative impact on ratepayers as well as PWSA's ability to meet regulatory requirements. As previously illustrated, projects related to regulatory requirements represent roughly 60% of all capital requirements in FPFTY 2021-2022. Future funding limitations resulting

from inadequate revenue increases will restrict the Authority's ability to comply with required regulatory requirements.

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

A. As of December 31, 2019, the PWSA currently has outstanding $749.615 million of bonds outstanding, comprised of $646.325 million (86%) issued under the Senior Lien and $104.29 million (14%) issued as Subordinate Bonds. Additionally, there is approximately $60.003 million outstanding of PENNVEST Loans, issued as a third lien, as well as a capital draw-down line of credit with a credit capacity of $150 million for construction purposes, of which $62.50 million has been drawn as of December 31, 2019. Of the bonds outstanding, $218.805 million (29%) were issued as variable rate bonds, hedged with interest rate swap agreements (with the exception of $2.085 million of the Senior Lien which is unhedged). All of the outstanding variable rate debt was issued as publicly issued Floating Rate Notes with a mandatory tender date of December 1, 2020. A mandatory tender requires that the Authority purchase the bonds on the tender date with proceeds from a remarketing, which could be from another public offering or a private bank loan. The PWSA had $103.660 million of variable rate debt issued as privately placed floating rate bank loans pursuant to three different bank agreements with a Bank of America, N.A. affiliate (Banc of American Preferred Funding Corporation) ("BofA") and JPMorgan Chase Bank, N.A. affiliate (DNT Asset Trust) ("JPM") with related interest rate swap agreements with Merrill Lynch Capital Services Inc. ("BofA Swaps") and JPMorgan Chase Bank, National Association ("JPM Swaps"). The $103.660 million of variable rate debt was refunded with the issuance of the Series B of 2019 Bonds on July 2, 2019. Additionally, the related swap agreements were also concurrently

terminated. If the outstanding swap agreements were terminated, as of December 31, 2019, the Authority would owe the swap providers $80.685 million; including accrued interest the amount owed would be $2.531 million. This termination amount is impacted by prevailing interest rates and the remaining average life in years of the outstanding interest rate swap. The Debt and Swap Portfolio Summary is attached in Exhibit EB-2.

In addition to the financial and other covenants required in the governing Trust Indenture, the Authority has several bank agreements and swap agreements, all with separate events of default and termination events. With the exception of the Series B of 2013 and the September 1, 2020 through 2023 maturities of the Series A of 2019, all of the outstanding bonds are secured with a Surety Policy with Assured Guaranty Municipal Corp. ("AGM") to meet the debt service reserve requirement (6.55% of the DSRF obligation) of the Trust Indenture. This Surety Policy also has certain agreements related to the interest rate swap agreements, also insured by AGM, with regard to certain termination events. The Series 1998 Series B Bonds are also partially insured by National Public Finance Guaranty Corporation ("NPFGC") who has placed additional restrictions on interim borrowings against the Senior Lien. Many of these transactions were entered into before the fiscal crisis and the related bank and bond insurer credit downgrades and, at that time, were viewed as cost effective. Since that time, the Authority has had to spend significant resources in replacing bank agreements, restructuring and/or terminating swap agreements and reaching certain side agreements with the bond insurers. The risks inherent to the debt portfolio are significant with these changes, however, the Authority mitigated certain threats by refunding $103.660 million of variable rate debt and terminating the related hedged swap agreements.

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

III. The PWSA's DSIC PROPOSAL

Q. DOES THE PWSA CURRENTLY HAVE A DSIC IN PLACE?

A. The PWSA has DSIC language in its current Commission-approved Water and Wastewater Tariffs but it does not include any funding level.

Q. PLEASE EXPLAIN THE PWSA'S SPECIFIC COST RECOVERY PROPOSAL.

A. Through a separate petition,[3] the PWSA proposes to:

a. fund the DSIC at 10% of the PWSA's distribution revenues;
b. recover in the DSIC either the debt service and debt service coverage associated with DSIC eligible property; or, cash that the PWSA expends to finance a portion of its CIP through "PAYGO" (where the PWSA expends the funds for a construction project in the year in which the construction occurs and the project goes into service); and,
c. charge the DSIC at a levelized, amount each month.

[3] *See Petition of the Pittsburgh Water and Sewer Authority for Waiver of Provisions of Act 11 to Increase the DSIC Cap, to Permit Levelization of DSIC Charges, and to Aauthorize the Pay-As-You Go Method of* Financing, filed March 3, 2020 at P-2020-2019019. PWSA is seeking to consolidate the Petition with this rate proceeding.

Q. WILL EACH OF THESE PROPOSALS WILL BENEFIT RATEPAYERS?

A. Yes.

Q. PLEASE EXPLAIN THE PWSA'S PROPOSAL TO ESTABLISH A DSIC AT 10% OF DISTRIBUTION REVENUES AND WHY IT IS BENEFICIAL TO THE PWSA AND ITS RATEPAYERS.

A. Funding the DSIC at 10% will mean that at least this portion will be steady and certain and not subject to vagaries of base rate revenue collection. In addition, permitting the PWSA to set the DSIC at 10% signals the Commission's support of the PWSA's CIP. This includes funding projects with a short useful life that are currently mandated by the PUC, such as meter replacements, while also funding core capital improvements related to water and sewer main replacements.

The DSIC is beneficial to the Authority's ratepayers because (1) it provides a reliable funding source to complete core capital improvements that will result in improved level of service for all ratepayers; and (2) is a cheaper funding option compared to long-term debt and moderates the current and future amount of debt needed to fund the system.

Q. PLEASE EXPLAIN THE PWSA'S PROPOSAL THAT IT BE PERMITTED TO RECOVER IN ITS DSIC EITHER THE BORROWING COSTS OF INSTALLING DSIC ELIGIBLE PROPERTY OR THE CASH EXPENDED TO INSTALL DSIC-ELIGIBLE PROPERTY?

A. The PWSA is a cash flow regulated municipal entity and therefore the method of cost recovery set out in Section 1357 (c) does not apply. The PWSA finances its construction costs either by borrowing the money through long term debt or state and federal funding (such as PENNVEST) or using internally generated funds (PAYGO). The PWSA asks that it be given authority to use either method, or a mixture of both, for recovery in its DSIC. These are the same two cost recovery methods that are permitted for the other cash

flow ratemaking entity that is regulated by the PUC and permitted to employ a DSIC – Philadelphia Gas Works ("PGW"). If it recovers borrowing costs, as permitted for PGW, the PWSA must be able to recover both the debt service costs, costs of issuance, and any annual debt service coverage requirement. If it does not recover both debt service and debt service coverage in its DSIC then the PWSA would not be assured of having sufficient revenues to satisfy the required debt service coverage, which could result in a default.

Q. WHAT ARE THE PWSA'S CURRENT DEBT SERVICE COVERAGE REQUIREMENTS?

A. The Amended and Restated Senior Indenture ("Senior Indenture") requires the Authority to fix, charge, and collect fees to satisfy the following three independent requirements. Failure to satisfy these requirements would result in the Authority being out of compliance with a legal governing document.

The Authority is required to satify 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

Q. PLEASE EXPLAIN HOW THE PWSA'S DSIC WOULD FUNCTION IF IT WERE TO UTILIZE IT FOR INTERNALLY GENERATED FUNDS OR CASH TO FINANCE A PORTION OF ITS CIP?

A. The PWSA would plan to pay for the installation of a portion of its DSIC-eligible property each year from cash produced by billing the DSIC to customers. The CIP assumes that approximately $26.700 million will be funded from PAYGO in FPFTY and a similar amount annually thereafter, with the two sources of PAYGO funding being current rates and DSIC revenues. The current projection is that a 10% of distribution revenues DSIC would permit the PWSA to bill $19.6000 million in the FPFTY and $21.000 million in FY 2022. The difference of approximately $7.000 million would be recovered through current year revenues.

Q. WHAT PORTION OF THE PWSA'S "DSIC-ELIGIBLE" CONSTRUCTION BUDGET WOULD THE APPROXIMATELY $20 MILLION FINANCE?

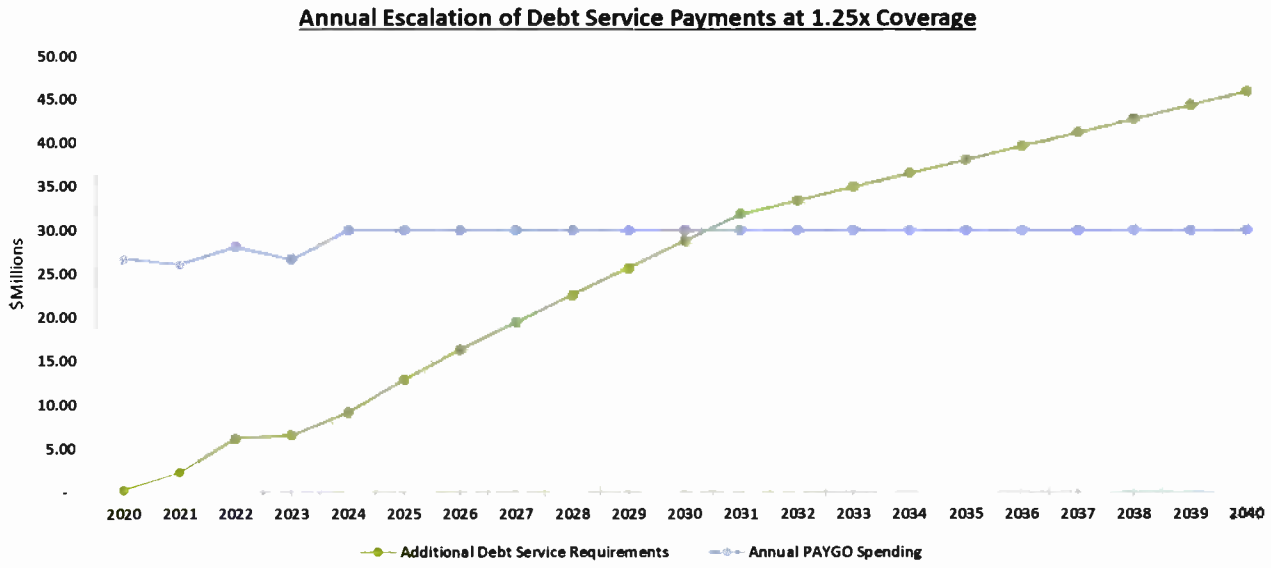
A. There are currently 84 "DSIC eligible" projects within the CIP. Below are the projected capital expenditures for the 84 projects from FPFTY 2021-2023. The bulk of these 84 projects are currently planned to be funded with debt. However, the funding source can easily be switched to the DSIC if and when the DSIC is implemented.

2021	$117,179,508
2022	$154,931,418
2023	$160,071,559

Thus, a DSIC at the 10% level would represent between 13 and 17% of the PWSA's "DSIC-Eligible" CIP in the FPFTY. However, as the PWSA's construction levels go up in future years that percentage would go down. Nevertheless, it would be very helpful to the PWSA if it were permitted to fund this amount of construction on a "PAYGO" basis.

Q. PLEASE EXPLAIN THE BENEFITS TO THE PWSA AND CUSTOMERS IF ITS FUNDS A PORTION OF ITS CIP IS FUNDED BY A DSIC.

A. Funding a portion of the PWSA's CIP through the DSIC means that the PWSA would borrow less resulting in reduced borrowing and debt service costs. In addition, the PWSA would not have to recover in rates the additional amount needed for debt service coverage. When the PWSA finances construction via revenue bonds, subsequent year revenues must be sufficient to pay the annual debt service plus at least 25% or 10%, depending on which lien the debt is issued under. Due to the debt service coverage factor, the cost to the ratepayer of funding a portion of the CIP with debt rather than a DSIC becomes more expensive in a relatively short period of time, as the following chart illustrates.



In addition, funding a portion of the CIP with a DSIC instead of revenue bonds eliminates the associated annual debt service payment and debt service coverage requirements. This allows the Authority to reduce the pressure to increase rates in the future related to on-going debt service on current and future bonds. Ratepayers are assured that they will not be overcharged for charges associated with the DSIC as any

amounts collected but not actually expended for construction must be returned in the subsequent year.

Q. PLEASE EXPLAIN HOW THE DSIC WOULD BE ADJUSTED IN YEARS AFTER THE FIRST YEAR?

A. If the DSIC is used to recover debt service/debt service coverage then the debt service/coverage would be rolled into base rates in the PWSA's next rate case. The DSIC would be set to zero and would be funded at the 10% level only when the PWSA has a new debt issuance that was not included in base rates. To the extent that the PWSA is using the DSIC to produce cash for "PAYGO" capital financing, that percentage level would not change from rate case to rate case. This is because the PAYGO method results in the PWSA expending 100% of the cost of the installation of the applicable DSIC eligible construction (without depreciation). Every year, the PWSA would expend the same amount; so there would be nothing to roll into base rates in subsequent rate cases.

IV. FINANCIAL METRICS

Q. PLEASE EXPLAIN THE KEY FINANCIAL METRICS FOR THE PWSA.

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

1) debt service coverage ratios;
2) reserves and liquidity; and
3) PAYGO financing.

First, the PWSA's debt service coverage levels are crucial because if the Authority falls below the minimum requirement of 1.25x for senior debt or 1.10x for subordinate debt, then it will be in technical default and its access to capital markets will

become problematic. This is not unique to the PWSA as all municipal authorities have a debt service coverage requirement.

It is important to recognize however that adequate debt service coverage provides PAYGO resources that fund critical financial resources that are needed to address potential economic and operational challenges without dipping into the Authority's moderate reserves. In addition, the PWSA's annual obligation payments to the City of Pittsburgh pursuant to a Cooperation Agreement are subordinate to the Senior and Subordinate Lien, which are also funded from internally generated funds (debt service coverage monies).

Second, the PWSA's reserves and liquidity, often measured as days cash on hand ("DCOH"), is crucial because the PWSA needs an accumulated balance of cash in its accounts throughout the year to pay its obligations. The Authority made substantial improvements to the year-end DCOH in 2019. However, according to Moody's Investor's Services, the Authority still needs to focus on improving the current DCOH position as it is defined as "somewhat weak" compared to similar peers. In fact, a narrowing year-end liquidity was one of the reasons that Moody's Investor's Services downgraded the Authority from A2 to A3 in 2018. As covered in the testimony of Mr. Huestis, the Authority is still well below its peers when comparing DCOH.

Third, the PWSA plans to increase the level of PAYGO financing. This will help with the PWSA's goal of sustaining and increasing the amount of its capital program funded with internally generated funds (PAYGO). Moody's Investor's Services mentions a "high leverage" system as being one of their primary credit concerns of the PWSA. This is attributable to the PWSA's historic reliance on debt to fund the majority of all

capital needs. Increasing the level of PAYGO funding will help to reduce the PWSA's highly leveraged system as well as sustain healthy debt service coverage ratios and liquidity balances.

Q. DOES THE AUTHORITY HAVE A FINANCIAL POLICY WHICH ESTABLISHES A DEBT SERVICE COVERAGE RATIO GOAL ABOVE THE LEGALLY REQUIRED LEVEL?

A. Yes. The Authority's Financial Management Policy included in exhibit EB-1 establishes an internal rate covenant target that Net Revenues in each fiscal year shall equal no less than (A) 135% of annual debt service with respect to senior debt; plus (B) 115% of the aggregate annual debt service with respect to subordinate debt. This increased rate covenant target demonstrates the Authority's commitment to strong financial management while also providing a margin of safety and flexibility with respect to the requirements of the Senior Indenture.

A. <u>Non-Borrowed Year-End Cash</u>

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

A. At present rates, the PWSA's Days of Cash on Hand ("DCOH") in the FTY (FY 2020) is projected to be 123 days. In the FPFTY DCOH drops to <u>negative</u> 21.2 and <u>negative</u> 205.4 in the Forecast Period. The substantial drop in DCOH, which is a result of required increases to operation and capital spending, demonstrates the needs for increased revenue requirements.

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

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

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

B. Debt Service Coverage

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

A. The fundamental ratemaking philosophy for most financially stable municipal utilities is to provide safe and reliable service at rates that recover all current costs, plus a margin in excess of current costs. This margin, also referred to as coverage, is a municipal utility's only real alternative to issuing debt to fund capital program costs. Coverage also provides assurance to investors that the utility will be able to make timely debt service payments. The recent rating agency reports by S&P Global Ratings and Moody's Investor's Services as outlined in Mr. Huestis's testimony have emphasized the need for the PWSA to maintain as well as improve its debt service coverage. Improving coverage is critically necessary to keep the PWSA in a position to continue to have access to the capital markets on acceptable terms and to finance a portion of the capital program through internally generated funds as necessary to provide significant savings to ratepayers over time.

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

A. At current rates, the debt service coverage ratios decrease to 1.09x for senior debt and 0.87x for subordinate debt in the FPFTY. These debt service coverage ratios are well below the legal minimum requirement. Under current rates, the debt service coverage ratios continue to decrease to even lower levels during the forecast period.

Q. PLEASE EXPLAIN THE 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. This is how the excess cash generated in 2019 was used and the Authority plans to continue that practice in future.

Q. WOULD THE RATING AGENCIES VIEW A DEBT SERVICE COVERAGE LEVEL JUST ABOVE 1.25X FOR SENIOR DEBT OR 1.10X FOR SUBORDINATE DEBT AS CAUSE FOR A DOWNGRADE?

A. Yes, most definitely. Moody's Investor's Services in its report when it downgraded the Authority from A2 to A3 in 2018 stated "Under factors that could lead to a downgrade" was "Further narrowing of debt service coverage and liquidity position". The Authority needs to maintain the financial improvements initiated in FY 2018 and continued in FY 2019 in order to demonstrate that operations have stabilized. Any relapse in financial performance could have negative consequences on the ratings of the Authority.

C. Debt To Equity Ratio; Short-Term Borrowing Capacity; Rate Stabilization Fund

Q. AT PRESENT RATES, WHAT IS THE PWSA'S PROJECTED DEBT TO EQUITY RATIO FOR THE FULLY PROJECTED FUTURE TEST YEAR?

A. The PWSA does not project a balance sheet as part of its budget. Ms. Presutti has included a recent audited balance sheet in her testimony (Exhibit JP-4). This shows that PWSA's total long term debt exceeds its total assets. This highlights the need to try to reduce PWSA's use of long term debt in favor of internally generated funds from its base rates or its DSIC.

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

A. Yes. It has a Rate Stabilization Fund ("RSF"). The RSF is a standard feature of municipal ratemaking. It is designed to provide flexibility to a municipal utility to meet minimum debt service coverage ratios as well as to demonstrate to the financial community that it is financially stable. As part of the PWSA's first base rate case,[4] the PWSA established a small RSF. The level of the RSF in the HTY and FTY is shown on Exhibit JP-1.

Q: DOES THE FPFTY INCLUDE ANY AMOUNTS FOR THE RATE STABILIZATION FUND (RSF) IN THIS RATE REQUEST?

A. The PWSA proposes to add $1.000 million to the RSF in the FPFTY. In addition, as in the PWSA's first rate case, the PWSA proposes that if the PWSA does not realize the level of expenditure projected for the FPFTY, but does experience the level of revenues at proposed rates it is projecting, the PWSA commits to placing a portion of the positive difference into the RSF. Thus, the RSF not only provides some financial security to the

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[4] *Pennsylvania Public Utility Commission v. PWSA*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

PWSA but also provides a means of assuring that all funds collected will ultimately be used to benefit the PWSA customers.

D. Bond Ratings

Q. PLEASE DESCRIBE THE PWSA'S CURRENT BOND RATINGS?

A. The ratings from the two rating agencies that rate the PWSA Revenue Bonds are:[5]

S&P: to A (Stable Outlook)
Moody's A3 (Stable Outlook)

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

A. Credit ratings are important because the PWSA, like most utilities, is required to make significant capital infrastructure improvements each year for new and replacement assets. Credit ratings are a critical component in determining the cost of debt as the ratings signal the PWSA's ability and willingness to meet financial obligations in full and on time. A downgrade of the credit ratings for the PWSA's Bonds would result in an increase in the PWSA's borrowing costs and necessitate higher rate increases over time.

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

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

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[5] *See* Exhibit EB-3.

E. PAYGO Financing

Q. HOW WAS THE LEVEL OF PAYGO FINANCING ESTABLISHED FOR THE FPFTY?

A. I explained this in Section III of my direct testimony. The current projection is that a 10% of distribution revenues DSIC would permit the PWSA to fill approximately $20.000 million each year with an additional $7.000 recovered through rates.

V. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding the PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

VERIFICATION

I, Edward Barca, hereby state that: (1) I am the Deputy Director of Finance/Treasurer 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: 3/6/20

Edward Barca
Deputy Director of Finance/Treasurer
The Pittsburgh Water and Sewer Authority

Exhibit EB-1

Pittsburgh Water & Sewer Authority

Effective Date:	10.7.19
Approved By:	Robert Weimer
Revision No.:	
Revision Date:	

Financial Management Policy

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 Executive Director is authorized to engage financial service providers and other related professional service providers, if deemed necessary and appropriate by the Executive Director in consultation with the Director of Finance, Deputy Director of Finance, and/or Treasurer or equivalent staff member, 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 assumptions, 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 200 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:

- 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 Executive Director 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 Executive Director will provide quarterly updates that include indicators of year-to-date operational and financial performance, progress toward key goals, and financial performance projections.

Policy Revision History:

Last Updated Date: (MO/DD/20XX)	Editor:	Location of change(s), what was changed, and why:
10/26/2018	Edward Barca	Original
10/03/2019	Edward Barca	Increased financial metric goals in the "Pay-As-You-Go Funding and Cash Reserves" Section

PGH2O

DEFINITIONS

Business Plan/Budget – The business plan/budget is the document approved by the Board annually that establishes the Board's goals and priorities. The business plan/budget includes operating and capital budgets as well as projections of PWSA's overall financial performance and capital financing plans. It describes the projects, products and service that support the associated revenues and expenditures over a five-year period.

Debt Service Coverage (Coverage) – Debt service coverage is the ratio of the fiscal year's ending total revenues minus total operating and maintenance expenses (net of depreciation, amortization, and other revenue and expense exclusions resulting from prior period funding), divided by scheduled debt service on all obligations as approved in the business plan/budget.

Equity Ratio – The calculation is the ratio of total equity divided by total assets.

Fixed-Rate Debt – Fixed-rate debt consists of coupon securities that have a scheduled maturity or mandatory sinking fund redemption date. Fixed-rate debt that has been synthetically converted to variable rate debt via a derivative instrument will be classified as fixed-rate debt for the term of the derivative instrument.

Long-Term Liabilities – Long-term liabilities are (1) principal amounts on long-term debt instruments, (2) pension liabilities, and (3) amounts owed on long-term obligations.

Operating and Maintenance Expenses – Operating and maintenance expenses consist of all reasonable and necessary costs and expenses incurred in the operation and maintenance of the PWSA system.

Variable-Rate Debt – Variable-rate debt consists of securities on which the interest rate varies over time (a) based on an index or formula such as variable-rate demand notes or auction-rate bonds, or (b) based on a rate that varies and allows the successful marketing of the bonds or notes.

Exhibit EB-2

The Pittsburgh Water and Sewer Authority Debt Summary
Outstanding Bonds and Loans Payable
As of January 1, 2020

PGH2O

Senior Lien

Series Name	Date of Issue	Date of Maturity	Interest Mode	Tax Status	Amount Issued[2]	Amount Outstanding[2]	Coupon Rate / Bank Index	Fixed Rate Swap (Paid)	Variable Swap Rate (Received)	Liquidity Expiration Date
Series B of 1998[1]	Mar-1998	9/1/2030	Fixed	Tax-Exempt	$ 32,400	$ 59,870	5.18%	N/A	N/A	N/A
Series 2013A	Dec-2013	9/1/2033	Fixed	Tax-Exempt	130,215	75,430	0.75%-5.00%	N/A	N/A	N/A
Series 2013B	Dec-2013	9/1/2040	Fixed	Tax-Exempt	86,695	38,760	3.00%-5.25%	N/A	N/A	N/A
Series 2017A	Dec-2017	9/1/2032	Fixed	Tax-Exempt	159,795	142,605	3.00%-5.00%	N/A	N/A	N/A
Series 2017C-1 (JPM Swap)	Dec-2017	9/1/2039	FRN	Tax-Exempt	72,748	72,748	70% LIBOR + .64%	3.784%	70% LIBOR	12/1/2020
Series 2017C-2 (MLCS Swap)	Dec-2017	9/1/2039	FRN	Tax-Exempt	72,748	72,748	70% LIBOR + .64%	3.770%	70% LIBOR	12/1/2020
Series 2017C-3 (JPM Swap)	Dec-2017	9/1/2040	FRN	Tax-Exempt	71,225	71,225	70% LIBOR + .64%	3.826%	70% LIBOR	12/1/2020
Series 2017C-4 (Unhedged)	Dec-2017	9/1/2035	FRN	Tax-Exempt	2,085	2,085	70% LIBOR + .64%	N/A	N/A	12/1/2020
Series 2019A	June-2019	9/1/2044	Fixed	Tax-Exempt	109,855	109,855	5.00%	N/A	N/A	N/A
Subordinate Lien										
Series 2019B	June-2019	9/1/2035	Fixed	Tax-Exempt	104,290	104,290	4.00%-5.00%	N/A	N/A	N/A
Secondary Subordinate Lien										
Pennvest Loans	Various	4/1/2045	Fixed	Tax-Exempt	103,087	60,003	1.00% - 3.25%	N/A	N/A	N/A
JPM LOC	July-2016	7/1/2020		Tax-Exempt	150,000	62,500				

[1] Capital Appreciation Bond

[2] Debt amounts are in $000's

Swap Financial Group LLC

555 Madison Avenue, 11th Floor, Suite D | New York NY 10022 | (212) 478-3700

Pittsburgh Water and Sewer Authority

Valuation Report as of December 31, 2019

Swap Portfolio Summary

Identification	Counterparty	Counterparty Ref ID	ISDA Date	Current Notional	Effective Date	Maturity Date	Avg. Life	Pay Leg	Receive Leg	Insurance	Net Present Value (NPV)	NPV w/ Accrued Interest
Senior Lien - Series 2017 C	JP Morgan	0500007009621	3/2/2007	72,747,500	6/12/2008	9/1/2039	17.5 yrs	3.7835%	70% 1m LIBOR	Assured	(26,064,668)	(26,912,050)
Senior Lien - Series 2017 C	MLCS	54009724	3/2/2007	72,747,500	6/12/2008	9/1/2039	17.5 yrs	3.7700%	70% 1m LIBOR	Assured	(25,919,666)	(26,763,775)
Senior Lien - Series 2017 C	JP Morgan	0500007009623	3/2/2007	71,225,000	6/12/2008	9/1/2040	19.9 yrs	3.8255%	70% 1m LIBOR	Assured	(28,700,541)	(29,540,160)
			Total:	$216,720,000						Totals:	($80,684,875)	($83,215,985)

Credit Rating Updates as of December 31, 2019

Counterparty Credit Ratings

Counterparty Name	Moody's		S&P		Fitch		Last Update
JP Morgan Chase Bank, N.A.	Aa2	Stable	A+	Stable	AA	Stable	10/25/2018
Merrill Lynch Capital Services, Inc.	A2	Stable	A-	Stable	A+	Stable	3/6/2019

Green = Last Update

PWSA Senior Lien Credit Ratings

Credit	Moody's	S&P		Fitch
Senior Lien	A3	A	Stable	NR

Insurance Credit Ratings

Counterparty Name	Moody's		S&P		Fitch		Last Update
Assured Guaranty Municipal Corp.	A2	Stable	AA	Stable	WD	-	3/18/2014

Green = Last Update

- Pittsburgh Water and Sewer has credit protections (i.e. no collateral posting) as long as Assured is rated (1) at or above A3 by Moody's, or (2) at or above A- by S&P.

Notes:

- Valuation amounts from the perspective of Pittsburgh Water and Sewer Authority (i.e., a negative number is what Pittsburgh Water and Sewer Authority would have owed if the transaction(s) were terminated at mid-market on the valuation date).
- Merrill Lynch Capital Services, Inc. is guaranteed by Bank of America Corporation, and carries the ratings of the guarantor

Disclaimers:

- Our pricing valuations were based upon Confirmation transactional information, including the notional amortization schedules as were furnished to us, comparing the rate on each swap with market rates on the valuation date and present-valuing the differential between the swap and market rates back to the valuation date, shown above, using market accepted prevailing discount rates (uncollateralized exposures are discounted by LIBOR and collateralized exposures are discounted by OIS)
- The valuation shown for any swap contract having multiple pricing components (such as a swap with an embedded option for a counterparty to cancel that swap) is the net sum of all the separate pricing components in the contract.

Exhibit EB-3

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
4 June 2019

Rate this Research

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CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Pittsburgh Water & Sewer Authority, PA

Update to credit analysis

Summary

The Pittsburgh Water & Sewer Authority, PA's (A3 stable) credit profile has benefitted from improvements to operations and controls implemented through Pennsylvania Public Utility Commission (PUC) oversight, effective as of April 2018, as well as the strength of its new management team. Both changes to PWSA's governance have contributed to its improved financial position as of fiscal 2018 year end.

The authority continues to face material pressure to improve its infrastructure given years of disinvestment. Coupled with a substantial consent decree pertaining to combined sewer overflows during wet weather events and elevated lead levels in the city's water, the authority will necessarily add to its already elevated debt burden in the near term. High leverage, elevated fixed costs, and the system's major capital needs remain primary credit concerns.

Moody's affirmed the A3 rating for Pittsburgh Water & Sewer Authority, PA's First Lien Revenue Bonds on June 4, 2019 and assigned an A3 rating to the authority's $109 million Water and Sewer System First Lien Revenue Bonds, Series A of 2019. The outlook was revised to stable from negative.

Credit strengths

» Diverse, urban Pittsburgh (A1 stable) 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 should bring improvements and controls

Credit challenges

» Substantial debt burden; debt ratio is 101%

» Narrow liquidity versus similarly sized peers

» Long term inadequate maintenance of infrastructure has led to severe inefficiencies and has contributed to a projected $2 billion in capital improvement needs; plan to be implemented over ten - twenty years

» Exposure to a large regional consent decree through ALCOSAN

» Elevated lead levels in water

Rating outlook

The outlook has been revised to stable from negative, reflecting the authority's improved financial position as well as the credit-positive impact of PUC oversight and the strength of PWSA's new management team, which will serve to stabilize the authority's finances and operations in the near term.

PWSA is still in the beginning stages of addressing its major capital needs and operating deficiencies, and future rating reviews will consider whether the authority is able to execute its capital plans while maintaining a healthy financial position.

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 address near term infrastructure and operating needs

» Escalation of environmental concerns, particularly lead levels in treated drinking water

Key indicators

Exhibit 1

Pittsburgh Water and Sewer Authority					
System Characteristics					
Asset Condition (Net Fixed Assets / Annual Depreciation)	45 years				
System Size - O&M (in $000s)	$153,180				
Service Area Wealth: MFI % of US median	87.6%				
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					
	2014	2015	2016	2017	2018
Operating Revenue ($000)	$164,255	$174,164	$180,727	$202,996	$231,734
System Size - O&M ($000)	$125,766	$131,694	$148,593	$157,220	$153,180
Net Revenues ($000)	$53,014	$57,455	$49,174	$47,071	$81,565
Net Funded Debt ($000)	$765,960	$757,490	$738,176	$821,167	$875,669
Annual Debt Service ($000)	$47,519	$58,346	$59,380	$57,818	$58,963
Annual Debt Service Coverage (x)	1.12	1.12	0.92	0.81	1.37
Cash on Hand	91 days	78 days	53 days	26 days	112 days
Debt to Operating Revenues (x)	4.7x	4.3x	4.1x	4.0x	3.8x

Source: Moody's Investors Service, Pittsburgh Water and Sewer Authority audited financial statements

Profile

PWSA is an authority of the city of Pittsburgh (A1 stable), 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 and stable Pittsburgh service area; Considerable aged infrastructure concerns

The authority provides water distribution and wastewater collection and conveyance for the city of Pittsburgh and neighboring municipalities. The city's healthy and growing economy, as well as its exposure to the strong "eds & meds" presence from healthcare and higher education institutions, are positives for the authority.

The authority's 10 largest customers (3.7% of revenues) include University of Pittsburgh Medical Center (A1 negative), University of Pittsburgh (Aa1 stable), Fox Chapel Authority, Allegheny Health Network, Carnegie Mellon University, Allegheny County (Aa3 stable), the city's public housing authority, and a state prison. All of the authority's five largest customers have been in the city for at least 75 years

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.

The system currently experiences unusually large water loss One of the authority's current major infrastructure projects is a complete metering and mapping of its system. Metering will not only address the system's water loss but will also help PWSA target repairs such that widespread boil water advisories should become less frequent. Some of the authority's other important near term improvements include hiring an expanded workforce to carry out maintenance of the system's general infrastructure up to current industry standards, and replacing water mains in line with accepted industry norms.

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. We believe that new oversight, under the purview of the PUC, will help PWSA bring its system to good working order by setting guidelines for system improvements based on industry-wide standards.

In April of 2016, the authority was ordered by the Pennsylvania Department of Environmental Protection (PADEP) to test for lead in the drinking water treated by PWSA, related to an unauthorized use of alternative corrosion control chemicals. Samples from 100 homes in June 2016 found lead of 22 parts per billion (ppb) at the 90th percentile. The EPA action level for lead at the 90th percentile is 15ppb, at which level additional testing in terms of frequency and number of samples is required and mitigation efforts are needed

PWSA has since tested for elevated lead levels each June and December. The authority has yet to realize two consecutive testing periods where lead is below the EPA requirement However, the authority was approved to treat its water with orthophosphate in March of 2019, and expects that this new treatment will bring lead levels to within the required range by December 2019

Debt service coverage and liquidity: Rate increases have strengthened finances, though cash still somewhat narrow

As cited in prior reviews, the authority's overall credit profile has been severely impacted by its limited liquidity, with days' cash on hand declining to a very narrow 29 days' as of 2017 year end. Favorably, the authority's cash position has materially improved as of audited 2018 financial statements, and reported cash is a more healthy $47 million, or 112 days' cash on hand. This is more in line with the authority's historical operating norms, but is still somewhat weak versus similarly sized peers. Median days' cash on hand for Moody's-rated water and sewer systems in the US generating revenues between $100 million and $500 million annually is 473 days

Beginning in 2019, the authority must meet a 1.10x coverage test on its consolidated debt service and a 1.25x coverage test on its senior debt service without the use of free cash. Positively, PWSA met both of these requirements as of audited 2018 financials, reporting senior lien debt service coverage of 1.89x and overall coverage of 1.37x

The authority implemented a 28% rate increase in early 2018. The authority also implemented a 13% rate increase in early 2019, which was the first rate plan approved by the PUC. PWSA expects to end 2019 with net revenues before debt service of roughly $75 million, which would result in senior lien debt service coverage of 1.7x and overall coverage of 1.32x, favorable metrics given the authority's current credit profile

The authority's rate increases were prompted by its substantial capital needs. Improved revenues will shore up reserves somewhat, but more will be required to support future debt issuance and increased expenditures for its expanded workforce, technology upgrades, and any pay-go capital needs. The authority's current estimate for capital improvements is $2.0 billion over 20 years, with more than $900 million of new money debt expected to be issued over the next five years.

LIQUIDITY

The authority's ending days' cash on hand for 2018 is materially improved over prior years, to 112 days' when pass through expenses for ALCOSAN are included, and 166 days' when ALCOSAN expenses are excluded. The authority expects to maintain liquidity in this range for 2019.

Liquidity for capital expenditures is supported by an $150 million revolving credit facility with JP Morgan Chase Bank, NA (Aa1 (cr)). An emergency $20 million liquidity line is in place with PNC Bank, NA (A2 (cr))

Debt and legal covenants: High leverage likely to increase, satisfactory and improved legals

The authority introduced a new indenture in 2017, which strengthened the rate covenant. The new requirement is 125% of senior debt service coverage plus 110% of subordinate debt service coverage. Free cash will no longer be used to increase coverage under the new indenture. The new test is effective for fiscal year 2019. The debt service reserve is funded at the lesser of the three-pronged test.

DEBT STRUCTURE

The additional borrowing implied by the authority's capital needs will increase an already elevated debt burden. The authority's total debt is equal to 101% of fixed assets as of 2018 year end, well above similarly sized peers. The outstanding debt amortizes slowly, with only 44% of principal scheduled to be repaid in the next 10 years.

The authority will reduce its variable rate debt outstanding with its Series 2019 A&B issuance. At fiscal year end 2018, the authority's debt profile includes total bonded debt of $656 million, of which $552 million is senior-lien bonds, and $103 million is privately placed subordinate-lien bonds, all of which is variable rate. Subsequent to the 2019 issuance, the subordinate lien debt will be refunded with fixed rate bonds, the associated swaps will be terminated, and the debt will be publicly offered.

The Series 2019 A&B issuance will reduce the authority's variable rate debt to roughly 28.6% of total bonded debt outstanding, down from 49% as of 2018 fiscal year end. Assured Guaranty Municipal Corp. (A2 stable insurance financial strength) insures much of the authority's variable rate bonds and all of the authority's swaps, and provides the surety policy for all debt service reserve funds. This counterparty concentration may adversely impact the authority should AGM's credit quality deteriorate. Subsequent to the subordinate refunding, there will be no liquidity support facilities outstanding.

The authority also maintains $28 million outstanding in PennVest loans and an $150 million revolving credit facility, of which $113 million is currently drawn. Given an intercreditor agreement, PennVest, JPM, and PNC share a third lien priority on system revenues.

DEBT-RELATED DERIVATIVES

The authority has entered into floating-to-fixed rate swaps in connection with substantially all of its variable rate debt ($322 million as of YE18) under ISDA Master Agreements with JP Morgan Chase Bank N.A. (64%) and Merrill Lynch Capital Services (36%), whereby the authority pays a fixed interest rate semi-annually (3.67% on average) and receives 70% of LIBOR

AGM provides swap insurance for all swaps and, despite a negative $86 million aggregate mark-to-market as of April 2019, no collateral is required to be posted unless an Insurer Event occurs. The amortization schedule for each swap mirrors that of the corresponding bonds and the swaps terminate at bond maturity. 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

The authority's employees participate in the city's pension program. It is anticipated that the authority's share of its pension contribution will be provided for through a renegotiated Cooperation Agreement with the city

Management and Governance

Continued turnover at the senior managing level of the authority had been a considerable credit concern. Favorably, however, 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. 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 has informed our stable outlook on PWSA's current credit profile

The authority is currently managed by a seven member board, with six members appointed by the mayor and one by the city council. The authority currently provides water at no cost to city-owned buildings and public areas. The city and authority are in the process of renegotiating their cooperation agreement to more accurately reflect the exchange of services provided

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.

REPORT NUMBER 1179261

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

S&P Global
Ratings

RatingsDirect®

Summary:

Pittsburgh Water and Sewer Authority; Water/Sewer

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Table Of Contents

Summary:

Pittsburgh Water and Sewer Authority; Water/Sewer

Credit Profile		
US$111.15 mil wtr & swr sys subord rev rfdg bnds ser 2019B due 09/01/2035		
Long Term Rating	A-/Stable	New
US$109.9 mil wtr & swr sys 1st lien rev bnds ser 2019A due 09/01/2044		
Long Term Rating	A/Stable	New
Pittsburgh Wtr & Swr Auth WTRSWR		
Long Term Rating	A/Stable	Affirmed

Rationale

S&P Global Ratings assigned its 'A' rating to the Pittsburgh Water and Sewer Authority (PWSA), Pa.'s series 2019A first-lien revenue bonds and its 'A-' rating to PWSA's 2019B subordinate-lien revenue refunding bonds. At the same time, we affirmed our 'A' long-term rating on the authority's senior debt and our 'A-' rating on the subordinate debt. The outlook is stable.

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. Our view of PWSA's general creditworthiness is based on its very strong enterprise risk profile and its strong financial risk profile.

The authority has been subject to scrutiny from local and state elected officials who voiced concerns over authority 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 HB 1490, which placed PWSA under the state Public Utility Commission's (PUC) oversight as of April 1, 2018. The PUC now regulates the authority's rates and fees, and must approve additional debt. PWSA and the PUC are also currently negotiating compliance and long-term implementation plans to prioritize investments needed to ensure full PWSA regulatory compliance; these plans are expected to be finalized early in 2020. While rate regulation of municipal-owned systems is less common in Pennsylvania, we view this as currently neutral to credit quality. We have noted that generally, rate regulation in Pennsylvania is supportive of credit quality, although the relationship between the two entities is still developing. We will look primarily to the magnitude of what is awarded versus what is requested in future rate cases, as well as the timing, and how much of the substantial capital improvement plan (CIP) can be put into the rate base with each review; the PUC is compelled to respond within 270 days. In our view, while serious, PUC oversight is indicative of the identified need for infrastructure investments to which we have observed all parties seem to agree are necessary. 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 today's. We understand that PWSA remains cooperative and in fact continues to work with all parties toward a long-term solution. PWSA's board additionally terminated the Cooperation Agreement with Pittsburgh in February 2019 and is currently negotiating a new agreement with the city, which will redefine the authority's and the city's respective responsibilities and cost allocations. We expect the agreement will provide for transactional payments between the city and PWSA based on actual expenses, in accordance with customary utility practices under the PUC. The new agreement, once finalized, is expected to be implemented over five years starting in 2020. The renegotiated agreement will not affect the capital lease agreement, and PWSA intends to purchase the system from the city for $1 in 2025 under the terms of the current agreement.

The enterprise risk profile reflects our view of Pittsburgh's:

- Role as the anchor and economic engine for western Pennsylvania, based on an employment base that has reinvented itself from one which once relied heavily on manufacturing and industrial jobs;
- Rates for service that remain affordable given low household consumption, but have been pressured over the last decade by the unfunded mandates; and,
- Operational management assessment (OMA) that we view as good even despite the aforementioned challenges.

The financial risk profile reflects our view of the system's:

- Adequate all-in debt service coverage (DSC), which may be on the cusp of steady improvement;
- Extremely strong liquidity, which we expect the authority to maintain due to its modest pay-as-you-go spending plans;
- Five-year CIP of $1.06 billion through fiscal 2023, which will be roughly 97% funded with additional debt, in additional to already-high system leverage;
- Decreasing exposure to interest rate risk and contingent liabilities; and
- Financial management practices and policies we consider good.

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 reserve in the amount of maximum annual debt service (MADS) provides additional liquidity on the senior-lien bonds. Under the current master trust indenture, certain cash reserves are permitted to be applied toward compliance with the rate covenant of either sufficiency (1x) across all liens from net revenues alone, or 1.2x from net revenues plus available reserves in the revenue fund, although the amended indenture proposes to strengthen these covenants. PWSA has only very rarely had to rely on those reserves to satisfy the rate covenant in recent years, and by our calculation not at all since 2010.

We understand that the proceeds of the series 2019A bonds will be used to repay a portion of a revolving construction loan facility with JPMorgan Chase, which was drawn to pay a portion of capital investments in the system, as well as pay the costs of issuance. The 2019B series will be used, with available authority funds, to refund all outstanding subordinate debt, terminate the associated swaps, and pay the costs of issuance. A new subordinate debt indenture is

being established with this issue.

Following the series 2019A and 2019B transaction, PWSA will have approximately $680.7 million in outstanding senior-lien obligations, $131.0 million in subordinate-lien debt, and $52.5 million in state PENNVEST loans. PWSA anticipates approximately $10.0 million will still be drawn on the line of credit with JPMorgan Chase Bank due to ongoing construction activities.

Enterprise risk

Pittsburgh Water and Sewer Authority provides drinking water and sewer collection to over 81,000 metered accounts to 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. While median household effective buying income (MHHEBI) is only 76% that of the U.S., the local economy has long since transitioned from its historic manufacturing base. Although those sectors are still part of the employment base, financial services, health care, and a booming technology sector are all important contributors to the metropolitan statistical area (MSA). The stability of the regional economy is reflected in a county unemployment rate of 3.0% as of April 2019. We do not view there to be any dependence on the authority's principal customers, given they include another water authority and the University of Pittsburgh.

Based on our organizational management assessment, we view PWSA to be a '3' on a scale of 1-6, with '1' being the strongest. An assessment of standard, in our opinion, implies that overall alignment between the system's operational characteristics and its management is sufficient but not comprehensive.

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 main 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, although this includes free service to the city that PWSA is compelled to provide and hopes to address in the new Cooperation Agreement with the city. PWSA also entered into a consent decree in November 2017 for corrective actions related to federal lead and copper rule requirements in its drinking water system. The authority undertook an ambitious plan of lead service line (LSL) replacement, exceeding its target for the numbers of LSLs replaced in 2018. This, in combination with the reintroduction of orthophosphate treatment, supports management's expectation that it will return to compliance with the lead and copper rule within three-to-six months.

PWSA is also dealing--directly and indirectly--with mandates from environmental regulators to address combined sewer overflows and wastewater treatment requirements. For example, Allegheny County Sanitary Authority's (ALCOSAN) 2008 consent decree is expected to cost $3.6 billion by the final 2026 deadline; PWSA represents about 35% of ALCOSAN's total operating revenues based on the 2018 budget. PWSA has also been working its way through its own consent decree since 2004. Most of the projects in scope for PWSA's consent decree have already reached substantial completion, and some of the remaining projects have been proposed to environmental authorities to be addressed using green infrastructure. Although management has been separating the sewer system in the areas of growth and redevelopment, 77% of the collection system is still a combined storm and sanitary infrastructure. PWSA, under its Green First plan, is piloting approximately a dozen projects to experiment with different approaches to green

infrastructure and overflow reduction. The authority is also negotiating a memorandum of understanding with the city to assume responsibility for the stormwater system, which would improve opportunities for integrated planning and mitigation.

To support the CIP, the authority's board adopted a practice of multiyear rate adjustments, although these were obviated with the introduction of PUC oversight. The PUC approved a rate increase of approximately 13% in February 2019; management said it does not plan to seek an increase for 2020. Past 2020, management has said it is looking at additional opportunities for cost recovery, including an ALCOSAN billing surcharge, distribution infrastructure service charge (DISC), and stormwater fee; these new fees and charges as well as any increases to existing rates will be subject to PUC approval. PWSA also bills for ALCOSAN, the regional wastewater treatment utility. All cost increases from ALCOSAN are passed through directly on customer bills. Based on S&P Global Ratings' universal assumption of 6,000 gallons of both water and sewer service, a monthly residential bill for fiscal 2019 is $128 without ALCOSAN charges, or $181 with them. Given actual average household consumption of 3,000 gallons, a combined water, sewer conveyance, and ALCOSAN bill is $102, or 3.3% of MHHEBI.

Financial risk

Annual all-in DSC for PWSA has consistently been low, but adequate. In addition to making a transfer payment to the city's general fund, PWSA also provides the city free service. It also provides a legacy payment that ultimately subsidizes the cost of water to a portion of the Pittsburgh area not served by PWSA, although it is possible PWSA could gain relief from that payment and the financial burden of providing free service after the Cooperation Agreement is renegotiated and PWSA and the private companies receive new rate decisions from the PUC. All-in DSC by our calculation has historically been close to 1.1x; it was below 1x in 2016-2017, but strengthened to almost 1.5x in 2018 following the rate increase. Based on our review of management's projections, coverage is likely to return to its historical average of 1.1x, and may even be marginally stronger, if the PUC approves planned rate requests.

The system's liquidity remains an area of consistency and credit strength. Total available reserves also include the construction line of credit, in place through July 2020, as well as a $20 million line of credit for operating expenses which may be renewed annually with PNC Bank N.A., which has never been drawn. All told, liquidity remains sound, usually equivalent to four-to-six months of operating expenses. At the end of fiscal 2018, the authority had almost $104 million in available liquidity, or 248 days' operating expenses.

Over half of PWSA's $820.6 million in total outstanding long-term debt is variable rate; following the 2019A and 2019B issuance, this will decline to 23%. The subordinate debt refunding will also terminate the swaps associated with the 2008C1 and 2008C2 bonds. All of the variable-rate debt is synthetically fixed-rate, although the current positions of the interest-rate swaps remain unfavorable.

Based on our financial management assessment (FMA), we view the authority to be a '3' on a scale of 1-6, with '1' being the strongest. 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 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 the PUC 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. In 2018, changes in the senior trust indenture introduced a rate covenant of either sufficiency (1x) across all liens from net revenues alone, or 1.2x from net revenues plus unrestricted cash and investments in the authority's revenue fund. The new subordinate debt indenture incorporates these covenants.

Outlook

The stable outlook reflects our expectation that both the timing and magnitude of rate adjustments that PWSA is likely to request, versus what the PUC ultimately grants, will generally prove to be aligned. 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.

Upside scenario

As financial performance stabilizes and capital plans are finalized, a higher rating could be warranted, even if beyond our outlook horizon and even from a stable outlook. We assume that PUC oversight will eventually be supportive of credit quality, but we would first look at the scope of regulation, then the record of the timing and magnitude of rate relief, and how the myriad of capital expenditures will be financed before considering an 'A+' rating.

Downside scenario

Conversely, should rate increases be insufficient to support strong finances, or the size and scope of the capital program cause the financial profile to weaken, we could lower the rating.

Ratings Detail (As Of June 6, 2019)

Pittsburgh Wtr & Swr Auth WTRSWR		
Long Term Rating	A/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth WTRSWR (AGM)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth wtr & swr subord		
Unenhanced Rating	A-(SPUR)/Stable	Affirmed
Pittsburgh Wtr & Swr Auth (fixed rate) wtr & swr 1st lien		
Unenhanced Rating	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 for further information. Complete ratings information is available to subscribers of RatingsDirect at www.capitaliq.com. All ratings affected by this rating action can be found on S&P Global Ratings' public website at www.standardandpoors.com. Use the Ratings search box located in the left column.

TAB
6

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

TESTIMONY OF

THOMAS F. HUESTIS

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

Topics:
Financial Policies and Goals
Capital Markets Consideration
Peer Review of Financial Metrics
Impact of Multiyear Rate Adjustment

March 6, 2020

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TABLE OF EXHIBITS

I. INTRODUCTION

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

A. Thomas F. Huestis. I am a Senior Managing Director and Partner with Public Resources Advisory Group, Inc. ("PRAG"). The business address is 39 Broadway, Suite 1210, New York, New York 10006.

Q. PLEASE DESCRIBE PRAG.

A. PRAG is a national independent financial advisory firm, wholly-owned and managed by its employees that provides independent and in-depth financial capital markets advice to state and local governments, authorities and their agencies and has continuously served governments that access the municipal finance market for the past thirty-four (34) years. PRAG is a Municipal Advisor, registered with the Municipal Securities Rule Making Board ("MSRB") (MSRB ID K0133) and the Securities and Exchange Commission ("SEC") (Municipal Advisor Registration Number 867-00146) and an Investment Adviser registered with the State of New York, with additional registrations in the states of California and Florida, the District of Columbia ("District") and the Commonwealth of Pennsylvania ("Pennsylvania") (CRD# 113338). PRAG provides comprehensive, high-quality, and independent advice to public sector clients with respect to capital planning, debt portfolio management, debt capacity, swaps and derivative instruments, financing options, refunding approaches and techniques, credit rating strategy, bond structure and pricing, and bond proceeds investment strategies. PRAG is one of the leading municipal advisors in the country and has been ranked by Thomson Reuters as either the top one, two or three firm by volume over the past 20 years. Our water and wastewater experience include some of the most active issuers in the country, including The Metropolitan Water

District of Southern California, Miami Dade County Water and Sewer Department and the City of Los Angeles Wastewater System.

Q. SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS AND EXPERIENCE.

A. I joined PRAG as a partner of the firm in 2002 and established PRAG's Pennsylvania office at that time. Last year, I relocated my primary office location to the firm's New York City headquarter office. At PRAG, I work with my colleagues and manage financial advisory engagements, working with a broad range of municipal clients located throughout the East and Midwest regions of the U.S. I am also part of PRAG's three-member executive committee, which is responsible for the overall management of the firm. I am also the Secretary and Treasurer of PRAG's Board of Directors.

My background includes 29 years as an independent financial advisor and as a municipal finance executive. Since joining PRAG, I have worked with similar water and sewer clients over the years, including The Bethlehem Authority (PA), Capital Region Water (formerly The Harrisburg Authority; PA), Miami-Dade County Water and Sewer Department (FL), the City of Orlando (FL) and the West Virginia Water Development Authority. I have served as financial advisor to The Pittsburgh Water & Sewer Authority ("PWSA" or "Authority") since 2019.

Prior to joining PRAG, I was the Treasurer of the District of Columbia during the District's financial crisis where I was responsible for the management of the District's financial assets, all debt offerings and financing programs. During my tenure, the District's S&P rating improved from "B" to "BBB." I also implemented the financial aspects of the transfer of the District of Columbia Department of Water and Sewer to the newly created District of Columbia Water and Sewer Authority.

During the City of Harrisburg's financial crisis, PRAG was retained by the Office of the Receiver to assist with the overall recovery plan for the City, including the water and sewer utilities. I assisted with discussions with the utilities' regulators and their enforcement arms (U.S. Department of Justice, U.S. Environmental Protection Agency, the Pennsylvania Department of Environmental Protection), and other parties. It was determined to transfer the operations and remaining assets of the utilities to an independent operating authority, modeled after the successful spinoff of the water and sewer departments of the District of Columbia into a then newly created DC Water and Sewer Authority, was the best course of action. I, and others at PRAG, worked with the City, Office of the Receiver and The Harrisburg Authority to negotiate the terms of the legislation and agreements to effectuate the transfer. The legislation was approved and became effective at the end of calendar year 2013. In 2014, I assisted the renamed Capital Region Water with its financing of the $50 million Advanced Wastewater Treatment Facility Improvement project meeting a tight timeline to finance this project to avoid violations of regulatory agreements, with resulting fines and penalties, and court action from the PA DEP, U.S. EPA and Department of Justice.

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Bachelor of Arts degree in Government from Franklin & Marshall College and a MBA from Carnegie Mellon University. I am a registered Municipal Advisor Representative with a Series 50 and a registered Investment Adviser Representative with a Series 65.

Q. HAVE YOU EVER TESTIFIED BEFORE ANY REGULATORY AGENCIES OR IN LEGAL PROCEEDINGS?

A. Yes. In 1996, I testified before Congress regarding the cause of and proposed methods to eliminate the District's $500 million accumulated deficit. I have also acted as financial advisor to two state-level public service/public utility commissions. In 2013, PRAG was engaged by the Public Service Commission of West Virginia to review a proposed Financing Order and Joint Stipulation and Agreement for Settlement submitted by the Appalachian Power Company and Wheeling Power Company. As project manager, I also advised the commission regarding whether a proposed Financing Order met the requirements for the issuance of Consumer Rate Relief Bonds.

In 2013, PRAG, along with another firm, was engaged by the Public Utilities Commission of Ohio to assist with the issuance of Phase-in Recovery Bonds.

Lastly, I was an elected official in Pennsylvania, serving as a Council Member from 2003 to 2010 in the Borough of Swarthmore, and as Council President in 2009 and 2010.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. We have been asked by PWSA to provide expert testimony relating to the rate case that PWSA is filing with the Pennsylvania Public Utility Commission ("PUC"), specifically related to the financial policies and goals and capital markets considerations of PWSA in connection with the requested rate increase pending with the PUC. This testimony will show that the requested rate increase is critical to PWSA in maintaining and enhancing its credit ratings needed to successfully access the bond market and achieve efficient financings at a cost of capital that benefits rate payers. Additionally, PWSA has several bank and swap agreements that have ratings-related cost increases and termination triggers that make maintaining certain credit ratings even more critical.

Further, the financial metrics developed by PWSA will be discussed in comparison to peer utility systems and water and sewer industry type rating criteria. I will discuss the importance of the metrics and how they should be viewed as a minimum level, critical for PWSA to continue maintaining its current credit profile. The financial metrics are well within the current industry standards, albeit on the low side. Also noted is the necessity of a municipal utility to maintain a certain level of liquidity and debt service coverage in order to have available internally generated funds required to fund critical capital needs and to have a cushion to mitigate any unforeseen financial or operational emergencies. Municipal utilities generally[1] have only two sources of funds to address operational and capital needs; revenues generated from rates, and fees and proceeds from debt issuance (which are then recovered from ratepayers). This is different from investor owned utilities that can also rely on investor equity. Finally, I discuss how the Authority's credit profile will impacted if the PUC approves a multi-year rate adjustment as requested by PWSA.

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

[1] Other sources of capital could include federal, state or local government grants.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- **Exh. TFH-1:** Exhibit TFH-1 contains a summary of PWSA's Rate Covenant and Flow of Funds from the Amended and Restated Indenture.
- **Exh. TFH-2:** Exhibit TFH-2 contains Peer Ratings and Comparative Financial Information

II. FINANCIAL POLICIES AND GOALS

Q. PLEASE SUMMARIZE THE CREDIT AGENCIES VIEW OF THE AUTHORITY'S DEBT STRUCTURE.

A. The Authority's debt structure is complex, consisting of a significant amount of variable rate bonds and interest rate swaps (although a portion of the Authority's variable rate debt and swaps were reduced with the 2019 refinancing). S&P writes: "Over half of PWSA's $820.6 million in total outstanding long-term debt is variable rate; following the 2019A and 2019B issuance, this will decline to 23%. The subordinate debt refunding will also terminate the swaps associated with the 2008C1 and 2008C2 bonds. All of the variable-rate debt is synthetically fixed-rate, although the current positions of the interest-rate swaps remain unfavorable." See PWSA Exhibit EB-3 for the most recent ratings reports from the two rating agencies that rate PWSA's Revenue Bonds.

In addition to the complicated nature of the debt portfolio, PWSA is also highly leveraged compared to other systems. As stated in Moody's most recent rating report dated June 4, 2019, "the Authority's total debt is equal to 101% of fixed assets as of 2018 year-end, well above similarly sized peers. The outstanding debt amortizes slowly, with only 44% of the principal scheduled to be repaid in the next 10 years." This is a result of many years of structuring bond financings with deferred principal in order minimize current year rate increases. The slow principal amortization combined with the structure

of PWSA's currently outstanding debt – annual debt service which is approximately level at $60 million a year through 2040, will mean an increase of annual debt service each year as the Authority issues additional debt for capital projects. Thus, PWSA's scheduled principal repayment does not reduce annual debt service, which would otherwise mitigate the impact of future borrowing.

Q. PLEASE DESCRIBE THE KEY FINANCIAL METRICS THAT WILL DRIVE THE REVENUE REQUIREMENT AND THE RESULTING IMPACT ON THE AUTHORITY'S CREDIT PROFILE.

A. Currently, the Authority is rated "A3" by Moody's with a "stable" outlook. Moody's downgraded the Authority's previous "A2" rating and changed the Rating Outlook to "negative" on October 15, 2018 due to PWSA's "narrow cash position, well below average for similarly sized peers" and due to the Authority being "pressured by the need for major capital funding." In the most recent Moody's report for the Authority dated June 4, 2019, the agency specifically mentions that "additional borrowing implied by the authority's capital needs will increase an already elevated debt burden." These risks can be mitigated with appropriate liquidity and debt service coverage resulting from the proposed rate increase(s) at the requested levels.

The Authority is rated "A" by S&P Global Ratings ("S&P") with a "stable" outlook. S&P also mentions the complex nature of the Authority's debt and makes it clear that contingent risks are mitigated in part by the assumption of continued improvement in management, decreased exposure to interest rate risks and maintaining certain financial metrics, such as debt service coverage and strong liquidity. S&P also notes PWSA's large capital improvement plan and the need for significant amount of debt to fund the plan in addition to what they view as an already highly leveraged system. Critical to the revenue requirement are financial management policies that support the financial

sustainability of the Authority, ensuring a minimum rating in the "A" category which will provide affordable access to the bond market and other financial institutions. The Authority's Financial Management Policy, which is provided as PWSA Exhibit EB-1, was established in 2018 and most recently updated in October 2019, provides a framework to maintain the PWSA's financial integrity, while serving the long-term interests of its customers and other constituencies. The Financial Management Policy applies to all financial practices within PWSA and provides guidance to policy makers, staff and stakeholders as PWSA seeks to maintain and improve its financial position. The scope of the guidance includes many of the key metrics that the rating agencies and other credit analysis use to evaluate PWSA's creditworthiness, including minimum targeted debt service coverage levels, minimum and targeted levels of liquidity and reserve funds, the ability to manage future debt capacity by funding a portion of the capital program with internally generated funds or "pay-go" and asset preservation. Both Moody's and S&P are specific in their discussions that certain financial metrics must be achieved and maintained in order to maintain PWSA's current credit profile.

Debt Service Coverage Ratio

The first key metric is debt service coverage ratio (Net Revenue to Annual Debt Service), which is discussed in Mr. Barca's testimony; PWSA's Amended and Restated Trust Indenture requires the annual debt service coverage ratio to be 1.25 times for the Senior Lien bonds. The Authority has covenanted with its bondholders that it will establish rates for each fiscal year to at least achieve this level. See Exhibit TFH-1 for a summary of the Authority's Rate Covenant and Flow of Funds provisions.

The Authority's Financial Management Policy, which is more stringent than the legal rate covenant, states that if the five year average senior lien debt service coverage is to be less than 1.35 times or less than 1.15 times on an overall debt service coverage basis, the Board will implement a plan which could include increasing rates, reducing expense or other means to achieve a 1.35 times senior debt service coverage level and 1.15 times overall debt service coverage level, "taking into consideration approved and pending rate increases with the Pennsylvania Public Utilities Commission." Although the financial management debt service coverages are higher than the legal requirements, it should be noted that the overall municipal water and sewer utility sector wide debt service coverage is closer to 2.3 times (using Moody's most recent median report, dated June 4, 2019, which uses 2017 data) for combined water and sewer governmental systems. While peer and rating comparisons will be discussed later in this testimony, it is clear that PWSA's debt service coverage ratio target is still significantly below national norms. Therefore, the target of 1.35 times should be viewed as a current minimum goal. It is also important to note that as PWSA's debt service coverage increases over time, PWSA will be able to grow its financial resources to fund targeted pay-go capital levels with less reliance on using debt. Without increased coverage levels, PWSA will have to continue its over reliance on debt, further leveraging an already over-leveraged system. In addition to providing pay-go resources, adequate debt service coverage creates critical financial resources that are needed to address potential economic and operational challenges without dipping into the Authority's moderate reserves. Lastly, PWSA has annual obligation payments to the City of Pittsburgh pursuant to a Cooperation Agreement that

are subordinate to the Senior Lien and Subordinate Lien, which are also funded from internally generated funds (debt service coverage monies).

It is extremely important to create policies that generate coverage in excess of the legal requirement in order to protect against any unforeseen additional expenses or decreases in expected revenues, as evidenced by the Authority's financial management policy and debt management policy. Setting coverage at just the (minimum) legal requirement puts the Authority at significant risk of violating the covenant. Furthermore, the ability to issue additional debt under the bond documents requires certain tests and certifications that the Authority is in compliance with the rate covenant and has sufficient revenues to comply with the covenant taking into account the additional debt service.

Any additional financial resources generated by coverage are needed to support the Authority's growing capital needs as well as to ensure adequate liquidity necessary to mitigate any financial or operational risks, not used for additional obligations.

As described in PWSA Exhibit JP-2, after accounting for the proposed rate increase, the FPFTY (FY 2021) projected debt service coverage for senior debt service is 1.82 times, and projected debt service coverage for total debt service is 1.45 times. These coverage levels are significantly improved from the budgeted FY 2020 figures of net revenue 1.38 times over senior lien debt service and 1.11 times over total debt service. Since the Authority did not have a rate increase for FY 2020, the resulting coverage dropped substantially from the prior year (FY 2019). Coverages were only marginally above the PWSA's Financial Policy target for Senior Lien Debt Service coverage and below the PWSA's Financial Policy target for All-In Debt Service. This situation supports the Authority's request for a multi-year rate increase. The Authority is in a period where the

cost of providing service increases annually, primarily due to capital reinvestment, and to prevent another '2020' slippage of key financial metrics, a multi-year increase will provide the Authority the stability and assurance that it will maintain at least adequate levels of cash on hand and achieve appropriate debt service coverage levels. After accounting for the second year of the proposed rate increase, the FY 2022 projected debt service coverage for senior debt service is 1.67 times, projected debt service coverage for total debt service is 1.37 times.

Reserves and Liquidity

The second metric that is critical is cash reserves and liquidity, often measured as days cash on hand – unrestricted cash and investments times 365 divided by operating and maintenance expenses. This statistic is used by both Moody's and S&P to measure liquid financial resources available to survive temporary revenue disruptions and unexpected expenses. This metric is fundamental in analyzing the financial strength of a municipal utility. In the recent past, reserves have been spent to address unexpected capital needs and collection disruptions. Moody's has commented on the Authority's liquidity in its most recent rating report. Moody's report asserts that "the Authority's cash position has materially improved as of audited 2018 financial statements, and reported cash is a healthier $47 million, or 112 days cash on hand. This is more in line with the Authority's historical operating norms, but is still somewhat weak versus similarly sized peers." As Moody's states, the prior levels of liquidity, especially in fiscal year 2017, were not adequate and put the Authority in a position of financial risk, which was a significant factor leading to the rating downgrade by Moody's in October 2018. The Authority's prior Financial Management Policy adopted in October of 2018 was to achieve "cash

reserves, including the operating reserves, rate stabilization fund and revenue fund at a level of 65 days cash on hand as measured at the end of fiscal year 2019, with the ultimate goal of increasing to over 100 days over the next five (5) years." PWSA strengthened its policy in 2019 to "[m]aintain 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 200 days over the next five (5) years."

PWSA's goal is to maintain and increase this level, while still maintaining affordable rate increases. For FY 2017, the Authority's days cash on hand was 26. For FY 2018, PWSA was able to achieve 112 days cash on hand and significantly improve its liquidity position, albeit this level is considered weak compared to its peer municipal utilities, as will be discussed in the next section. I also note that PWSA's Amended and Restated Trust Indenture requires deposits to the Operating Reserve Fund, which is part of the Revenue Requirement. This obligation, which is measured as a percentage of operating expenses, will increase as operating expenses increase, maintaining days cash on hand. As described in PWSA Exhibit JP-2, after accounting for the proposed rate increase, the Authority is projecting to achieve 113 days for FPFTY (FY 2021). This project level of cash is significantly lower than the FY 2019 days cash on hand of 242 days. Since the Authority did not have a rate increase for FY 2020, the resulting FY 2020 days cash on hand of 123 days dropped substantially from the prior year (FY 2019). As a result of not having a FY 2020 rate increase, the FPFTY (FY 2021) days cash on hand is significantly lower than PWSA's Financial Policy target, rating agencies medians (as discussed previously) and peer utilities (as discussed later in my testimony). Similar to the

discussion above regarding debt service coverage levels, this situation supports the Authority's request for a multi-year rate increase.

Pay-go Financing

The third metric is the percentage of pay-go financing, or simply funding capital needs with current revenues. Systems that have been able to fund significant portions of their capital improvement plan with annual revenues are generally better able to manage their debt. PWSA's goal for sustaining and increasing the amount of its capital program funded with internally generated funds is critical to reducing or moderating the amount of debt outstanding in comparison to its physical assets and financial resources. As a point of reference, Fitch Investor Service (a national rating agency that does not currently rate PWSA's debt) in its rating criteria measures pay-go levels for similar systems and views 65% pay-go funding as strong, 55% as a midrange and 45% pay-go funding as on the weaker side in assessing operating risks. Systems that are able to sustain higher levels of pay-go financing also enjoy healthy debt service coverage and liquidity. Historically, PWSA is substantially on the weaker side, generally financing more than 90% of its capital with debt. In FY 2019, PWSA spent $4.18 million of pay-go funds, which represents approximately 4% of its annual capital spending that year. In FY 2020, PWSA has budgeted $26.98 million of pay-go funds, which represents approximately 13% of its budgeted capital spending during the current year; however, much of this amount ($26.98 million) is being appropriated from Authority reserves funds, which will negatively affect the Authority's liquidity position.

According to PWSA's current Financial Management Policy, the Authority's goal is to increase the percentage of "pay-go funding" to 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." The proposed DSIC will greatly assist PWSA in meeting its financial management targets, improve its position relatively to peer agencies (as discussed below) and take another step to improve its credit position. The proposed DSIC revenue request, which is expected to generate $19.6 million in FPFTY (FY 2021) and $21 million in FY 2022 along with pay-go funds, would represent 14.09% and 13.01% of the Authority's projected capital spending requirements for FPFTY (FY 2021) and FY 2022, respectively. Consequently, the DSIC revenue request would enable the Authority to achieve the Financial Management Policy's "pay-go funding" goal.

III. CAPITAL MARKETS CONSIDERATION

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

A. As outlined in PWSA Exhibit JP-1, which is a part of Ms. Presutti's testimony, if the current rates remain in place, the Authority will violate its covenant with bondholders. As described previously, in order to comply with the legal requirement, the Authority must generate net revenues in an amount that exceeds senior debt service of at least 1.25 times, exceeds senior and subordinate debt service of at least 1.1 times and is adequate to pay all financial obligations. Without the rate increase, the debt service coverage in FPFTY is projected to be 1.09 times for senior debt service (1.25 times legal covenant) and 0.87 times for subordinate debt service (1.1 times is the legal documents). This would cause the Authority to be in non-compliance with its bond rate covenant.

If the Authority fails to comply with the rate covenant, the Authority is required to engage a consultant to prepare a report to remedy the failure and to make recommendations. The Authority has 180 days after the tested fiscal year to revise rates,

fees and charges or to petition the PUC to establish the necessary rates, fees and charges to address the rate covenant failure. If, after this time period, the Authority continues to fail the rate covenant, then an Event of Default under the Trust Agreement will have occurred. An event of default results in certain remedies available to bond holders, including acceleration of principal. An event of default would also likely lead to a downgrade of the Authority's credit ratings, making future borrowing more problematic and costly and requiring increased rate revenue to cover the Authority's higher cost of borrowing. Additionally, the Authority's financial policies require senior debt service coverage of 1.35 times and all-in debt service coverage of 1.15 times in order to provide a cushion in the event actual collections are lower than anticipated or expenses are higher. In terms of days cash on hand, without the rate increase, days cash on hand falls to negative 21 days cash on hand (basically the Authority would have to use all of its cash on hand from other sources to pay its FPFTY (FY 2021) obligations). This would result in the full depletion of the Operating Fund.

Q. WHAT ARE THE LIKELY CONSEQUENSES IF PWSA FAILS TO MEET ITS BOND COVERAGE OR FAILS TO MAINTAIN ADEQUATE CASH ON HAND?

A. The failure to maintain debt service coverage levels and/or a notable deterioration in days of cash on hand would 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. 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 risks of the PUC not approving the requested rate increase, including rating downgrades and the possible consequences.

IV. PEER REVIEW OF FINANCIAL METRICS

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

A. The Authority's senior lien credit ratings are "A3" and "A", from Moody's and S&P respectively, and are on the lower half of most of the US municipal water and sewer systems, with approximately 93% rated A2 or higher by Moody's and 50% are rated in the AA and AAA categories by S&P. National water and sewer credits are generally well received by the investor community with rating agencies viewing the industry overall with a stable outlook. It is expected that the industry outlook will remain stable with increasing rates as necessary while still balancing affordability concerns. Rating agencies have been reviewing and updating methodologies with a view towards transparency and a more quantitative approach. Both Moody's and S&P have published credit scorecards which identify certain rating factors, as well as assigning certain factor weighting. Both credit scorecards include some level of qualitative analysis, as well as above and below-the-line notching. While the approach is slightly different, the factors considered both include debt service coverage and liquidity measures as critical components of any credit review.

Moody's – Moody's identifies broad factors for consideration and further provides sub-factors in the scorecard. The broad categories include system characteristics (asset

condition, service area and system size), financial strength (debt service coverage, days cash on hand, debt to operating revenues), management (rate management, regulatory compliance and capital plans) and legal provisions (rate covenant, debt service reserve requirements). In general, Moody's reports that the median coverage for all Moody's rated credits (using 2017 data) is 2.3x for combined water and sewer systems and 2.1x for single systems and days cash on hand are 440 days for combined systems and 418 days cash on hand for water systems.

Below are PWSA's key ratios from the most recent Moody's Median report dated June 4, 2019 (which uses 2017 data) compared to median peers for the "A3", "A2" and "A1" rating categories that illustrates that the Authority is below each median indicator. Increasing rates to provide cash flow available to fund an increasing amount of projects on a pay-go basis will help mitigate PWSA's relative position.

Moody's Key Indicators	PWSA (2018)	A3 Rated Medians	A2 Rated Medians	A1 Rated Medians
Debt Service Coverage	1.4x	1.5x	2.1x	1.8x
Days Cash on Hand	112	363	350	381

Sources: Moody's Investor Service Rating Report for PWSA and Moody's Water and Sewer Median Report dated June 4, 2019 (2017 data).

Standard & Poor's – S&P also has developed a credit scorecard to provide a qualitative analysis of a systems credit profile. S&P measures credit through an enterprise risk profile (economic fundamentals, industry risk, market position and operational management assessment) and a financial risk profile ("all in" coverage, liquidity and reserves, debt and liabilities and financial management assessment). They also provide notch adjustments for certain factors. When reviewing assessment scores for "A" rated water and sewer credits, debt service coverage averaged 1.5 times for S&P A-rated systems and liquidity measures averaged approximately 387 days cash on hand.

Below is a summary of the Authority's most recent rating recent reports, outlining the strengths, challenges and viewpoints of the credit agencies.

Moody's Investors Service A3 (Stable)	Standard & Poor's Ratings Services A- (Stable)
Credit Strengths	
▪ Diverse, urban service area, supported by strong "eds & meds" presence ▪ Considerable size ▪ Significant rate increase implemented recently ▪ Rate increase boost revenues ▪ PUC oversight should bring improvements and controls.	▪ Employment base that has reinvented itself from previously relying on manufacturing and industrial jobs ▪ View operational management assessment (OMA) as "good" ▪ Adequate debt service coverage (DSC) ▪ Decreasing exposure to interest rate risk and contingent liabilities.
Credit Challenges	
▪ Substantial debt burden ▪ Narrow liquidity ▪ Long term inadequate maintenance of infrastructure; projected $2 billion in capital improvement needs ▪ Exposure to large regional consent decree through ALCOSAN ▪ Elevated lead levels in water persist	▪ If the size and scope of capital program cause the financial profile to weaken ▪ Exposure to large regional consent decree through ALCOSAN ▪ Best practices for financial management not institutionalized or formalized in policy or not as robust as utilities with strong financial management

Regulatory Oversight: Moody's views PUC oversight as a credit positive while S&P views it more as a credit neutral, however, both agencies have stated in recent reports that PUC oversight has contributed to their stable outlooks for PWSA. This is due to Moody's expectation that PUC will bring PWSA's system to good working order and S&P's expectation that the timing and magnitude of rate adjustments requested by PWSA will align with what is approved by PUC.

Conclusion: General observation related to the Authority's financial profile is that PWSA's financial metrics are on the weaker side and generally below the median rating categories for the "A" rated category. It will be critical to maintain the minimum debt service coverage and days cash on hand outlined in the Authority's adopted financial

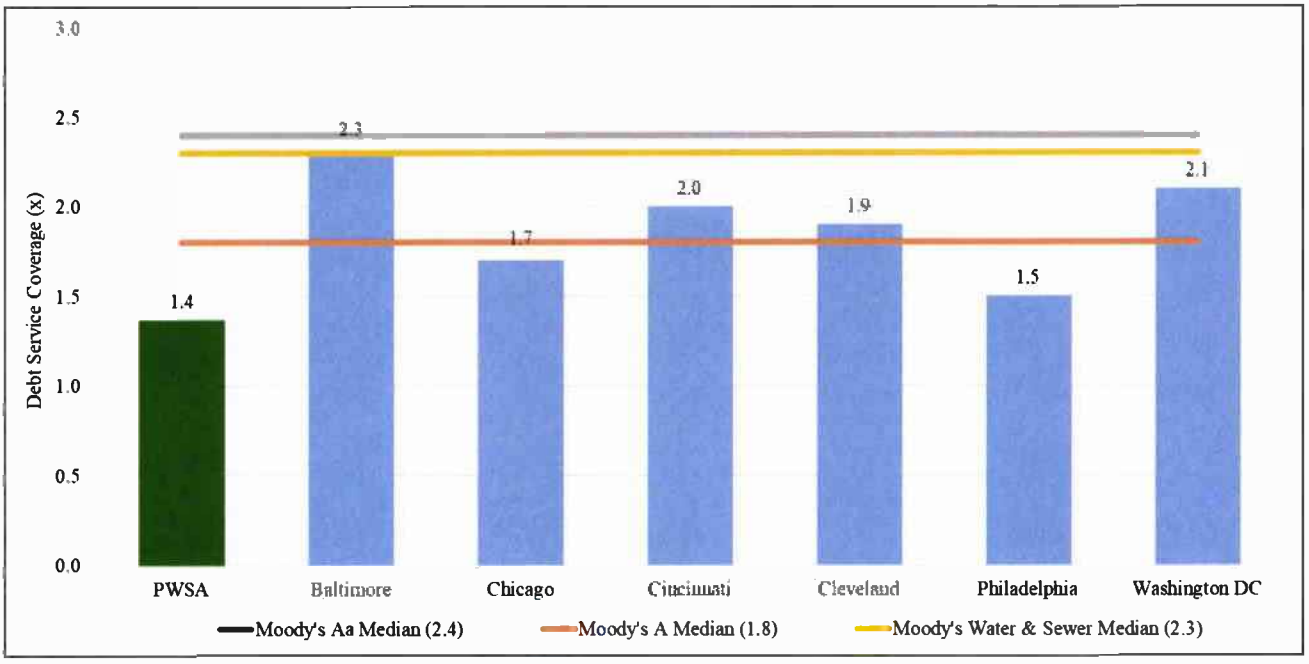
metrics and support for the requested rate increases necessary to achieve these financial management objectives and stabilize the Authority's credit ratings and future borrowing costs.

Peer Utilities: PWSA has selected certain large city municipal peer systems to provide important benchmarking critical to organizational best practices. While systems have their own characteristics based on regions, size, and service area, the selected peers are of similar size, service areas of industrial urban centers and are located largely in the mid-Atlantic and Midwestern regions of the country. Peer comparisons and benchmarking performance indicators are a component of best practices and have been incorporated into the Authority's financial policies. Data gathered on peer systems is provided by recent Moody's Credit Opinion reports for each respective peer.

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

Provided below is a peer comparison chart of debt service coverage levels that compares PWSA to other large city water and sewer entities. Higher debt service coverage levels are looked upon more favorably by the rating agencies because it indicates a better ability to pay debt service and issue further debt while maintaining a strong financial position. PWSA's 2018 debt service coverage levels are the lowest of its peer utilities and also compared unfavorably to Moody's overall and "A" and "Aa" rated utility medians.

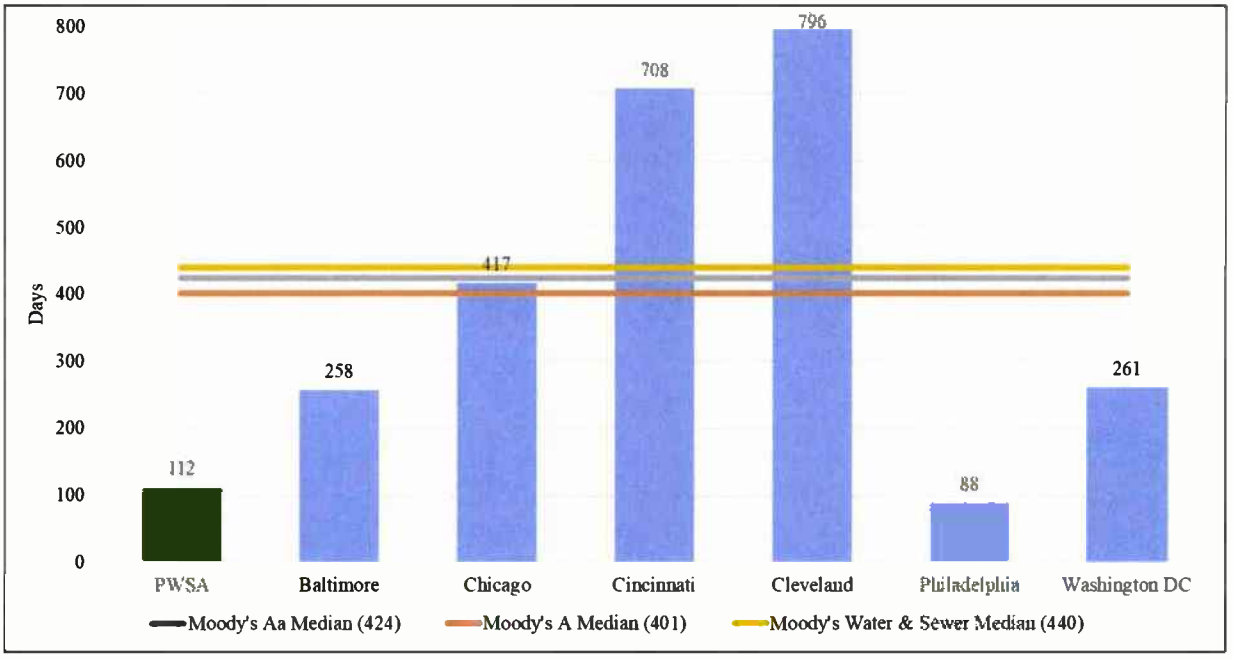
DEBT SERVICE COVERAGE
(2018 net revenue divided by 2018 debt service, expressed as a multiple)



Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Financial Performance Signals Continued Stability, May 29, 2019 (2017 data) and Moody's Investor Service latest rating reports for each entity (2018 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. In 2018, PWSA had 112 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.

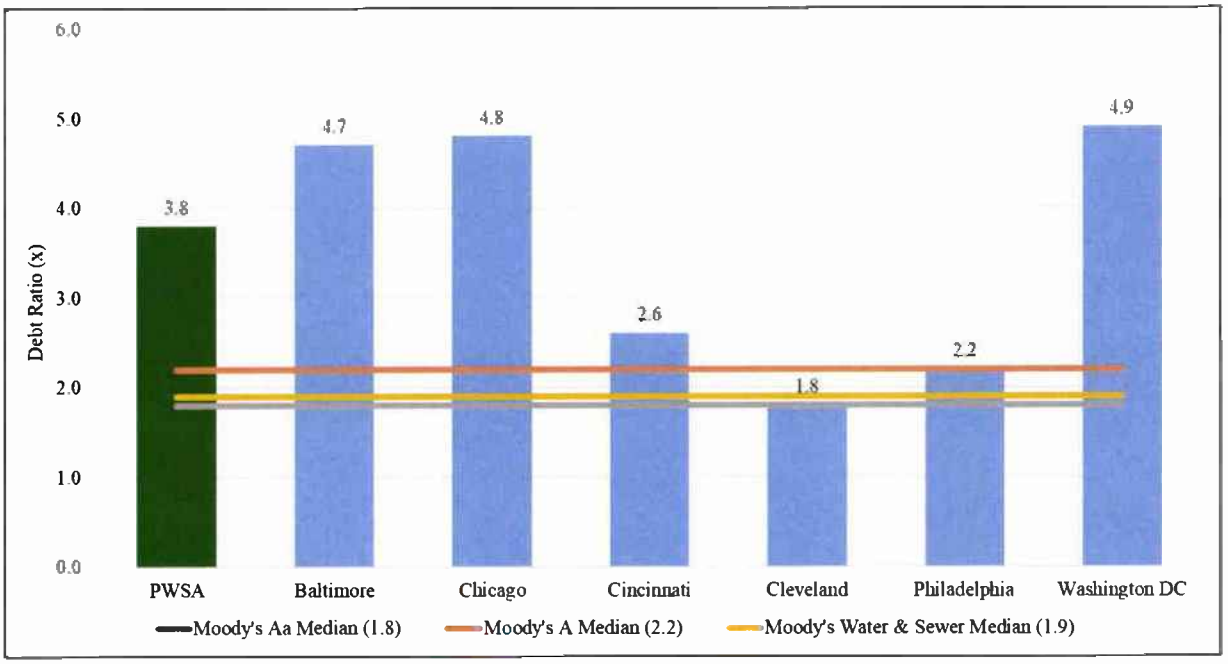
DAYS CASH ON HAND
(2018 unrestricted cash and liquid investments times 365 divided by 2018 operating and maintenance expenses, expressed in days)



Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Financial Performance Signals Continued Stability, May 29, 2019 (2017 data) and Moody's Investor Service latest rating reports for each entity (2018 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 2018, PWSA ranked as one of the highest 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.

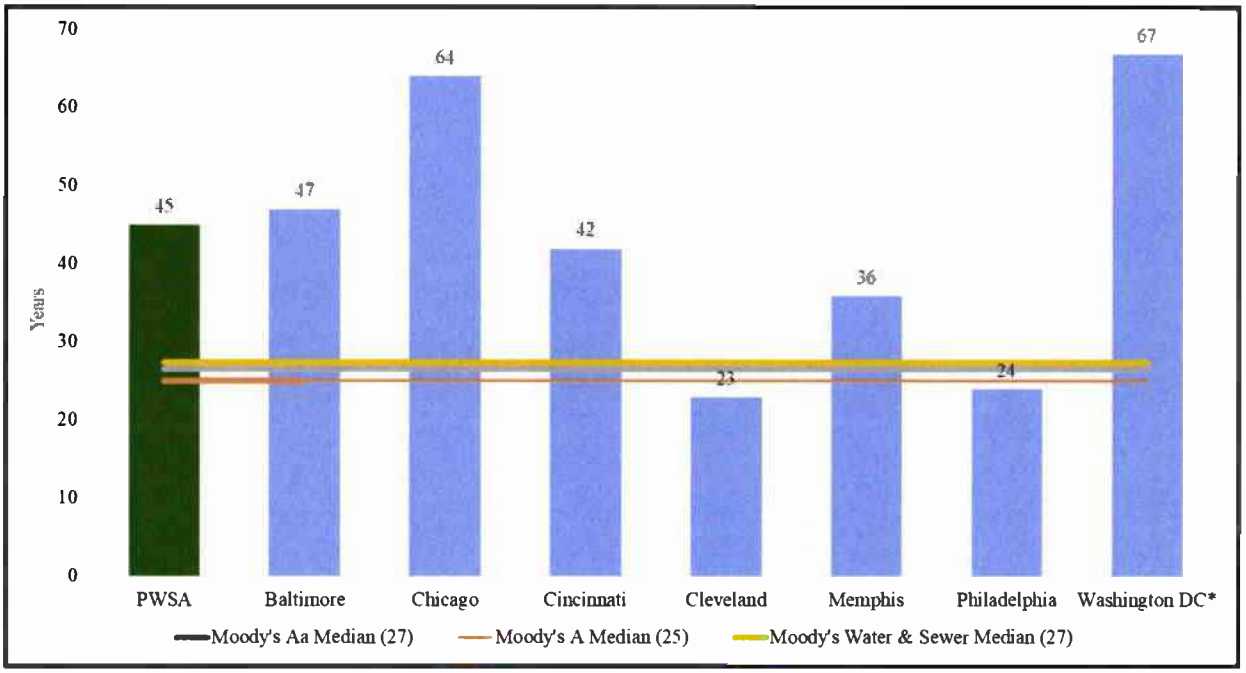
DEBT RATIO
(2018 net debt divided by 2018 operating revenues, expressed as a multiple)



Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Financial Performance Signals Continued Stability, May 29, 2019 (2017 data) and Moody's Investor Service latest rating reports for each entity (2018 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 2018, 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.

ASSET CONDITION
(2018 net fixed assets divided by 2018 depreciation, expressed in years)



*** 2017 asset condition for Washington DC is most recent available**

Sources: Moody's Investor Service: Water and Sewer Utilities Medians – Financial Performance Signals Continued Stability, May 29, 2019 (2017 data) and Moody's Investor Service latest rating reports for each entity (2018 data).

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

A. There are several risks that occur if the PUC does not approve the requested rate increase. Previously, I described the repercussions if the rate increase was not approved in relation to the debt service coverage and liquidity and the violations of the Amended and Restated

Indenture, as well as the Authority's Financial Management Policy. In addition to those risks, there are several other risks that correlate if there is no revenue increase for the Authority.

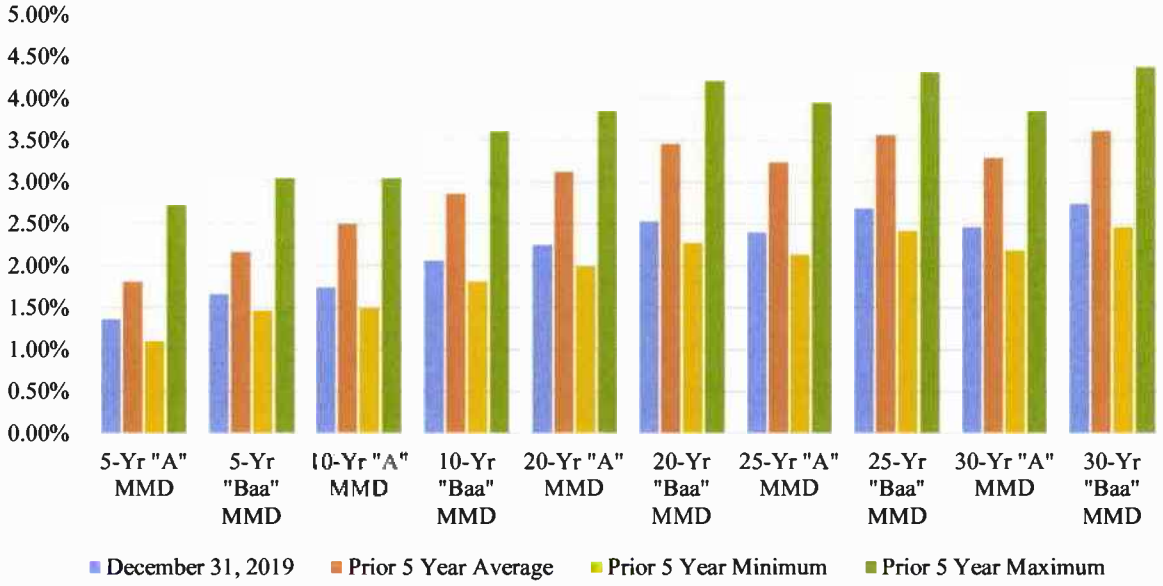
Operations. The Authority has put off investing in improvements of infrastructure in the past, which has led to cost inefficiencies and a deteriorated system. The Authority's new management has prioritized addressing the system infrastructure and put forth capital requirements in updating its water pumping and storage and water distribution, among others. In order to cover costs and expenses for these projects, revenue has to be adequate. The total system revenues would accumulate to $225.829 million in FPFTY if the rate were to be approved by the PUC and cover the necessary costs and expenses. However, if rates were not increased, total system revenues would only be $181.654 million, and the Authority runs the risk of having a deficit in fulfilling their debt service payments and creating an event of default.

Rating Downgrade. Rating downgrade(s) could lead to a myriad of issues for the Authority. Specifically, the cost of fixed-rate borrowing for infrastructure would increase, as well as rates/costs impacts to the Authority for their current line(s) of credit and outstanding swaps. In addition, the Authority could see a lack of options for the required regular refinancing of its existing variable bonds, which would likely lead to higher interest and support costs.

Cost of Capital. In addition to ensuring that rate increases provide the necessary cash flow for liquidity and pay-go, the Authority's rating has a direct impact on the cost of capital. This has an impact on the cost of annual debt service, as well as the cost to PWSA of alternative financing options, such as letter of credits, bank loans, and

implementing a commercial paper program. Higher rated credits enjoy a range of options in financing increasing Capital Improvement Programs and these short term, variable rate options can be even more advantageous in a rising rate environment. Below are current and historical credit spreads for "A" and "Baa" ratings.

Current and Historical MMD Rates*



*Municipal Market Data (MMD) is the standard index for municipal bonds. MMD publishes various yield curves (1 to 30 years) for different credits/rating categories.

Below is a historical representation of the range in interest rates for "A" and "Baa" rated credits provided by Municipal Market Data. Based on data from the last five years, the average between "A" and "Baa" rates of yield curves ranged from 32 to 36 basis point in the 5-year, 10-year, 20-year and 30-year MMD scales.

	5 Year			10 Year			20 Year			30 Year		
Stats	"A" MMD	"Baa" MMD	Basis Point Difference	"A" MMD	"Baa" MMD	Basis Point Difference	"A" MMD	"Baa" MMD	Basis Point Difference	"A" MMD	"Baa" MMD	Basis Point Difference
December 31, 2019	1.36%	1.66%	30	1.74%	2.06%	32	2.25%	2.53%	28	2.46%	2.74%	28
Prior 5 Year Average	1.80%	2.16%	36	2.49%	2.85%	36	3.12%	3.46%	33	3.29%	3.61%	32
Prior 5 Year Minimum	1.10%	1.46%	36	1.49%	1.81%	32	1.99%	2.27%	28	2.18%	2.46%	28
Prior 5 Year Maximum	2.72%	3.04%	32	3.04%	3.60%	56	3.85%	4.21%	36	3.85%	4.38%	53

Source: Municipal Market Data.

Over the next five years, the Authority expects to issue $1.13 billion in additional debt. For every 35 basis point increase, which is approximately the difference between the prior five year interest rate average between an A credit and Baa rates, PWSA and ultimately rate payers could expect to pay an additional $3.95 million in annual debt service or more than $118 million over the life of the bond issue. This increase adds up and can place additional stress on debt service coverage requirements.

Costs of Revolving LOC. The revolving line of credit amended agreement that the Authority executed with JPMorgan Chase Bank, National Association in October 2016 has legal language that sets the applicable spread regarding the cost of the line of credit. According to the agreement, the Authority is currently paying 79% of LIBOR + 1.45% based on their rating. However, if the Authority were to be downgraded in the future to Baa1 or BBB+ by Moody's and/or S&P, respectively, then the Authority would be paying a spread to LIBOR at 1.60%. The spread would increase even more to 1.80% if the Authority were to be downgraded further to Baa2 or BBB by Moody's and/or S&P, respectively. Additionally, the Authority pays an annual unutilized commitment fee for the revolving line of credit of 0.45% based on their current ratings. Downgrades to Ba1 and/or BBB+ would lead to a rate of 0.525% and additional downgrades to Baa2 and/or BBB would lead to a rate of 0.625%.

Swap Agreements. Fortunately, 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.

V. IMPACT OF MULTI-YEAR RATE ADJUSTMENT

Q. HOW WILL THE AUTHORITY'S CREDIT PROFILE BE IMPACTED IF THE PUC APPROVES A MULTI-YEAR RATE ADJUSTMENT?

A. Rating Agency Rating Considerations

Moody's views multi-year rate increases as positive since it relates to forward looking planning. Moody's scorecard has a rate management sub-factor under the management factor that is worth 10% of the overall score. According to Moody's methodology, since rates are typically the primary mechanism to pay for a utility's operations, ideally their rate would increase steadily. Management's track record at setting rates appropriately and increasing them when necessary drives this score. Moody's also takes into account the length of time required to implement a rate increase, especially when the utility must seek approval from the state. In the case of PWSA, Moody's has noted that an inability to raise rates sufficiently to meet debt service coverage covenants while also funding significant deferred capital improvements could lead to a downgrade.

S&P uses a scorecard approach for their water and sewer ratings. There are four factors that go into the Operational Management Assessment score. "Rate Setting Practices", which represents 40% of the Operational Management Assessment score, is the largest factor within the Operational Management Assessment score.

- *Strong Rate Setting Practices* occur 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 Setting Practices* occur when rate considerations are done on a year-to-year planning horizon, rather than over a long-term time frame, but generally are politically approved if, and when, necessary.
- *Standard Rate Setting Practices* occur when setting rates for the rate covenant and/or additional bonds test are the de facto guide as to when rate adjustments are necessary, but that instill enough for the political decision makers to agree to a rate increase.
- *Vulnerable Rate Setting Practices* occur when 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.

Specifically, as mentioned previously, S&P has noted that their stable outlook for PWSA reflects an expectation that both the timing and magnitude of rate adjustments that PWSA requests, versus what the PUC ultimately grants, will generally prove to be aligned. S&P assumes that PUC oversight will eventually be supportive of credit quality, but they would first look at the scope of regulation, then the record of the timing and scale of rate relief, and how capital expenditures will be financed before considering an upgrade to PWSA's rating. S&P also notes that should rate increases be insufficient to support strong finances, they could lower the rating.

Stable Financial Performance.

Multi-year planning and rate adjustments contribute to municipal utilities' stable financial performance. The table below summarizes the historical debt service coverages and days cash on hand for PWSA and peer utilities. The peer agencies generally have stable financial metrics. In cases where metrics have deteriorated sharply for respective peers, such as the City of Baltimore in FY 2016 and PWSA in 2017, bond ratings have been lowered following the reported results. The absence of annual rate increases has caused substantial volatility in the Authority's financial metrics. Neither bond investors, nor the rating agencies will look favorably on this type of variability, as it is inconsistent with metrics of moderate to highly rated municipal utilities.

Debt Service Coverage*

	PWSA	Atlanta	Baltimore	Capital Region Water[1]	Chicago	Cincinnati	Cleveland	Philadelphia	Washington DC
2014	1.1	1.6	1.6	N/A	2.8	1.5	2.1	1.4	1.6
2015	1.1	2.1	1.8	1.3	2.5	1.5	2.2	1.5	1.8
2016	0.9	1.8	1.1	1.2	2.6	1.7	2.0	1.4	2.0
2017	0.8	1.9	1.4	1.3	2.3	1.5	1.7	1.7	2.1
2018	1.4	2.4	2.3	1.5	2.2	2.0	1.9	1.5	2.1
2019	1.9								
2020	1.4								
2021	1.8								
2022	1.7								
2023	1.5								

Days Cash On Hand*

	PWSA	Atlanta	Baltimore	Capital Region Water[1]	Chicago	Cincinnati	Cleveland	Philadelphia	Washington DC
2014	91	1,131	124	N/A	153	445	585	73	315
2015	78	1,313	205	607	462	448	469	78	244
2016	53	1,243	113	372	591	564	781	79	268
2017	26	1,364	58	194	598	613	848	88	250
2018	112	2,005	258	446	480	708	796	88	261
2019	242								
2020	123								
2021	113								
2022	111								
2023	75								

*Sources: Moody's Investors Service Reports for years 2014 through 2018, except for Capital Region Water (CRW) figures which are from Rate Studies and Standard & Poor's Reports. PWSA figures from FY 2019 thru FY 2023 Pro Forma documents assuming full requested rate increase. 2014 data for CRW in is not meaningful as CRW was unrated, was not issuing publicly offered debt.

Notes: Yellow shaded cells represent rating Moody's downgrades. Green shaded cells represent rating Moody's upgrade. Orange shaded cells represent years when no PWSA rate adjustment is scheduled.

Overall, the case for allowing multi-year rate increases is strong. First, most municipal utilities do long-term planning and review and adjust their rates annually. Many have automatic or long-term rate adjustment mechanisms. Second, for most large metropolitan systems, water costs are rising annually and water usage is declining. The utility needs to adjust its rate to stay financial healthy, which is especially true for a system like PWSA

that has financial metrics that are under industry medians and peer agencies. Third, not permitting multi-year rate increase will mean that the utility may seek a higher rate increase in order to tie the utility over for two years. Although this may be feasible, it puts stress on the rate payers (as well as the utility itself). Lastly, for a regulated municipal utility, the time, resources and expenses needed to file a rate case are substantial. PWSA, like other municipals utilities, are conducting long term planning efforts. The planning efforts, many times have resulted in multi-year rate adjustments that have been accepted by rate payers, ratings agencies and the credit markets. It would be very beneficial to PWSA for the PUC to approve its request

Q. IS THERE RISK ASSOCIATED WITH REMOVING THE AUTHORITY'S MINIMUM ALLOWANCE FROM THE RATE STRUCTURE?

A. Yes. The Authority is projecting that a removal of the Minimum Allowance from the rate structure would result in a reduction of more than 70% of PWSA's fixed (non-volumetric) water and wastewater revenue. Given the historic and projected volatility in the Authority's key credit metrics (debt service coverage and days cash on hand) and the fact that the Authority expects continued declines in water consumption over the projection period, a more than 70% drop in the fixed revenue amount would be seen as creating additional volatility to the net revenue pledged to pay debt service. This change in the rate structure would have to be discussed and justified to the rating agencies. Thus, at this time, we see removing the minimum allowance as a credit negative, not a credit positive.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

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

VERIFICATION

I, Tom Huestis hereby state that: (1) I am Senior Managing Director Certifications/Licenses of Public Resources Advisory Group; (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).

3-6-20
Dated

Tom Huestis, Senior Managing Director
Certifications/Licenses of Public Resources Advisory Group

Consultant to:
The Pittsburgh Water and Sewer Authority

Exhibit TFH-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 the 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 20th 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); (4) 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 1/6th 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 TFH-2

Peer Ratings and Comparative Financial Information

	Pittsburgh Water and Sewer Authority	Chicago Water Enterprise	Great Lakes Water Authority Water Enterprise	Allegheny County Sanitary Authority	Capital Region Water
Year	2018	2018	2018	2018	2018
Current Senior Most Rating	A3	Baa2	A2	A1	A+*
Total Current Cash, Cash Equivalents and Investments ($000)	46,920	333,954	317,090	142,482	48,170
Total Revenue Bonds ($000)	656,038	2,077,483	N/A	704,565	145,905
Total Long Term Debt ($000)	877,977	2,550,388	2,860,070	704,565	174,192
Total Operating Revenues ($000)	231,734	773,960	338,312	169,724	44,895
Total O&M Expenses ($000)	153,180	358,040	143,992	76,005	24,582
Net Revenues ($000)	81,565	577,748	127,687	96,846	26,046
Total Annual Senior Lien Debt Service ($000)	39,966	15,600	172,739	46,131	14,805
Total Annual Debt Service ($000)	59,406	193,469	176,613	60,528	14,805
Operating Ratio (%)	66.1	46.3	33.2	44.8	54.8
Debt Ratio (%)	108.3	N/A	115.3	N/A	N/A
Total Annual Senior Lien DSC (x)	2.0	37.0	2.1	2.1	1.8
Total Annual Debt Service Coverage (x)	1.4	3.0	1.6	1.6	1.8

* S&P rating, CRW is not rated by Moody's

Sources: Moody's rating reports for each issuer and 2018 Financial Statements and Operating Data for Capital Region Water.

Peer Ratings and Comparative Financial Information					
	Pittsburgh Water and Sewer Authority	City of Philadelphia Water and Wastewater	Westmoreland County Municipal Authority	Baltimore Water Enterprise	Louisville & Jefferson County Metro. Sewer District
Year	2018	2018	2018	2018	2018
Current Senior Most Rating	A3	A1	A1	Aa3	Aa3
Total Current Cash, Cash Equivalents and Investments ($000)	46,920	587,038	12,868	71,130	75,356
Total Revenue Bonds ($000)	656,038	1,696,535	N/A	893,969	1,996,730
Total Long Term Debt ($000)	877,977	1,824,507	531,797	893,969	2,224,941
Total Operating Revenues ($000)	231,734	726,942	100,067	178,367	279,149
Total O&M Expenses ($000)	153,180	429,239	61,204	100,441	93,735
Net Revenues ($000)	81,565	310,215	42,399	80,166	201,943
Total Annual Senior Lien Debt Service ($000)	39,966	202,338	26,647	35,139	127,812
Total Annual Debt Service ($000)	59,406	202,338	26,647	57,126	139,595
Operating Ratio (%)	66.1	59.0	61.2	56.3	33.6
Debt Ratio (%)	108.3	N/A	84.6	48.3	N/A
Total Annual Senior Lien DSC (x)	2.0	1.5	1.6	2.3	1.6
Total Annual Debt Service Coverage (x)	1.4	1.5	1.6	1.4	1.5

* S&P rating, CRW is not rated by Moody's

Sources: Moody's rating reports for each issuer and 2018 Financial Statements and Operating Data for Capital Region Water.

Peer Ratings and Comparative Financial Information					
	Pittsburgh Water and Sewer Authority	Cleveland Water Enterprise	District of Columbia Water & Sewer Authority	Tampa Bay Water	Greater Cincinnati Water Works
Year	2018	2018	2018	2018	2018
Current Senior Most Rating	A3	Aa2	Aa1	Aa1	Aaa
Total Current Cash, Cash Equivalents and Investments ($000)	46,920	411,768	231,956	211,077	178,143
Total Revenue Bonds ($000)	656,038	491,635	N/A	N/A	505,685
Total Long Term Debt ($000)	877,977	604,170	3,273,034	208,403	505,685
Total Operating Revenues ($000)	231,734	306,150	684,502	223,524	161,835
Total O&M Expenses ($000)	153,180	188,870	302,641	125,810	81,274
Net Revenues ($000)	81,565	132,490	387,727	100,717	84,455
Total Annual Senior Lien Debt Service ($000)	39,966	49,719	67,296	24,301	38,967
Total Annual Debt Service ($000)	59,406	70,318	178,400	26,721	42,085
Operating Ratio (%)	66.1	61.7	44.2	56.3	50.2
Debt Ratio (%)	108.3	25.5	44.8	15.2	N/A
Total Annual Senior Lien DSC (x)	2.0	2.7	5.8	4.1	2.2
Total Annual Debt Service Coverage (x)	1.4	1.9	2.2	3.8	2.0

* S&P rating, CRW is not rated by Moody's

Sources: Moody's rating reports for each issuer and 2018 Financial Statements and Operating Data for Capital Region Water.

TAB

7

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

HAROLD J. SMITH

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:
Class Cost of Service Study
Cost Allocations
Rate Design

March 6, 2020

Table of Contents

TABLE OF EXHIBITS

I. INTRODUCTION AND QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Harold J. Smith and my business address is 5619 DTC Parkway Suite 850 Greenwood Village, CO 80111.

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

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

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.

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

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

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

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

A. Yes, I provided testimony for the Pittsburgh Water and Sewer Authority's (PWSA) first water and wastewater conveyance rate filings before the PAPUC (Docket Nos. R-2018-3002645 and R-2018-3002647).

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

A. Yes. I have provided testimony before the Rhode Island Public Utilities Commission (RIPUC) in Providence Water Supply Board's nine most recent filings before the Rhode Island Public Utility Commission (RIPUC) (Docket Nos. 3832, 4061, 4070, 4080, 4287, 4406, 4571, 4618 and 4994) and in Newport Water's nine most recent filings (RIPUC Docket Nos. 3578, 3675, 3818, 4025, 4128, 4243, 4355, 4595 and 4933). I have also provided testimony on water, sewer and stormwater rate related matters before the Tennessee Regulatory Authority as well as in court proceedings in Arizona, Connecticut, Indiana, Maryland and Maine.

II. PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE YOUR ROLE IN THIS PROCEEDING.

A. I have worked with the staff of the Pittsburgh Water and Sewer Authority ("PWSA" or "Authority") to prepare a class cost of service study (CCOSS) and develop cost based rates and charges for both water and wastewater conveyance service. The results of my analyses are included in the schedules incorporated herein with my testimony.

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR TESTIMONY.

A. I am sponsoring PWSA's CCOSS and rate designs for both the water and wastewater conveyance tariffs. The purpose of the CCOSS is to allocate PWSA's costs of providing

service to each rate class. The rate design analysis results in water and wastewater conveyance rates that help ensure that PWSA's costs are recovered from each class in a fair and equitable manner and in a way that reflects the demands that each class places on the systems. My testimony will first address the CCOSS and rate design analysis that supports the proposed water tariff and will then address the CCOSS and rate design analysis that supports the proposed wastewater conveyance tariff.

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

A. Yes, Raftelis performed a water and wastewater conveyance rate study for PWSA in 2016 and again in 2017. Raftelis also prepared the CCOSS that supported PWSA's last rate filing before the PAPUC.

Q. IN THE SETTLEMENT OF PWSA'S FIRST BASE RATE CASE APPROVED IN DOCKET NOS. R-2018-3002645 AND R-2018-3002647 DID PWSA AGREE TO ADDRESS CERTAIN ISSUES WITH THE CCOSS THAT WERE RAISED BY OTHER PARTIES IN THOSE PROCEEDINGS?

A. Yes, in the Initial Rate Case Settlement Agreement,[1] PWSA agreed to address the following issues related to cost allocation and rate design:

1) The use of at least two years of billing data in its next base rate case;
2) Allocation of costs to wholesale water customers;
3) Determine and show the cost of public fire hydrants service separately;
4) Identify uncollectible accounts expense by class and allocate those costs in the water and wastewater cost of service studies to the various customer classes.
5) Gather detailed customer class consumption data necessary to implement class specific max-day and max-hour adjustment factors.
6) Consider the removal of the minimum usage allowances
7) Submit a plan to address infiltration cost remediation

[1] *Pennsylvania Public Utility Commission v. PWSA*, Docket Nos. R-2018-3002645 (water) and R-2018-3002647 (wastewater), Opinion and Order entered February 27, 2019.

Additionally, as part of the proceedings related to PWSA's Compliance Plan Stage 1,[2] PWSA agreed to address the following issues related to rates and charges for service:

1) Assessing the City of Pittsburgh (City) a charge for public fire service;
2) Charging the City for water and wastewater conveyance service;
3) Preparing separate CCOSSs for wastewater conveyance and stormwater management.

Q. HAVE ALL OF THESE ISSUES BEEN ADDRESSED IN THIS DOCKET?

A. Yes. All items have been addressed in this filing.

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

A. Ms. Presutti's and Mr. Barca's testimonies support PWSA's revenue requirements for the total system revenue requirements. My testimony uses PWSA's revenue requirements for the Fully Projected Future Test Year ("FPFTY") as a starting point for the CCOSS. It also relies on the inputs and assumptions that went into the determination of the FPFTY and fiscal year (FY) 2022.

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

A. My testimony includes three separate sets of exhibits[3], one set for total revenue requirements allocated to utility service, one set for water rates and another set for wastewater conveyance rates. They are as follows:

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[2] *Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water and Sewer Authority*, Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), Petition Of The Pittsburgh Water And Sewer Authority For Approval Of Its Compliance Plan filed September 28, 2018. *Petition Of The 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) filed September 28, 2018. Joint Petition for Partial Settlement dated September 13, 2019 still pending.

[3] These exhibits are generated by an Excel-based cost of service model. An electronic copy of the model will be provided to all parties.

Allocation of Total System Revenue Requirements Exhibits:

a. **HJS-1 Allocation of Total System FPFTY Revenue Requirements:** This schedule shows the total system revenue requirements for the FPFTY. It also provides the allocation of the total system revenue requirements to the water and wastewater conveyance utility services. Note that the column labeled Stormwater is for informational purposes only. The revenue requirements used for determining Wastewater Conveyance rates for this filing are the total of the costs listed under Wastewater Conveyance and Stormwater.

b. **HJS-2 Allocation of Total System Fiscal Year 2022 Revenue Requirements:** This schedule shows the total system revenue requirements for FY2022. It also provides the allocation of the total system revenue requirements to the water and wastewater conveyance utility services.

c. **HJS-3 Total System Allocation Factor Summary:** This schedule provides a summary of the factors used to assign costs to the water, wastewater conveyance and stormwater utility services.

d. **HJS-4 City Services Mapped to Budget Departments:** This schedule shows how the payments to the City for services rendered are distributed to departments within the operating budget such that these costs can be allocated appropriately.

e. **HJS-5 FPFTY Revenue Requirements by Utility:** The FPFTY revenue requirements used for the CCOSS are shown on this schedule.

f. **HJS-6 Fiscal Year 2022 Revenue Requirements by Utility:** The FY2022 revenue requirements used for the multi-year rate analysis are shown on this schedule.

Water Cost of Service Allocation and Rate Design Methodology Exhibits:

a. **HJS-1W FPFTY Water Revenue Requirements:** This schedule shows the water revenue requirements that must be recovered from the various water rates and charges assessed by PWSA.

b. **HJS-2W Assignment to Functional Categories:** This schedule shows the way in which the FPFTY revenue requirements are allocated to different functional categories.

c. **HJS-3W Allocation to Base/Extra Capacity Categories:** This schedule shows the way in which the FPFTY revenue requirements are allocated to different cost of service categories.

d. **HJS-4W Allocation Factor Summary:** This schedule provides a summary of the factors used to assign costs to functional categories and to allocate costs to the cost of services categories and to customer classes.

e. **HJS-5W Allocation Factor Detail:** This exhibit shows the derivation of the allocation factors presented in Schedule HJS-4W.

f. **HJS-6W Water Units of Service:** Projected water consumption and peaking factors for each customer are shown on this schedule.

g. **HJS-7W Fire Allocation Factors & Units of Service**: This schedule shows the derivation of allocation factors for allocating costs to public and private fire service as well as the equivalent units of service for fire charge calculations.

h. **HJS-8W Water Unit Cost of Service:** This schedule shows the calculation of the unit costs of providing service to meet the various and extra capacity demands place on the water system as well as the unit cost of the various components of the Minimum Charge.

i. **HJS-9W Cost Distribution to Customer Classes:** The allocation of categorized costs to customer classes based on their demand characteristics is shown on this schedule.

j. **HJS-10W Adjustments to Allocated Cost of Service**: This schedule shows the adjustments PWSA is required to make to the allocated cost of service by customer class.

k. **HJS-11W Rate Design:** This schedule demonstrates the calculation of the Minimum Charges and Volumetric Charges under both Cost of Service and Adjusted Cost of Service.

l. **HJS-12W Proposed Rates:** This schedule shows the proposed water Minimum Charges and Volume Charges for each customer class, Fire System Charges, and the percent change that the proposed charges represent over existing rates.

m. **HJS-13W Comparison of Revenues by Customer Class:** This schedule provides a comparison of revenue generated from each customer class under both the

existing and proposed rates. Also shown is the percent difference between revenues under existing and proposed rates. This schedule also provides a comparison of revenue by class with the indicated class cost of service and adjusted cost of service.

n. **HJS-14W FPFTY CCOS Comparison – Water:** This schedule summarizes the differences in revenue at existing rates, revenue at proposed rates, and the adjusted cost of service.

o. **HJS-15W Typical Bill Comparison:** This schedule provides a comparison of typical monthly bills for water service under the existing and proposed rates for typical customers from each customer class.

p. **HJS-16W Revenue Proof:** This schedule provides a summary of the revenue requirements and revenue to be recovered under both the Cost of Service rates and proposed rates.

q. **HJS-17W Projected Units of Service:** This schedule summarizes consumption data for each of PWSA's customer classes for the HTY, FTY, FPFTY and the previous two fiscal years.

r. **HJS-18W Fiscal Year 2022 Water Revenue Requirements:** This schedule shows the water revenue requirements that must be recovered from the various water rates and charges assessed by PWSA for FY2022.

s. **HJS-19W Proposed Fiscal Year 2022 Rates:** This schedule shows the proposed water Minimum Charges and Volume Charges for each customer class, Fire System Charges, and the percent change that the proposed FY2022 charges represent over proposed FPFTY (2021) rates.

t. **HJS-20W Fiscal Year 2022 Revenue Proof:** This schedule provides a summary of the revenue to be recovered under both the FPFTY (2021) rates and proposed FY2022 rates. Additionally, this schedule shows the determination of the base rate revenue increase needed to meet full water system revenue requirements.

u. **HJS-21W Typical Bill Comparison:** This schedule provides a comparison of typical monthly bills under the FPFTY (2021) rates and proposed FY2022 rates for typical customers from each customer class.

v. **HJS-22W Projected Units of Service:** This schedule summarizes consumption data for each of PWSA's customer classes for the HTY, FTY, FPFTY, FY2022 and the previous two fiscal years.

Wastewater Conveyance Cost of Service Allocation and Rate Design Methodology Exhibits:

a. **HJS-1WW FPFTY Wastewater Conveyance Revenue Requirements:** This schedule shows the wastewater conveyance revenue requirements that must be recovered from the various rates and charges assessed by PWSA.

b. **HJS-2WW Assignment to Functional Categories:** This schedule shows the way in which the FPFTY revenue requirements are allocated to different functional categories.

c. **HJS-3WW Allocation to Cost Categories:** This schedule shows the way in which the FPFTY revenue requirements are allocated to different cost of service categories.

d. **HJS-4WW Allocation Factor Summary:** This schedule provides a summary of the factors used to assign costs to functional categories and to allocate costs to the cost of services categories and to customer classes.

e. **HJS-5WW Allocation Factor Detail:** This shows the derivation of the allocation factors presented in Schedule HJS-4WW.

f. **HJS-6WW Wastewater Conveyance Units of Service:** Projected wastewater flow for each customer class are shown on this schedule.

g. **HJS-7WW Wastewater Conveyance Unit Cost of Service:** This schedule shows the calculation of the unit costs of providing service to meet the demands placed on the wastewater conveyance system as well as the unit cost of the various components of the Minimum Charge.

h. **HJS-8WW Cost Distribution to Customer Classes:** The allocation of categorized costs to customer classes based on their demand characteristics is shown on this schedule.

i. **HJS-9WW Adjustments to Allocated Cost of Service:** This schedule shows the adjustments PWSA is required to make to the allocated cost of service by customer class.

j. **HJS-10WW Rate Design:** This schedule demonstrates the calculation of the Minimum Charges and Volumetric Charges under both Cost of Service and Adjusted Cost of Service.

k. **HJS-11WW Proposed Rates:** This schedule shows the proposed wastewater conveyance Minimum Charges and Volume Charges for each customer class and the percent change that the proposed charges represent over existing rates.

l. **HJS-12WW Comparison of Revenues by Customer Class:** This schedule provides a comparison of revenue generated from each customer class under both the existing and proposed rates. Also shown is the percent difference between revenues under existing and proposed rates. This schedule also provides a comparison of revenue by class with the indicated class cost of service and adjusted cost of service.

m. **HJS-13WW FPFTY CCOS Comparison – Wastewater Conveyance:** This schedule summarizes the differences in revenue at existing rates, revenue at proposed rates, and the adjusted cost of service.

n. **HJS-14WW Typical Bill Comparison:** This schedule provides a comparison of typical monthly bills under the existing and proposed rates for typical customers from each customer class.

o. **HJS-15WW Revenue Proof:** This schedule provides a summary of the revenue requirements and revenue to be recovered under both the Cost of Service rates and proposed rates.

p. **HJS-16WW Projected Units of Service:** This schedule summarizes consumption data for each of PWSA's customer classes for the HTY, FTY, FPFTY and the previous two fiscal years.

q. **HJS-17WW FY2022 Wastewater Conveyance Revenue Requirements:** This schedule shows the wastewater conveyance revenue requirements that must be recovered from the various wastewater conveyance rates and charges assessed by PWSA for FY2022.

r. **HJS-18WW Proposed FY2022 Rates:** This schedule shows the proposed wastewater conveyance Minimum Charges and Volume Charges for each customer

class, Fire System Charges, and the percent change that the proposed FY2022 charges represent over proposed FPFTY (2021) rates.

s. **HJS-19WW FY2022 Revenue Proof:** This schedule provides a summary of the revenue to be recovered under both the FPFTY (2021) rates and proposed FY2022 rates. Additionally, this schedule shows the determination of the base rate revenue increase needed to meet full wastewater conveyance system revenue requirements.

t. **HJS-20WW Typical Bill Comparison:** This schedule provides a comparison of typical monthly bills under the FPFTY (2021) rates and proposed FY2022 rates for typical customers from each customer class.

u. **HJS-21WW Projected Units of Service:** This schedule summarizes consumption data for each of PWSA's customer classes for the HTY, FTY, FPFTY, FY2022 and the previous two fiscal years.

III. ALLOCATION OF TOTAL SYSTEM REVENUE REQUIREMENTS

Q. WHAT IS THE LEVEL OF TOTAL SYSTEM REVENUE REQUIREMENTS?

A. Ms. Presutti's and Mr. Barca's testimonies support PWSA's revenue requirements for the total system. The total system revenue requirements for the FPFTY is $225.8 million and for fiscal year (FY) 2022 is $241.3 million, as shown on Schedules HJS-1 and HJS-2, respectively.

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

A. The revenue requirements are designated as water only, wastewater conveyance only, or allocated between water and wastewater conveyance based on a set of allocation factors. As PWSA steps closer to establishing a stormwater fee, the allocation of total revenue requirements to stormwater service is also incorporated into this allocation analysis. However, it is important to note that on Schedules HJS-1 and HJS-2, wastewater conveyance (in this case is sanitary sewer) and stormwater will be combined to determine

the total wastewater conveyance service revenue requirements and used to establish wastewater conveyance rates and charges since no stormwater fee will be established at this time.

As shown on HJS-1, the City Services payment to the City in FY 2021 is approximately $4.3 million. The services provided by the City provide benefit to PWSA and its customers in a number of different operating categories. In order to ensure that these costs are appropriately allocated for recovery in PWSA's various rates and charges, these costs were distributed to the operating departments as shown on Schedule HJS-4.

The allocation of total system revenue requirements after redistributing the City Services costs to water and wastewater conveyance for the FPFTY and for FY2022 are shown on Schedules HJS-5 and HJS-6, respectively.

Q. WHAT COSTS ARE DESIGNATED AS WATER ONLY?

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

Q. WHAT COSTS ARE DESIGNATED AS WASTEWATER CONVEYANCE ONLY?

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

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

A. The remaining costs are allocated using a set of allocation factors. The allocation factors used in the establishment of utility service revenue requirements are summarized on Schedule HJS-3 and described in detail on Schedules HJS-5W/5WW.

The majority of Administrative Division expenses were allocated between water and wastewater conveyance based on each utility's proportionate share of operations costs.

The only exception is Customer Service, which is allocated based on the projected number of bills for each utility.

Under the Operations Division, most costs are allocated as 100% water or wastewater conveyance. The exceptions are:

- Environmental Compliance, which is allocated based on PWSA staff's determination of time spent on activities;
- Warehouse, which is allocated based on operations factors;
- Engineering and Construction is allocated based on the CIP.

Existing debt is allocated by fixed assets. Proposed debt and PAYGO are allocated by the capital plan and known sources and uses. Costs of transfers to reserves are allocated based on FPFTY rate revenue between water and wastewater conveyance.

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

A. Yes. As previously mentioned, the breakdown is presented on Schedules HJS-1 and HJS-2, which show PWSA's total revenue requirements allocated between water, wastewater conveyance and stormwater. These costs were derived using the allocation factors provided in HJS-3. The allocation factors were applied to the total system revenue requirements in some cases and to only the wastewater conveyance costs in other cases, as shown in the allocation tables. This breakdown is provided for informational purposes only since PWSA is not seeking approval for a stormwater fee as part of this filing. It is important to note that the wastewater conveyance revenue requirements used for this filing is the sum of wastewater conveyance and stormwater columns, as shown on HJS-5 and HJS-6 for the FPFTY and FY2022, respectively. As such, the wastewater

conveyance fees proposed at this time are designed to recover the costs related to both the conveyance of sanitary waste and stormwater.

It is also important to note that while we have identified approximately $21.6 million of stormwater related costs in the FPFTY and $24.7 million in FY2022, we are not suggesting the levels of revenue requirement for the basis of a stormwater fee would be $21.6 million and $24.7 million. The cost of service analysis will be updated at the time of a stormwater tariff filing that includes a fee. This filing is tentatively scheduled for the third or fourth quarter of 2020 but may change based on PWSA's or the PUC's direction. Additionally, the stormwater revenue requirement for the FPFTY may not include all the costs that would be necessary when a stormwater fee is implemented. For example, additional capital costs may be incorporated at the time of implementation of a fee.

IV. WATER COST ALLOCATION

Q. WHAT IS THE LEVEL OF REVENUE REQUIREMENTS TO BE RECOVERED BY WATER RATES AND CHARGES?

A. Ms. Presutti's and Mr. Barca's testimonies support PWSA's total revenue requirements, and HJS-5 supports the allocation of total revenue requirements for water service. As shown on HJS-1W, the total water system revenue requirements for the FPFTY is $146.7 million. A portion is projected to be recovered by a proposed Distribution System Improvement Charge (DSIC) at 10% of water revenues,[4] which will be used to fund capital projects as outlined in Mr. King's and Mr. Barca's testimony. The water system revenue requirements net of DSIC are $134.0 million.

[4] PWSA filed a Petition seeking approval of a DSIC on March 3, 2020 at Docket No. P-2020-3019019. PWSA is also requesting that the Commission consolidate the Petition with this proceeding.

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

A. Costs are allocated in a manner consistent with the methodology described in the American Water Works Association (AWWA) Manual M-1 "Principle of Water Rates, Fees and Charges" using the Base/Extra Capacity cost allocation methodology which is a three step process that involves first assigning costs to functional categories, then assigning the costs from each functional category to Base/Extra Capacity cost categories based on system demand characteristics and then allocating the Base/Extra Capacity cost categories to customer classes based on customer class demand patterns.

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

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

- Supply
- Treatment
- Storage
- Transmission
- Distribution
- Meters
- Billing
- Fire Protection
- Administrative Support

As shown on HJS-1W, the FPFTY water operating and maintenance (O&M) expenses are accounted for in a manner consistent with PWSA's O&M budget. With the exception of Customer Service, Water Distribution and Engineering & Construction, all of the budget divisions relate directly to one functional category. As shown on HJS-2W, costs

that are incurred in support of only one function are assigned directly to that function, while costs that are incurred in support of two or more functions are assigned to functions using allocation factors that reflect the way a particular budget division supports each function. The allocation factors used to assign costs to functional categories are listed and described on Schedules HJS 4W and 5W. Schedules HJS 4W and 5W also shows allocation factors used to allocate costs to Base/Extra Capacity cost categories as described later.

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

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

Q. HOW ARE WATER DISTRIBUTION COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. Since the Water Distribution division supports both the Transmission and Distribution functions, Water Distribution costs are assigned to functional categories using factor W-D. This factor was developed based on an analysis of the water pipe inventory as shown on Schedule HJS-5W.

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

A. The Engineering & Construction division is responsible for planning and executing PWSA's capital projects; therefore, the division's costs are allocated using factor W-J which is based on the composition of the utility's CIP as shown on HJS-5W.

Q. HOW ARE CAPITAL COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. PWSA's capital costs consist of three components: (1) Internally Generated Fund/PAYGO funded capital projects; (2) debt service; and (3) contributions to reserves. To properly assign these costs to Base/Extra Capacity cost categories they must first be assigned to functional categories. With the exception of debt service, all water capital costs are assigned to functions based on the make-up of the fixed assets that currently comprise PWSA's water system. This process involved assigning each of PWSA's fixed assets to the appropriate functional category and determining the percentage of the total value of the assets that is assigned to each function. These percentages are then applied to the capital costs to determine the appropriate distribution of capital costs across the functional categories. Schedule HJS-2W shows the break-down of fixed assets by functional categories and the resulting allocation of water capital costs to functional categories.

Q. HOW IS DEBT SERVICE ASSIGNED TO FUNCTIONAL CATEGORIES?

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

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

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

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

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

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

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

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

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

- The Maximum Day allocation factor (W-BB) recognizes the way in which costs are incurred to meet the peak day demands placed on the system by all of the customer classes. This factor also allocates a small portion of costs to which it is applied to Fire protection in recognition of the potential peak demand that fire protection could place on the system. This allocation factor is based on plant production data and is developed by dividing average day plant production by peak day plant production.
- The Peak Hour allocation factor (W-CC) was developed in the same way as the Maximum Day allocation factor except that average day plant production is divided by the peak hour plant production. Similar to factor W-BB, this factor also allocates a small portion of costs to Fire Protection in recognition of the potential peak demands that fire protection places on the system.
- The Customer-Meters allocation factor (W-DD) simply allocates all meter related costs to the meter component of the Minimum Charge.
- The Customer-Billing allocation factor (W-EE) allocates all billing related costs to the billing component of the Minimum Charge.
- The Fire Protection allocation factor (W-FF) assigns all costs it is used to allocate to the Fire Protection category in recognition that these costs are incurred to meet

the potential demands placed on the system by the public fire protection system and private fire connections.

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

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

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

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

A. In addition to Allocation Factor W-BB, which is used to allocate approximately 21.5% of the water revenue requirements, the two factors used to allocate the majority of the revenue requirements are Allocation Factors W-CC and W-GG.

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

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

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

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

A. As demonstrated on Schedule HJS-8W, the revenue requirements from each cost category are used to determine the unit cost of providing service to meet both average day and peak demands. For example, approximately $72.3 million in water revenue requirements were allocated to the Base cost category. This amount is reduced by approximately $1.7 million to reflect revenue from miscellaneous revenue, resulting in approximately $70.6 million in Base revenue requirements to be recovered through retail and wholesale rates. This amount is used to determine the unit cost to meet average day demand for retail classes and the wholesale class. For example, the unit cost for average day demand for retail classes is determined by first taking the net revenue requirement of $70.6 million less $12.5 million for Distribution related costs (which wholesale isn't responsible for) and dividing by the FPFTY projected water sales volume to arrive at a unit cost for average day demand for all costs except Distribution related costs. The Distribution related costs of $12.5 million are divided by the FPFTY projected water sales volume for retail classes only and the two sub unit costs are combined to arrive at the retail classes' unit cost to meet average day demand of $8.36 per kgal. This unit cost

is then multiplied by each class' projected annual water sales volume required to meet average day demand to arrive at the amount of Base costs to be recovered from each retail class, as shown in HJS-9W. For example, the Residential class is projected to purchase approximately 2.7 million kgal to meet its average day demands. This amount is multiplied by the unit cost of $8.36 to arrive at the total Base costs to be recovered from the Residential class. The same process is applied to the wholesale class but with a reduced unit cost of average day demand of $6.75, reflecting the removal of the Distribution related costs.

This process is repeated for each of the Base/Extra Capacity cost categories and customer classes to arrive at the total costs to be recovered from each class.

Q. ARE COSTS ALLOCATED TO THE WHOLESALE CUSTOMERS?

A. Yes, as was agreed in the Initial Rate Case Settlement Agreement, costs have been allocated to the Wholesale customer class as shown on HJS-9W. As shown, the Wholesale class is allocated an appropriate share of Base, Max Day and Max Hour costs based on their demand characteristics.

Q. ARE ANY ADJUSTMENTS MADE TO THE CLASS COST OF SERVICE?

A. Yes. Adjustments to class cost of service were based on several factors, including rate case settlement items, negotiated agreements with the City of Pittsburgh and other entities, bad debt and customer assistance program forgone revenue.

Q. WHAT ADJUSTMENTS WERE MADE TO THE ALLOCATED WATER COST OF SERVICE BY CUSTOMER CLASS?

A. PWSA is required to make six adjustments to the cost of service allocated to each customer class. Five of these adjustments are shown on Schedule HJS-10W and the sixth is on HJS-11W. The adjustments are described below:

1. **Public Fire Protection** – PWSA is required to reduce the costs allocated to public fire protection for two reasons. First, PWSA is limited in only recovering 25% of public fire costs based on 66 Pa. C.S. § 1328. Second, per PWSA's revised Cooperation Agreement with the City of Pittsburgh, PWSA has agreed to "phase-in" charges for public fire service based on an increasing scale of 20% per year over five years (20% in 2020, 40% in 2021, 60% in 2022, 80% in 2023, and 100% in 2024).[5] Public fire costs that cannot be recovered through hydrant charges are reallocated among customer classes by billed demand.
2. **Wholesale Contracts** – While rates that reflect the full cost of service for Wholesale customers are developed in this rate filing, PWSA currently maintains separate contracts for wholesale water service with each of their existing wholesale customers. Rates are set per each agreement and are unable to be changed until the contracts expire or are due for renewal. At this time, PWSA is unable to modify any rates with existing customers beyond what is legally allowed in the individual agreements. As such, costs that were allocated to wholesale service that PWSA is unable to recover through wholesale rates are allocated among retail customers by billed demand.
3. **City of Pittsburgh Phase-In** – As stated above, PWSA has agreed to "phase-in" charges for water service based on an increasing scale of 20% per year over five years. As such, costs allocated to Municipal customers are reduced by 60% and those costs must be recovered from the other retail customer classes.
4. **City of Pittsburgh Unmetered Properties** – PWSA has agreed to not assess the City of Pittsburgh flat charges for unmetered properties until 2024. Costs allocated to these connections have been redistributed among the other customer classes based on billable flow.
5. **Bad Debt Expense** – The CCOSS introduces Bad Debt Expense with the other adjustments on Schedule HJS-10W since it must be allocated directly to customer classes. Bad Debt Expense is allocated among the customer classes based on each class' historical contribution for such costs.

[5] *See* PWSA Exh. DML01 for a copy of the revised Cooperation Agreement.

6. **Customer Assistance Program** – The cost of the Customer Assistance Program is allocated among customer classes based on the composite cost of service for each class, as shown on Schedule HJS-11W.

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

A. Typically, demand projections would be based on at least three years of historical billing data. However, since data from 2017 contains unexplained anomalies and PWSA is seeing a significant decline in consumption year-over-year since 2017, billing data from FY2018 and FY2019 was the basis for our demand projections in the CCOSS.

Q. PLEASE EXPLAIN HOW THE FY2018 AND FY2019 DATA WAS USED TO DEVELOP THE DEMAND PROJECTIONS.

A. FPFTY demand by class was set equal to the average annual demand exhibited by each class based on averaging annual demand by class in 2018 and 2019. PWSA has been experiencing a decline in customer demand since 2017 at approximately 6% per year in aggregate. While this appears to be a trend, PWSA has elected to honor the request of developing forecast demand based on averaging of years. Therefore, as stated, forecasted FPFTY annual demand represents the two-year average.

Modifications were made to the Residential and CAP classes to reflect the ramp up of CAP customers based on improved participation in the bill discount program to approximately 3,000 water customers in 2021. Residential bills and demand are reduced by the corresponding bills and demand associated with the incremental increase in CAP participation. No other modifications were made. While PWSA anticipates installing meters for City accounts that are currently unmetered, no modifications were made to the forecast of municipal demand because of the uncertainty of the timing, size or flow of the accounts added.

The average day demand for each class was then determined by dividing each class' projected annual demand by 365 days. In order to determine the units of service for allocating base/extra capacity costs between customer classes, peaking factors were developed that recognize the level of peak demands placed on the system by each customer class. PWSA customer class data from 2017-2019 was used to establish peaking factors by customer class. It is important to note that the Industrial class peaking factor has been adjusted to represent the peaking factor for the largest Industrial customer. The basis for this adjustment is that the three-year average for the Industrial class resulted in a peaking factor more than 40% higher than the previous filing and did not align with typical industrial class behavior. That would have shifted a significant amount of costs to the Industrial class that is likely a one-time result. Therefore, we examined the peaking factor of the largest customer, which was within 7.3% of the previous peaking factor, and thus, we used that factor as a proxy for the class as a whole.

We calculated Maximum Month to Average Day factors for each class as shown on HJS-6W. These factors were then adjusted by a system Maximum Day to Maximum Month factor (1.29) which was derived using a three-year average of PWSA water treatment plant production data for 2017-2019. Multiplying those two factors together provided Maximum Day peaking factors for each class. In order to estimate peak hour factors, we utilized an estimated Maximum Hour to Maximum Day factor which was 1.33 for industrial and 1.66 for all other customer classes. This factor was utilized to recognize that industrial customers have stable usage patterns and typically exhibit lower peak usage. Multiplying the estimated Maximum Hour to Maximum Day factor by the

Maximum Day factor provided the Maximum Hour peaking factor. FPFTY demands and historical demand data are shown on HJS-17W.

V. WATER RATE DESIGN

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

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

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

- Residential,
- Residential CAP,
- Commercial,
- Industrial,
- Health or Education,
- Fire, and
- Wholesale

PWSA does assess a monthly Fire System Charge to non-residential customers with fire suppression systems connected to PWSA's water system. Additionally, PWSA does not currently assess public fire protection charges but intends to do so in the future by incorporating a public fire protection charge in this water tariff.

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

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

A. Not at this time. In the Initial Rate Case Settlement Agreement, PWSA agreed to explore options for the removal of the Minimum Allowance but determined that doing so at this point would create a number challenges that could likely be avoided by delaying the change to a future filing.

Q. PLEASE EXPLAIN THE CHALLENGES CREATED BY REMOVING THE MINIMUM ALLOWANCE FROM THE RATE STRUCTURE.

A. First, removing the Minimum Allowance from the rate structure would result in a significant drop in total fixed revenue for PWSA. Since the Minimum Charge includes the recovery of the cost to provide the Minimum Allowance, the Minimum Charge currently generates approximately 36.1% of PWSA's water and wastewater conveyance user charge revenue. If the Minimum Allowance is eliminated and the costs of providing the allowance are removed from the Minimum Charge, PWSA's fixed revenue would drop by over 70% to approximately 9.7%. Putting a greater amount of PWSA's revenue collection subject to annual water volumes places more of PWSA's revenues at risk and could create serious cash flow issues for the Authority. Second, removal of the Minimum Allowance would result in adverse bill impacts for a significant number of PWSA's non-residential customers.

Q. CAN YOU EXPLAIN WHAT YOU MEAN BY ADVERSE BILL IMPACTS?

A. Yes, this a subjective measure that looks at the relationship between the actual impact to a customer's typical bill and the overall revenue adjustment that a utility is seeking. If the percent change to a customer's bill is approximately 1.5 times or more different that the overall percent revenue that the utility is seeking it is considered to be adversely impacted. For example, for this filing PWSA is seeking a 25.4% increase in combined water and wastewater conveyance rate revenue. Therefore, any customer whose typical monthly water and wastewater conveyance bill would change by more than 1.5 times 25.4% (38.1%) would be considered to be impacted adversely.

As shown in the table below, removal of the Minimum Allowance results in the percentage of non-residential bills that will experience above a 40% combined water and wastewater conveyance bill, which is approximately 1.5 times the overall increase, to increase from 1.8% to 27.2%. More than one quarter of the non-residential bills will see a greater than 40% increase in their monthly bill. Additionally, by removing the minimum, more than 10% of residential customers will see a greater than 30% increase in their monthly bill. These impacts are mitigated by retaining the existing rate structure.

	Proposed Rates				Minimum Allowance Removal			
% Increase on Customer Bill	Residential	%	Non-Residential	%	Residential	%	Non-Residential	%
Bill Decrease	4,586	0.6%	-	0.0%	91,370	11.6%	28,681	32.8%
0-20%	507,283	64.4%	43,328	49.5%	111,995	14.2%	8,840	10.1%
20-30%	276,052	35.0%	17,770	20.3%	501,488	63.6%	10,085	11.5%
30-40%	-	0.0%	24,772	28.3%	72,759	9.2%	16,074	18.4%
>40%	-	0.0%	1,612	1.8%	10,309	1.3%	23,802	27.2%
Total Bills	787,921	100.0%	87,482	100.0%	787,921	100.0%	87,482	100.0%

Q. ARE THERE OTHER CHALLENGES THAT WOULD ARISE IF PWSA ELIMINATED THE MINIMUM ALLOWANCE AT THIS TIME?

A. Yes, the third challenge created by removal of the Minimum Allowance is related to the second. A very large portion of customers participating in PWSA's Bill Discount Program (BDP) would see bill increases well in excess of 1.5 times the overall revenue increase because the resulting fixed charge is significantly reduced, which is the basis for the BDP. Therefore, to provide customers participating in the BDP a similar level of discount, PWSA would have to completely overhaul how it currently assesses the discount. This is not an insurmountable task, but it is just one more challenge that PWSA would have to face and put in place the appropriate outreach to re-educate participating customers about how their BDP will be significantly changing.

Q. HOW ARE THE MINIMUM CHARGES CALCULATED?

A. As shown on Schedule HJS-11W the Minimum Charges are comprised of four components: the Meter component, the Billing component, the Readiness-to-Serve component and the Usage component.

Q. HOW IS EACH OF THESE COMPONENTS CALCULATED?

A. The Meter component is calculated by dividing all costs allocated to the Meter category by the number of 5/8" equivalent meters in the system to determine a cost per 5/8" equivalent meter. The meter size specific service charges are determined by then multiplying the cost per 5/8" equivalent meter by the appropriate AWWA meter equivalency ratio (shown on HJS-5W) to determine the appropriate charge for each meter size.

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

The Readiness-to-Serve component is calculated by dividing all of the costs allocated to the Meter category by the number of 5/8" equivalent meters in the system to determine a cost per 5/8" equivalent meter. The meter size specific Readiness-to-Serve charges are determined by then multiplying the cost per 5/8" equivalent meter by the appropriate AWWA meter equivalency ratio to determine the appropriate charge for each meter size. The Usage component is used to recover the costs of providing the volume allowance included in the Minimum Charge. It is calculated, as shown on Schedule HJS-11W, by multiplying the allowance for each meter size by the retail volumetric unit cost. For example, accounts with a ¾" meter receive a 2 kgal/month allowance. Therefore, the Usage component for a ¾" meter is equal to 2 kgal times the volumetric unit cost of $13.54, or $27.08.

Once each of the four components of the Minimum Charge are calculated, they are added together to arrive at the Minimum Charge for each meter size. For example, the proposed Minimum Charge for an account with a ¾" meter is $45.46/month. This charge is comprised of a metering component of $3.55, plus a billing component of $2.00, plus a Readiness-to-Serve component of $12.83, plus a usage component of $27.08. The resulting amount is then rounded up to the nearest cent. This process is demonstrated on HJS-11W and the proposed Minimum Charges are shown on HJS-12W. HJS-12W also provides a comparison of the proposed Minimum Charges to the existing Minimum Charges.

Q. HOW ARE VOLUME CHARGES CALCULATED?

A. Volumetric charges are calculated by dividing the total of the base and extra capacity costs allocated to each customer class, adjusted based by the adjustment factors described above and net of revenues provided by the assessment of the minimum charges, by the

projected FPFTY consumption of that customer class as demonstrated on HJS-11W. For example, the rate for the commercial class is determined by dividing the total adjusted base and extra capacity costs allocated to the commercial class, net of the revenues provided by the minimum charge, by projected commercial class consumption in the FPFTY to arrive at the consumption rate. The resulting value, rounded to the nearest cent, is the proposed rate for the commercial class. HJS-11W shows the calculation of volumetric rates and HJS-12W shows the proposed Volume Charges as well as a comparison of the proposed charges to the existing charges.

As a reminder, the wholesale rate will only be applicable to new wholesale customers while existing contracts remain in effect for current wholesale customers. Additionally, the metered City accounts will be paying a rate equivalent to the Commercial class, but both the water rates, wastewater conveyance rates and public fire charges will be assessed at 40% of the full rate for 2021 and 60% of the full rate for 2022 per the Cooperation Agreement with the City of Pittsburgh.[6]

Q. DOES PWSA ASSESS FIRE PROTECTION CHARGES?

A. Monthly fixed Fire System charges are assessed to non-residential customers that have private fire suppression systems connected to PWSA's system. PWSA also assesses a Volumetric Charge for all water used by all fire system customers for purposes other than firefighting. PWSA is implementing Public Fire Protection charges for the first time in this Water Tariff.

[6] *See* PWSA Exh. DML01 for a copy of the revised Cooperation Agreement.

Q. HOW ARE THE FIXED FIRE SYSTEM CHARGES CALCULATED?

A. Like the Minimum Charges, Fire System Charges are comprised of four components: the Meter component; the Billing component; the Readiness-to-Serve component; and the Fire component. The Billing and Readiness-to-Serve components are calculated in the same manner as for the Minimum Charge but derived for meters larger than 5/8". The Fire component is calculated by dividing the costs allocated to the Fire Protection cost category by the number of 5/8" meter equivalents represented by the projected number of fire suppression connections and hydrant connections during the FPFTY. The Fire System Charge for each group of meter sizes is the sum of the four components for each group of meter sizes.

Q. PLEASE EXPLAIN WHY METERS ARE GROUPED FOR FIRE SYSTEM CHARGES.

A. The fire system charge is based on four groupings of meter sizes, which were used when Raftelis first developed water rates for PWSA in 2016. The exact origin of these groupings are not known, but we have continued to use these groupings in the interest of rate stability.

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

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

Q. HOW ARE PUBLIC FIRE PROTECTION CHARGES CALCULATED?

A. Public Fire Protection Charges are assessed on a per hydrant basis, and each hydrant is set at the equivalent of a six-inch meter, which is standard in the water industry. The

Public Fire Protection Charges are first calculated based on the allocated fire costs for a six-inch meter. In accordance with 66 Pa. C.S. § 1328 they are then adjusted so that only 25% of public fire protection costs are assessed in the form of a Public Fire Protection Charge. For this Water Tariff, Public Fire Protection Charges will be further adjusted downward based on PWSA's revised Cooperation Agreement with the City of Pittsburgh, which stipulates that PWSA will "phase-in" charges for public fire service based on an increasing scale of 20% per year over five years (20% in 2020, 40% in 2021, 60% in 2022, 80% in 2023, and 100% in 2024).

Q. AT WHAT LEVEL IS THE DSIC BEING INCORPORATED INTO THE RATE PACKAGE?

A. PWSA is seeking a 10% DSIC as detailed in Mr. Barca's testimony. This is included on Schedule HJS-12W and is a new rate component in 2021.

Q. DO THE PROPOSED CHARGES GENERATE REVENUE BY CLASS THAT IS CONSISTENT WITH EACH CLASS' ADJUSTED COST OF SERVICE AS INDICATED BY THE CCOSS?

A. Yes, as shown on HJS-14W, the revenue generated by each class is consistent with the costs assigned to each class.

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

A. Yes, Schedule HJS-15W shows example monthly bills under existing and proposed rates and the percentage impacts that are likely to occur for typical customers in each class. For a typical residential customer using 3 kgal per month, their monthly water bill would increase from $49.35 to $58.15 which represents a 17.8% increase.

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

A. Schedule HJS-16W serves as a revenue proof to determine revenue sufficiency of the proposed rates and charges. The revenues that would be generated under the proposed rates and charges are shown along with the anticipated revenue from the DSIC. As shown on this schedule, revenue generated by the proposed rates and charges recovers the full water system revenue requirements.

VI. WATER BASE RATES FOR FISCAL YEAR 2022

Q. IS PWSA REQUESTING A RATE ADJUSTMENT FOR FISCAL YEAR 2022?

A. Yes. PWSA is seeking a two-year set of base rate adjustments in accordance with the Public Utility Code, 66 Pa.C.S. § 1330(b), and the guidance provided in the Commission's subsequent Implementation Order.[7] The fully projected future test year of fiscal year (FY) 2022 is hereafter referenced as FY2022

Q. HAVE THE TOTAL REVENUE REQUIREMENTS FOR FY2022 BEEN DETERMINED?

A. Yes. Ms. Presutti's and Mr. Barca's testimonies support PWSA's total revenue requirements for FY2022, and HJS-6 supports the allocation of total revenue requirements for water service for FY2022. As shown on HJS-18W, the total water system revenue requirements for FY2022 is $155.1 million. A portion is projected to be recovered by the DSIC, assumed to be approved and implemented at 10% of water revenues. The water system revenue requirements net of DSIC are $141.7 million.

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7 *Implementation of Act 58 of 2018 Alternative Ratemaking for Utilities*, Docket No. M-2018-3003269, Implementation Order entered April 25, 2019.

Q. HAS A DIFFERENT APPROACH BEEN TAKEN TO DEVELOP RATES IN FY2022?

A. Yes. As previously described, a comprehensive cost of service analysis was conducted to develop rates for the FPFTY (2021). This analysis included cost functionalization, allocation to demand factors, analysis of units and equivalent units of service, evaluation of class cost of service, and the development of the Minimum Charge by meter size and Volumetric Rates by class. Given that analysis was performed for the FPFTY, an across-the-board (ATB) increase to all water rates based on the identified level of additional base rate revenue needed is proposed for FY2022. In other words, the Minimum Charge and the Volumetric rates for all classes will be increased by the same percentage to recover the identified revenue need.

Q. HAS THE BASE RATE REVENUE ADJUSTMENT FOR FY2022 BEEN EVALUATED?

A. Yes. Schedules HJS-19W and HJS-20W show the determination of the base rate revenue requirement and the development of the FY2022 rates. Schedule HJS-19W shows the FPFTY (2021) rates and FY2022 rates after a 5.1% increase in base rates. Schedule HJS-20W serves as a revenue proof to determine revenue sufficiency of the proposed rates and charges. At the bottom of Schedule HJS-20W the determination of the 5.1% increase needed for base rates is shown to meet the full water system revenue requirements for FY2022.

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

A. Yes. Since the rate revenue need is proposed as an ATB increase, all customers should experience a 5.1% increase in their monthly bills (rounding of rates to the nearest cent may cause slight variations). Schedule HJS-21W shows those anticipated results by

presenting example monthly bills under the FPFTY (2021) and proposed rates of FY2022 and the percentage impacts that are likely to occur for typical customers in each class. For a typical residential customer using 3 kgal per month, their monthly water bill would increase from $58.15 to $61.11 which represents a 5.1% increase.

Q. HAS ANY MODIFICATION BEEN MADE TO THE UNITS OF SERVICE PROJECTION FOR THE FY2022?

A. No. The billing and consumption water service units for all meters and all classes were held constant, or level from the FPFTY (2021) to FY2022, as shown in HJS-22W. The only change is not a units of service change but a change in the phase-in factor for City charges and public fire protection charges, anticipated at 40% in the FPFTY (2021) to 60% in FY2022 based on PWSA's revised Cooperation Agreement with the City of Pittsburgh, which stipulates that PWSA will "phase-in" charges for water service and public fire service based on an increasing scale of 20% over five years (20% in 2020, 40% in 2021, 60% in 2022, 80% in 2023, and 100% in 2024).

Q. WHAT CONSIDERATION HAS BEEN GIVEN AS TO WHETHER THE REVENUES FROM THE RATES AND CHARGES ARE SUFFICIENT TO COVER REVENUE REQUIREMENTS FOR PWSA FOR FY2022?

A. As previously introduced, Schedule HJS-20W serves as a revenue proof to determine revenue sufficiency of the proposed rates and charges. The revenues that would be generated under the proposed rates and charges are shown along with the anticipated revenue from the DSIC. As shown on this schedule, revenue generated by the proposed rates and charges recovers the full water system revenue requirements for FY2022.

VII. WASTEWATER CONVEYANCE COST ALLOCATION

Q. WHAT IS THE LEVEL OF REVENUE REQUIREMENTS TO BE RECOVERED BY WASTEWATER CONVEYANCE RATES AND CHARGES?

A. Ms. Presutti's and Mr. Barca's testimonies support PWSA's total revenue requirements for wastewater conveyance service, and HJS-5 supports the allocation of total revenue requirements for wastewater conveyance service. As shown on HJS-1WW, the total wastewater conveyance system revenue requirements for the FPFTY is $79.1 million. A portion is projected to be recovered by a Distribution System Improvement Charge (DSIC) at 10% of wastewater conveyance revenues, which will be used to fund capital projects as outlined in Mr. King's and Mr. Barca's testimony. The wastewater conveyance system revenue requirements net of DSIC are $72.2 million.

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

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

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

A. The process of assigning costs to functional categories allows costs to be recovered from customer classes based on the way that PWSA utilizes the resources within each function

to meet the demands of each customer class. The functions to which costs are assigned are:

- Conveyance & Collection
- Meters
- Billing
- Administrative Support

Similar to the water expenses, the FPFTY operating and maintenance (O&M) expenses are accounted for in a manner consistent with PWSA's O&M budget. The wastewater conveyance revenue requirements are shown on HJS-1WW. With the exception of Customer Service, all of the budget divisions relate directly to one functional category. As shown in Schedule HJS-2WW, costs that are incurred in support of only one function are assigned directly to that function, while costs that are incurred in support of two or more functions are assigned to functions using allocation factors that reflect the way a particular budget division supports each function. The allocation factors used to assign costs to functional categories are listed and described on Schedules HJS 4WW and 5WW.

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

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

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

A. The Engineering & Construction division is responsible for planning and executing PWSA's capital projects; therefore, as was the case with the water expenses, the

division's costs are allocated based on the composition of the utility's CIP. Unlike the water CIP, all of the wastewater conveyance projects are related to the improvement, repair, replacement and expansion of the wastewater conveyance and collection system; therefore, all of the Engineering & Construction expenses are allocated to Conveyance & Collection as shown on Schedule HJS-2WW.

Q. HOW ARE CAPITAL COSTS ASSIGNED TO FUNCTIONAL CATEGORIES?

A. PWSA's capital costs consist of three components: (1) Internally Generated Funds/PAYGO funded capital projects; (2) debt service; and (3) contributions to reserves. To properly assign these costs to cost categories they must first be assigned to functional categories. All capital costs are assigned to functions based on the make-up of the fixed assets that currently comprise PWSA's wastewater conveyance system. This process involved assigning each of PWSA's fixed assets to the appropriate functional category and determining the percentage of the total value of the assets that is assigned to each function. These percentages are then applied to the capital costs to determine the appropriate distribution of capital costs across the functional categories. Schedule HJS-2WW shows the break-down of fixed assets by functional categories.

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

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

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

A. O&M and capital costs are assigned to one or more of four cost categories based on how costs are incurred to meet the demands of the wastewater conveyance system as a whole. The assignment of costs to the cost categories is shown on Schedule HJS-3WW,

Allocation to Cost Categories. Since all of the wastewater collected and conveyed by PWSA's wastewater conveyance system is treated at the ALCOSAN wastewater treatment facilities, the process of assigning costs to cost categories is greatly simplified because no costs need to be allocated to any of the treatment related categories addressed in WEF Manual No. 27.

The four cost categories consist of:

- **Volume** – Volume costs are those costs that are a function of the amount of wastewater that is collected and conveyed by the system
- **Meters** – Meter costs are the costs associated with installing, maintaining, repairing and replacing water meters. While the water meters are not used to measure wastewater flow, the water flow measured by the meters serves as a proxy for the volume of wastewater discharged by each customer and therefor the meters serve a vital role in the process of assessing wastewater conveyance charges to PWSA's customers.
- **Billing** – Billing costs are those costs associated with billing PWSA wastewater conveyance customers for wastewater collection and conveyance.
- **Readiness-to-Serve** – Readiness-to-serve costs are the fixed costs associated with the utility's investment in facilities to provide capacity that must be recovered regardless of the amount of wastewater that is discharged into the system.

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

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

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

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

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

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

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

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

A. In the cost allocation model, allocation factors are applied to costs in each functional category such that costs are allocated in a way that reflects the type of demand being met by the function to which the costs have been assigned, as shown on Schedule HJS-3WW. For instance, the costs in the Collection & Conveyance function are allocated using the Allocation Factor WW-AA which allocates costs in a way that recognizes that all of the costs in this function are to some degree dependent upon the volume of wastewater

collected and conveyed by the wastewater conveyance system. Over ninety-five percent (95%) of PWSA's wastewater conveyance costs are allocated using the WW-AA allocation factor.

Q. ARE ANY ADJUSTMENTS MADE TO THE CLASS COST OF SERVICE?

A. Yes. Adjustments to class cost of service were based on several factors, including rate case settlement items, negotiated agreements with the City of Pittsburgh and other entities, bad debt and customer assistance program forgone revenue.

Q. WHAT ADJUSTMENTS WERE MADE TO THE ALLOCATED WASTEWATER CONVEYANCE COST OF SERVICE BY CUSTOMER CLASS?

A. PWSA is required to make four adjustments to the cost of service allocated to each customer class. Three of these adjustments are shown on Schedule HJS-9WW and the fourth is on HJS-10WW. The adjustments are described below:

1. **City of Pittsburgh Phase-In** – As stated previously, PWSA has agreed to "phase-in" charges for wastewater conveyance service based on an increasing scale of 20% over five years. As such, costs allocated to Municipal customers are reduced by 60% and those costs must be recovered from the other retail customer classes.
2. **City of Pittsburgh Unmetered Properties** – PWSA has agreed to not assess the City of Pittsburgh flat charges for unmetered properties until 2024. Costs allocated to these connections have been redistributed among the other customer classes by billable flow.
3. **Bad Debt Expense** – The CCOSS introduces Bad Debt Expense with the other adjustments on Schedule HJS-9WW since it must be allocated directly to customer classes. Bad Debt Expense is allocated among the customers based on their historical responsibility for such costs.
4. **Customer Assistance Program** – The cost of the Customer Assistance program is allocated among customer classes on Schedule HJS-10WW. These costs are allocated to classes based on the composite cost of service for each customer class.

Q. PLEASE EXPLAIN HOW THE FY2018 AND FY2019 DATA WAS USED TO DEVELOP THE DEMAND PROJECTIONS.

A. FPFTY demand by class was set equal to the average annual demand exhibited by each class based on averaging annual demand by class from 2018 and 2019, as shown on HJS-16WW. Modifications were made to the Residential and CAP classes to reflect the ramp up of CAP customers based on improved participation in the bill discount program to an estimated 4,500 customers in 2021. The estimated CAP customers for wastewater conveyance service is higher than water service due to more overall wastewater conveyance customers. This is because PWSA services approximately 30,000 customers that are wastewater conveyance only. Residential bills and demand are reduced by the corresponding bills and demand associated with the incremental increase in CAP participation. No other modifications were made. While PWSA anticipates installing meters for City accounts that are currently unmetered, no modifications were made to the forecast of municipal demand because of the uncertainty of the timing, size or flow of the accounts added.

VIII. WASTEWATER CONVEYANCE RATE DESIGN

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

A. PWSA's current wastewater conveyance rate structure for retail customers consists of a monthly Minimum Charge that varies by meter size and a Volume Charge that varies by customer class. The Minimum Charge is used to recover PWSA's customer costs and the cost of a wastewater usage allowance that also varies by meter size.

The Volume Charge is designed to recover PWSA's costs that vary based on customer demand as well as the portion of PWSA's fixed costs that are not recovered through the Minimum Charge. The volumetric rate per kgal of wastewater discharged varies by

customer class based on the way in which each class demands service. The water customer classes are:

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

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

A. No. As described in my testimony relating to the water rate structure, PWSA is not proposing to make any changes to the wastewater conveyance rate structure at this time.

Q. HOW ARE THE MINIMUM CHARGES CALCULATED?

A. As shown on Schedule HJS-10WW the Minimum Charges are comprised of four components: the Meter component, the Billing component, the Readiness-to-Serve component and the Usage component.

Q. HOW IS EACH OF THESE COMPONENTS CALCULATED?

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

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

The Readiness-to-Serve component is calculated by dividing all of the costs allocated to the Readiness-to-Serve category by the number of 5/8" equivalent meters in the system to determine a cost per 5/8" equivalent meter. The meter size specific Readiness-to-Serve

charges are determined by then multiplying the cost per 5/8" equivalent meter by the appropriate AWWA meter equivalency ratio to determine the appropriate charge for each meter size. None of PWSA's wastewater conveyance costs are currently recovered through the Readiness-to-Serve component.

The Usage component is used to recover the costs of providing the volume allowance included in the Minimum Charge. It is calculated, as shown on Schedule HJS-10WW, by multiplying the allowance for each meter size by the retail volumetric unit cost. For example, accounts with a ¾" meter receive a 2 kgal/month allowance. Therefore, the Usage component for a ¾" meter is equal to 2 kgal times the volumetric unit cost of $7.51, or $15.03.

Once each of the four components of the Wastewater Conveyance Minimum Charge are calculated, they are added together to arrive at the Wastewater Conveyance Minimum Charge for each meter size. For example, the proposed Wastewater Conveyance Minimum Charge for an account with a ¾" meter is $17.64/month. This charge is comprised of a metering component of $0.80, plus a billing component of $1.81, plus a Readiness-to-Serve component of $0.00, plus a usage component of $15.03. The resulting amount is then rounded up to the nearest cent.

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

A. As demonstrated on Schedule HJS-7WW, the revenue requirements from each cost category are used to determine the unit cost of providing wastewater collection and conveyance service. For example, approximately $68.2 million in wastewater conveyance revenue requirements were allocated to the Volume cost category. This amount is reduced by approximately $2.8 million to reflect revenue from miscellaneous

revenue, resulting in approximately $65.4 million in Volume revenue requirements to be recovered through retail rates. This amount is divided by the FPFTY projected billable flows (approximately 8.1 million kgal) to arrive at the unit cost of $8.29 per kgal. This unit cost is then multiplied by each class' projected billable wastewater flows to arrive at the amount of Volume costs to be recovered from each class as shown on Schedule HJS-8WW. For example, the Residential class is projected to discharge approximately 2.8 million kgal. This amount is multiplied by the unit cost of $8.29 to arrive at the total Volume costs to be recovered from the Residential class. This process is repeated for each of the customer classes to arrive at the total costs to be recovered from each class.

Q. HOW ARE WASTEWATER CONVEYANCE VOLUME CHARGES CALCULATED?

A. As shown on HJS-10WW, wastewater conveyance Volume Charges are calculated by dividing the net volumetric revenue requirements for each class by the projected volume of wastewater discharged by each class. Net volumetric revenue requirements are determined by first subtracting the revenue generated from Wastewater Conveyance Minimum Charges by each class from the total revenue requirements allocated to each class. The result is the costs that must be recovered from each class through the volume charge. For example, the rate for the Residential class is determined by dividing the net volumetric revenue requirements allocated to the Residential class ($16.2M) by the projected wastewater volume discharged by the Residential class (2.1M kgal) to arrive at the volumetric rate of $7.87 per kgal. The resulting rates and charges are shown on HJS-11WW.

As a reminder, the metered City accounts will be paying a rate equivalent to the Commercial class, but the wastewater conveyance rates will be assessed at 40% of the

full rate for 2021 and 60% of the full rate for 2022 per the Cooperation Agreement with the City of Pittsburgh.

Q. AT WHAT LEVEL IS THE DSIC BEING INCORPORATED INTO THE RATE PACKAGE?

A. PWSA is seeking a 10% DSIC as discussed in Mr. Barca's testimony. This is included on Schedule HJS-11WW and is a new rate component in 2021.

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

A. Yes, HJS-14WW shows bills under existing and proposed rates and the percentage impacts that are likely to occur for typical residential, commercial, and industrial customers. For a typical residential customer using 3 kgal per month, their monthly wastewater conveyance bill increases from $23.14 to $28.16 which represents a 21.7% increase.

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

A. HJS-15WW serves as a revenue proof to determine revenue sufficiency of the proposed rates and charges. The revenues that would be generated under the proposed rate structure are shown along with the anticipated revenue from the DSIC.

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

A. Yes. As shown in HJS-15WW, the revenues generated by the proposed rates and charges recovers the full wastewater conveyance system revenue requirements.

IX. WASTEWATER CONVEYANCE BASE RATES FOR FISCAL YEAR 2022

Q. IS PWSA REQUESTING A RATE ADJUSTMENT FOR FISCAL YEAR 2022?

A. Yes. PWSA is seeking a two-year set of base rate adjustments in accordance with the Public Utility Code, 66 Pa.C.S. § 1330(b), and the guidance provided in the Commission's subsequent Implementation Order.[8] The fully projected future test year of fiscal year (FY) 2022 is hereafter referenced as FY2022.

Q. HOW HAVE THE TOTAL WASTEWATER CONVEYANCE REVENUE REQUIREMENTS FOR FY2022 BEEN DETERMINED?

A. Ms. Presutti's and Mr. Barca's testimonies support PWSA's total revenue requirements for wastewater conveyance service for FY2022, and HJS-6 supports the allocation of total revenue requirements for wastewater conveyance service for FY2022. As shown on HJS-17WW, the total water system revenue requirements for FY2022 is $86.3 million. A portion is projected to be recovered by the DSIC, assumed to be approved and implemented at 10% of wastewater conveyance revenues. The wastewater conveyance system revenue requirements net of DSIC are $78.7 million.

Q. HAS A DIFFERENT APPROACH BEEN TAKEN TO DEVELOP RATES IN FY2022?

A. Yes. Similar to water, an across-the-board (ATB) increase to all wastewater conveyance rates based on the identified level of additional base rate revenue needed is proposed for FY2022. In other words, the Minimum Charge and the Volumetric rates for all classes will be increased by the same percentage to recover the identified revenue need.

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8 *Implementation of Act 58 of 2018 Alternative Ratemaking for Utilities*, Docket No. M-2018-3003269, Implementation Order entered April 25, 2019.

Q. HAS THE BASE RATE REVENUE ADJUSTMENT FOR FY2022 BEEN EVALUATED?

A. Yes. Schedules HJS-18WW and HJS-19WW show the determination of the base rate revenue requirement and the development of FY2022 rates. Schedule HJS-18WW shows the FPFTY (2021) rates and FY2022 rates after an 8.7% increase in base rates. Rounding of rates to the nearest cent may cause slight variations in the rate increase. Schedule HJS-19WW serves as a revenue proof to determine revenue sufficiency of the proposed rates and charges. At the bottom of Schedule HJS-19WW the determination of the 8.7% increase needed for base rates is shown to meet the full wastewater conveyance system revenue requirements for FY2022.

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

A. Yes. Since the rate revenue need is proposed as an ATB increase, we would expect all customers to experience an 8.7% increase in their monthly bills (rounding of rates to the nearest cent may cause slight variations). Schedule HJS-20WW shows those anticipated results by presenting example monthly bills under the FPFTY (2021) and proposed rates of FY2022 and the percentage impacts that are likely to occur for typical customers in each class. For a typical residential customer using 3 kgal per month, their monthly water bill would increase from $28.16 to $30.60 which represents an 8.7% increase.

Q. HAS ANY MODIFICATION BEEN MADE TO THE UNITS OF SERVICE PROJECTION FOR FY2022?

A. No. The billing and demand wastewater conveyance units for all meters and all classes were held constant, or level from the FPFTY (2021) to FY2022, as shown in HJS-21WW. The only change is not a units of service change but a change in the phase-in factor for city wastewater conveyance charges, anticipated at 40% in the FPFTY (2021)

to 60% in FY2022 based on PWSA's revised Cooperation Agreement with the City of Pittsburgh, which stipulates that PWSA will "phase-in" charges for wastewater conveyance service based on an increasing scale of 20% over five years (20% in 2020, 40% in 2021, 60% in 2022, 80% in 2023, and 100% in 2024).

Q. WHAT CONSIDERATION HAS BEEN GIVEN AS TO WHETHER THE REVENUES FROM THE RATES AND CHARGES ARE SUFFICIENT TO COVER REVENUE REQUIREMENTS FOR PWSA FOR FY2022?

A. As previously introduced, Schedule HJS-19WW serves as a revenue proof to determine revenue sufficiency of the proposed wastewater conveyance rates and charges. The revenues that would be generated under the proposed rates and charges are shown along with the anticipated revenue from the DSIC. As shown on this schedule, revenue generated by the proposed rates and charges recovers the full wastewater conveyance system revenue requirements for FY2022.

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

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

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: 3/6/20

Harold J. Smith, Vice President
Raftelis Financial Consultants, Inc.

Exhibits HJS-1

To

Exhibits HJS-6

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

Base Rate Revenue Requirements	FPFTY 2021 Water	Wastewater Conveyance	Stormwater	Total
Operating Expenses				
Direct Operating Expenses				
Administrative Division				
Executive Director	$ 1,656,931	$ 278,444	$ 295,430	$ 2,230,804
Customer Service	2,121,771	2,633,718	2,412,761	7,168,249
Management Information Systems	2,778,727	466,959	495,446	3,741,132
Finance	5,380,521	904,185	959,344	7,244,051
Procurement	-	-	-	-
Human Resources	934,981	157,121	166,707	1,258,809
Legal	3,356,269	564,014	598,421	4,518,704
Public Affairs	1,103,464	185,435	196,747	1,485,646
Operations Division				
Environmental Compliance	1,436,211	1,333,624	1,333,624	4,103,460
Ops Capital Assets	-	-	-	-
Warehouse	450,629	75,727	80,347	606,703
Water Treatment Plant	26,912,878	-	-	26,912,878
Water Quality (Lab)	1,639,947	-	-	1,639,947
Water Distribution	15,132,271	-	-	15,132,271
Sewer Operations	-	2,681,628	3,341,628	6,023,256
Engineering & Construction Division				
Engineering & Construction	19,233,486	6,843,154	6,848,412	32,925,052
Subtotal: Direct Operating Expenses	$ 82,138,087	$ 16,124,009	$ 16,728,867	$ 114,990,962
Other Operating Expenses				
Loss / (Gain) on ALCOSAN Billings	$ -	$ 770,497	$ -	$ 770,497
City Services	3,257,213	503,589	531,199	4,292,000
Non-City Water Payments	475,975	-	-	475,975
Subtotal: Other Operating Expenses	$ 3,733,188	$ 1,274,086	$ 531,199	$ 5,538,472
Subtotal: Operating Expenses	$ 85,871,274	$ 17,398,095	$ 17,260,065	$ 120,529,434
Debt Service				
Existing Debt				
Senior Debt Service	$ 27,591,954	$ 23,312,749	$ -	$ 50,904,703
Subordinate Debt Service	5,398,314	4,561,096	-	9,959,410
Subtotal: Existing Debt	$ 32,990,268	$ 27,873,845	$ -	$ 60,864,113
Proposed Debt				
Revolving Line of Credit Interest	$ 1,816,578	$ 547,663	$ 635,759	$ 3,000,000
Revenue Bonds	5,412,261	1,880,460	1,927,764	9,220,485
SRF Loans	1,341,839	461,776	475,952	2,279,567
Subtotal: Proposed Debt	$ 8,570,679	$ 2,889,899	$ 3,039,475	$ 14,500,052
Subtotal: Debt Service	$ 41,560,946	$ 30,763,743	$ 3,039,475	$ 75,364,165
Capital Expenditures & Transfers				
Internally Generated Funds / PAYGO	$ 4,596,181	$ 1,257,989	$ 1,259,477	$ 7,113,647
Other Transfers to Reserves	615,885	384,115	-	1,000,000
Reimbursements from Municipalities	-	-	-	-
Remarketing & Liquidity Charges	-	-	-	-
Bad Debt Expense	1,332,073	830,788	-	2,162,861
Subtotal: Capital Expenditures & Transfers	$ 6,544,139	$ 2,472,892	$ 1,259,477	$ 10,276,508
Total: Base Rate Revenue Requirements	**$ 133,976,359**	**$ 50,634,730**	**$ 21,559,017**	**$ 206,170,107**
% Change				
DSIC Costs	$ 12,696,494	$ 6,923,506	$ -	$ 19,620,000
Total System Revenue Requirements	**$ 146,672,854**	**$ 57,558,236**	**$ 21,559,017**	**$ 225,790,107**

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

Base Rate Revenue Requirements	2022 Water	2022 Wastewater Conveyance	2022 Stormwater	2022 Total
Operating Expenses				
Direct Operating Expenses				
Administrative Division				
Executive Director	$ 1,745,342	$ 293,301	$ 311,194	$ 2,349,836
Customer Service	2,245,620	2,791,584	2,569,693	7,606,897
Management Information Systems	2,830,522	475,663	504,681	3,810,866
Finance	5,484,337	921,631	977,855	7,383,822
Procurement	-	-	-	-
Human Resources	974,759	163,806	173,799	1,312,364
Legal	3,298,273	554,268	588,080	4,440,621
Public Affairs	1,170,383	196,680	208,679	1,575,742
Operations Division				
Environmental Compliance	1,475,312	1,369,932	1,369,932	4,215,176
Ops Capital Assets	-	-	-	-
Warehouse	461,802	77,605	82,339	621,746
Water Treatment Plant	22,401,447	-	-	22,401,447
Water Quality (Lab)	1,165,712	-	-	1,165,712
Water Distribution	16,559,300	-	-	16,559,300
Sewer Operations	-	2,812,399	3,532,399	6,344,798
Engineering & Construction Division				
Engineering & Construction	19,622,967	7,167,645	7,172,932	33,963,543
Subtotal: Direct Operating Expenses	$ 79,435,775	$ 16,824,514	$ 17,491,583	$ 113,751,871
Other Operating Expenses				
Loss / (Gain) on ALCOSAN Billings	$ -	$ 778,202	$ -	$ 778,202
City Services	3,342,234	513,327	541,439	4,397,000
Non-City Water Payments	475,975	-	-	475,975
Subtotal: Other Operating Expenses	$ 3,818,209	$ 1,291,529	$ 541,439	$ 5,651,177
Subtotal: Operating Expenses	$ 83,253,984	$ 18,116,043	$ 18,033,022	$ 119,403,048
Debt Service				
Existing Debt				
Senior Debt Service	$ 27,571,492	$ 23,295,461	$ -	$ 50,866,953
Subordinate Debt Service	5,376,700	4,542,834	-	9,919,533
Subtotal: Existing Debt	$ 32,948,192	$ 27,838,295	$ -	$ 60,786,486
Proposed Debt				
Revolving Line of Credit Interest	$ 2,481,556	$ 520,920	$ 497,523	$ 3,500,000
Revenue Bonds	14,970,408	4,769,709	4,893,504	24,633,621
SRF Loans	2,118,699	729,122	751,506	3,599,327
Subtotal: Proposed Debt	$ 19,570,663	$ 6,019,752	$ 6,142,533	$ 31,732,948
Subtotal: Debt Service	$ 52,518,855	$ 33,858,046	$ 6,142,533	$ 92,519,434
Capital Expenditures & Transfers				
Internally Generated Funds / PAYGO	$ 3,835,842	$ 694,957	$ 567,995	$ 5,098,794
Other Transfers to Reserves	615,885	384,115	-	1,000,000
Reimbursements from Municipalities	-	-	-	-
Remarketing & Liquidity Charges	-	-	-	-
Bad Debt Expense	1,425,968	889,348	-	2,315,316
Subtotal: Capital Expenditures & Transfers	$ 5,877,694	$ 1,968,421	$ 567,995	$ 8,414,110
Total: Base Rate Revenue Requirements	**$ 141,650,533**	**$ 53,942,509**	**$ 24,743,550**	**$ 220,336,592**
% Change				
DSIC Costs	13,426,572	7,573,428	-	$ 21,000,000
Total System Revenue Requirements	**$ 155,077,106**	**$ 61,515,937**	**$ 24,743,550**	**$ 241,336,592**

Pittsburgh Water and Sewer Authority
Allocation Factors - Between Utilities

Allocations to Utilities (Revenue Requirements & Assets)				
Code	*Description*	*Water*	*Sewer*	*Stormwater*
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	26.8%	35.2%	38.0%
F	Operations Cost	74.3%	12.5%	13.2%
G	Engineering and Construction	64.6%	17.7%	17.7%
H	Environmental Compliance	35.0%	32.5%	32.5%
I	Customer Service - Composite	29.2%	36.3%	34.5%
J	Wastewater - Conveyance	0.0%	50.0%	50.0%
K	Existing Debt Service - Assets	54.2%	45.8%	0.0%

Sewer / Stormwater Allocation Factor Detail	**Sewer**	**Stormwater**
Conveyance	50.0%	50.0%
Debt Service	100.0%	0.0%

Pittsburgh Water and Sewer Authority
City Services Mapped to Budget Departments (1)

Department	GL Code	GL Name	2021	2022
325 Water Distribution	7015	Permits	$ 564,000	$ 600,000
424 Sewer Operations	7015	Permits	102,000	105,000
913 Finance	5491	Vehicle Repairs	720,000	780,000
913 Finance	7422	Fuel-Gasses	306,000	312,000
913 Finance	8005	City Indirect Costs	2,600,000	2,600,000
			$ 4,292,000	$ 4,397,000

(1) City Services costs are picked up in the specified budget departments so the individual line items can be allocated with similar costs.

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

	FPFTY 2021		
Base Rate Revenue Requirements	*Water*	*Wastewater Conveyance*	*Total*
Operating Expenses			
Direct Operating Expenses			
Administrative Division			
Executive Director	$ 1,656,931	$ 278,444	$ 1,935,374
Customer Service	2,121,771	2,633,718	4,755,489
Management Information Systems	2,778,727	466,959	3,245,686
Finance	8,073,734	1,356,774	9,430,508
Procurement	-	-	-
Human Resources	934,981	157,121	1,092,102
Legal	3,356,269	564,014	3,920,282
Public Affairs	1,103,464	185,435	1,288,898
Operations Division			
Environmental Compliance	1,436,211	1,333,624	2,769,835
Ops Capital Assets	-	-	-
Warehouse	450,629	75,727	526,357
Water Treatment Plant	26,912,878	-	26,912,878
Water Quality (Lab)	1,639,947	-	1,639,947
Water Distribution	15,696,271	-	15,696,271
Sewer Operations	-	2,732,628	2,732,628
Engineering & Construction Division			
Engineering & Construction	19,233,486	6,843,154	26,076,640
Subtotal: Direct Operating Expenses	$ 85,395,299	$ 16,627,598	$ 102,022,897
Other Operating Expenses (1)			
Loss / (Gain) on ALCOSAN Billings	$ -	$ 770,497	$ 770,497
Non-City Water Payments	475,975	-	475,975
Subtotal: Other Operating Expenses (1)	$ 475,975	$ 770,497	$ 1,246,472
Subtotal: Operating Expenses	$ 85,871,274	$ 17,398,095	$ 103,269,369
Debt Service			
Existing Debt			
Senior Debt Service	$ 27,591,954	$ 23,312,749	$ 50,904,703
Subordinate Debt Service	5,398,314	4,561,096	9,959,410
Subtotal: Existing Debt	$ 32,990,268	$ 27,873,845	$ 60,864,113
Proposed Debt			
Revolving Line of Credit Interest	$ 1,816,578	$ 547,663	$ 2,364,241
Revenue Bonds	5,412,261	1,880,460	7,292,721
SRF Loans	1,341,839	461,776	1,803,615
Subtotal: Proposed Debt	$ 8,570,679	$ 2,889,899	$ 11,460,577
Subtotal: Debt Service	$ 41,560,946	$ 30,763,743	$ 72,324,690
Capital Expenditures & Transfers			
Internally Generated Funds / PAYGO	$ 4,596,181	$ 1,257,989	$ 5,854,170
Other Transfers to Reserves	615,885	384,115	1,000,000
Reimbursements from Municipalities	-	-	-
Remarketing & Liquidity Charges	-	-	-
Bad Debt Expense	1,332,073	830,788	2,162,861
Subtotal: Capital Expenditures & Transfers	$ 6,544,139	$ 2,472,892	$ 9,017,030
Stormwater	$ -	$ 21,559,017	$ 21,559,017
Total: Base Rate Revenue Requirements	**$ 133,976,359**	**$ 72,193,747**	**$ 206,170,107**
% Change			
DSIC Costs	$ 12,696,494	$ 6,923,506	$ 19,620,000
Total System Revenue Requirements	**$ 146,672,854**	**$ 79,117,253**	**$ 225,790,107**

(1) City Services has been reallocated to the respective Direct Operating Departments as shown on HJS-4.

Pittsburgh Water and Sewer Authority
Revenue Requirements by Utility

	2022		
Base Rate Revenue Requirements	*Water*	*Wastewater Conveyance*	*Total*
Operating Expenses			
Direct Operating Expenses			
Administrative Division			
Executive Director	$ 1,745,342	$ 293,301	$ 2,038,643
Customer Service	2,245,620	2,791,584	5,037,204
Management Information Systems	2,830,522	475,663	3,306,185
Finance	8,226,571	1,382,457	9,609,029
Procurement	-	-	-
Human Resources	974,759	163,806	1,138,565
Legal	3,298,273	554,268	3,852,540
Public Affairs	1,170,383	196,680	1,367,063
Operations Division			
Environmental Compliance	1,475,312	1,369,932	2,845,244
Ops Capital Assets	-	-	-
Warehouse	461,802	77,605	539,407
Water Treatment Plant	22,401,447	-	22,401,447
Water Quality (Lab)	1,765,712	-	1,765,712
Water Distribution	16,559,300	-	16,559,300
Sewer Operations	-	2,864,899	2,864,899
Engineering & Construction Division			
Engineering & Construction	19,622,967	7,167,645	26,790,612
Subtotal: Direct Operating Expenses	$ 82,778,009	$ 17,337,841	$ 100,115,849
Other Operating Expenses (1)			
Loss / (Gain) on ALCOSAN Billings	$ -	$ 778,202	$ 778,202
Non-City Water Payments	475,975	-	475,975
Subtotal: Other Operating Expenses (1)	$ 475,975	$ 778,202	$ 1,254,177
Subtotal: Operating Expenses	$ 83,253,984	$ 18,116,043	$ 101,370,027
Debt Service			
Existing Debt			
Senior Debt Service	$ 27,571,492	$ 23,295,461	$ 50,866,953
Subordinate Debt Service	5,376,700	4,542,834	9,919,533
Subtotal: Existing Debt	$ 32,948,192	$ 27,838,295	$ 60,786,486
Proposed Debt			
Revolving Line of Credit Interest	$ 2,481,556	$ 520,920	$ 3,002,477
Revenue Bonds	14,970,408	4,769,709	19,740,117
SRF Loans	2,118,699	729,122	2,847,821
Subtotal: Proposed Debt	$ 19,570,663	$ 6,019,752	$ 25,590,415
Subtotal: Debt Service	$ 52,518,855	$ 33,858,046	$ 86,376,901
Capital Expenditures & Transfers			
Internally Generated Funds / PAYGO	$ 3,835,842	$ 694,957	$ 4,530,799
Other Transfers to Reserves	615,885	384,115	1,000,000
Reimbursements from Municipalities	-	-	-
Remarketing & Liquidity Charges	-	-	-
Bad Debt Expense	1,425,968	889,348	2,315,316
Subtotal: Capital Expenditures & Transfers	$ 5,877,694	$ 1,968,421	$ 7,846,115
Stormwater	$ -	$ 24,743,550	$ 24,743,550
Total: Base Rate Revenue Requirements	**$ 141,650,533**	**$ 78,686,059**	**$ 220,336,592**
% Change			
DSIC Costs	$ 13,426,572	$ 7,573,428	$ 21,000,000
Total System Revenue Requirements	**$ 155,077,106**	**$ 86,259,487**	**$ 241,336,592**

(1) City Services has been reallocated to the respective Direct Operating Departments as shown on HJS-4.

Exhibits HJS-1W

To

Exhibits HJS-22W

Pittsburgh Water and Sewer Authority HJS-1W
2021 COS & Rate Design
FPFTY Water Revenue Requirements

Water System Revenue Requirements		**2021 FPFTY Revenue Requirements**
Operating Expenses		
Direct Operating Expenses		
Administrative Division		
Executive Director	$	1,656,931
Customer Service		2,121,771
Management Information Systems		2,778,727
Finance		8,073,734
Procurement		-
Human Resources		934,981
Legal		3,356,269
Public Affairs		1,103,464
Operations Division		
Environmental Compliance		1,436,211
Ops Capital Assets		-
Warehouse		450,629
Water Treatment Plant		26,912,878
Water Quality (Lab)		1,639,947
Water Distribution		15,696,271
Sewer Operations		-
Engineering & Construction		
Engineering & Construction		19,233,486
Other Operating Expenses		
Loss / (Gain) on ALCOSAN Billings		-
Non-City Water Payments		475,975
Total Operating Expenses	$	85,871,274
Debt Service		
Existing Debt	$	32,990,268
Future Debt		8,570,679
Subtotal: Debt Service	$	41,560,946
Capital Expenditures & Transfers		
Internally Generated Funds / PAYGO	$	4,596,181
Internally Generated Funds / PAYGO (DSIC)		12,696,494
Other Transfers to Reserves		615,885
Reimbursements from Municipalities		-
Remarketing & Liquidity Charges		-
Bad Debt Expense		1,332,073
Subtotal: Capital Expenditures & Transfers	$	19,240,633
Total: Water System Revenue Requirements	**$**	**146,672,854**
Capital Costs to be Recovered through DSIC	**$**	**(12,696,494)**
Total: Water System Base Rate Revenue Requirement	**$**	**133,976,359**

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Assignment to Functional Categories

HJS-2W

Water Operating Costs	FY 2021 FPFTY	Allocation	Water Functional Categories: Supply	Treatment	Storage	Transmission	Distribution	Meters	Billing	Fire Protection	Admin Support
Operating Expenses:											
Direct Operating Expenses											
Administrative Division											
Executive Director	$ 1,656,931	W-H									100.0%
Customer Service	2,121,771	W-I						29.3%	70.7%		
Management Information Systems	2,778,727	W-H									100.0%
Finance	8,073,734	W-H									100.0%
Procurement	-	W-H									100.0%
Human Resources	934,981	W-H									100.0%
Legal	3,356,269	W-H									100.0%
Public Affairs	1,103,464	W-H									100.0%
Operations Division											
Environmental Compliance	1,436,211	W-H									100.0%
Ops Capital Assets	-	W-H									100.0%
Warehouse	450,629	W-H									100.0%
Water Treatment Plant	26,912,878	W-B		100.0%							
Water Quality (Lab)	1,639,947	W-B		100.0%							
Water Distribution	15,696,271	W-D				37.8%	62.2%				
Sewer Operations	-	n/a									
Engineering & Construction Division											
Engineering & Construction	19,233,486	W-I		18.2%	41.6%	36.9%					3.3%
Subtotal: Direct Operating Expenses	$ 85,395,299										
Other Operating Expenses											
Loss / (Gain) on ALCOSAN Billings	-	n/a									100.0%
Non-City Water Payments	475,975	W-H									100.0%
Subtotal: Other Operating Expenses	$ 475,975										
Total: Operating Expenses	**$ 85,871,274**										

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Assignment to Functional Categories

HJS-2W

Water Operating Expenses	FY 2021 FPFTY	Allocation	Water Functional Categories: Supply	Treatment	Storage	Transmission	Distribution	Meters	Billing	Fire Protection	Admin Support
Direct Operating Expenses											
Administrative Division											
Executive Director	$ 1,656,931	W-H	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,656,931
Customer Service	2,121,771	W-I	-	-	-	-	-	621,634	1,500,137	-	-
Management Information Systems	2,778,727	W-H	-	-	-	-	-	-	-	-	2,778,727
Finance	8,073,734	W-H	-	-	-	-	-	-	-	-	8,073,734
Procurement	-	W-H	-	-	-	-	-	-	-	-	-
Human Resources	934,981	W-H	-	-	-	-	-	-	-	-	934,981
Legal	3,356,269	W-H	-	-	-	-	-	-	-	-	3,356,269
Public Affairs	1,103,464	W-H	-	-	-	-	-	-	-	-	1,103,464
Operations Division											
Environmental Compliance	1,436,211	W-H	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,436,211
Ops Capital Assets	-	W-H	-	-	-	-	-	-	-	-	-
Warehouse	450,629	W-H	-	-	-	-	-	-	-	-	450,629
Water Treatment Plant	26,912,878	W-B	-	26,912,878	-	-	-	-	-	-	-
Water Quality (Lab)	1,639,947	W-B	-	1,639,947	-	-	-	-	-	-	-
Water Distribution	15,696,271	W-D	-	-	-	5,935,763	9,760,509	-	-	-	-
Sewer Operations	-	n/a	-	-	-	-	-	-	-	-	-
Engineering & Construction Division											
Engineering & Construction	19,233,486	W-J	-	3,504,019	8,000,892	7,092,953	-	-	-	-	635,622
Subtotal: Direct Operating Expenses	$ 85,395,299		$ -	$ 32,056,845	$ 8,000,892	$ 13,028,715	$ 9,760,509	$ 621,634	$ 1,500,137	$ -	$ 20,426,568
Other Operating Expenses											
Loss / (Gain) on ALCOSAN Billings	-	n/a	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Non-City Water Payments	475,975	W-H	-	-	-	-	-	-	-	-	475,975
Affordability Program Placeholder	-		-	-	-	-	-	-	-	-	-
Subtotal: Other Operating Expenses	$ 475,975		$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 475,975
Allocated Water Operating Costs	**$ 85,871,274**		**$ -**	**$ 32,056,845**	**$ 8,000,892**	**$ 13,028,715**	**$ 9,760,509**	**$ 621,634**	**$ 1,500,137**	**$ -**	**$ 20,902,543**
Allocation Percentage	-		0.00%	37.33%	9.32%	15.17%	11.37%	0.72%	1.75%	0.00%	24.34%

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Assignment to Functional Categories

HJS-2W

Row Labels	Allocated Water Assets: Acquisition Cost	Allocated to Water	Allocated Costs	Allocation	Water Functional Categories: Supply	Treatment	Storage	Transmission	Distribution	Meters	Billing	Fire Protection	Admin Support	Check
Customer Service	3,404,918	29.62%	1,008,643	W-I						29.30%	70.70%			
Distribution	268,054,032	100.00%	268,054,032	W-D				37.82%	62.18%					
Engineering	2,235,799	64.61%	1,444,567	W-D				37.82%	62.18%					
Executive Director	969,720	74.28%	720,260	W-H									100.00%	
Finance	79,614	74.28%	59,133	W-H									100.00%	
Fire	14,942,263	100.00%	14,942,263	W-E								100.00%		
Membrane Plant	20,355,348	100.00%	20,355,348	W-B		100.00%								
Meters	31,890,342	100.00%	31,890,342	W-E						100.00%				
Mgt Info Systems	12,589,169	74.28%	9,350,610	W-H									100.00%	
Plant Operations	64,260,881	100.00%	64,260,881	W-B		100.00%								
Pumping	25,727,651	100.00%	25,727,651	W-D				37.82%	62.18%					
Sewer Operations	397,654,629	0.00%	-	n/a										
Stormwater	26,127,083	0.00%	-	n/a										
Supply	920,461	100.00%	920,461	W-A	100.00%									
Warehouse	4,180,082	74.28%	3,104,757	W-B		100.00%								
Water Quality	1,477,505	100.00%	1,477,505	W-B		100.00%								
Water Storage	67,450,916	100.00%	67,450,916	W-C			100.00%							
Total	**942,320,412**		**510,767,368**		$ 920,461	$ 89,198,491	$ 67,450,916	$ 111,643,902	$ 183,582,348	$ 32,185,853	$ 713,132	$ 14,942,263	$ 10,130,003	$ -
	-		-											
Allocation Factors for Capital Costs					**0.18%**	**17.46%**	**13.21%**	**21.86%**	**35.94%**	**6.30%**	**0.14%**	**2.93%**	**1.98%**	**0.00%**

Allocation of Capital Costs	*Readiness-to-Serve*												
Debt Service	25.0%	$ 41,560,946	$ 56,173	$ 5,443,535	$ 4,116,342	$ 6,813,316	$ 11,203,519	$ 1,964,213	$ 43,520	$ 911,885	$ 618,206	$ 10,390,237
Internally Generated Funds / PAYGO	0.0%	4,596,181	8,283	802,660	606,962	1,004,637	1,651,980	289,627	6,417	134,459	91,156	-
Other Transfers to Reserves	0.0%	615,885	1,110	107,556	81,333	134,621	221,364	38,810	860	18,017	12,215	-
Reimbursements from Municipalities	0.0%	-	-	-	-	-	-	-	-	-	-	-
Remarketing & Liquidity Charges	0.0%	-	-	-	-	-	-	-	-	-	-	-
Bad Debt Expense (1)	0.0%		-	-	-	-	-	-	-	-	-	-
Total: Allocated Capital Costs		$ 46,773,012	$ 65,566	$ 6,353,751	$ 4,804,636	$ 7,952,573	$ 13,076,864	$ 2,292,650	$ 50,798	$ 1,064,361	$ 721,576	$ 10,390,237

(1) Bad Debt Expense allocated directly to customer classes based on each classes responsibility for historical bad debt.

Pittsburgh Water and Sewer Authority HJS-3W
2021 COS & Rate Design
Allocation to Base/Extra Capacity Categories

	FY 2021	Allocation	Water Cost Drivers: Base	Max Day	Peak Hour	Meters	Bills	Readiness-to-Serve	Fire Protection
	FPFTY								
Water Revenue Requirement									
Functional Categories									
Supply	$ 65,566	W-AA	100.00%						
Treatment	38,410,596	W-BB	69.04%	29.38%					1.58%
Storage	12,805,528	W-CC	54.81%	18.36%	19.14%				7.69%
Transmission	20,981,289	W-BB	69.04%	29.38%					1.58%
Distribution	22,837,372	W-CC	54.81%	18.36%	19.14%				7.69%
Meters	2,914,283	W-DD				100.00%			
Billing	1,550,934	W-EE					100.00%		
Fire Protection	1,064,361	W-FF							100.00%
Admin Support	21,624,119	W-GG	54.20%	21.46%	6.10%	2.61%	1.39%	10.00%	4.24%
Readiness-to-Serve (Debt Service)	10,390,237	W-HH						100.00%	
Total: Water Revenue Requirements	$ 132,644,286								

	FY 2021	Allocation	Water Cost Drivers: Base	Max Day	Peak Hour	Meters	Bills	Readiness-to-Serve	Fire Protection
Water Revenue Requirement	*FPFTY*								
Functional Categories									
Supply	$ 65,566	W-AA	$ 65,566	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	38,410,596	W-BB	26,518,384	11,283,728	-	-	-	-	608,485
Storage	12,805,528	W-CC	7,019,256	2,351,143	2,450,930	-	-	-	984,199
Transmission	20,981,289	W-BB	14,485,323	6,163,590	-	-	-	-	332,377
Distribution	22,837,372	W-CC	12,518,137	4,193,027	4,370,987	-	-	-	1,755,221
Meters	2,914,283	W-DD	-	-	-	2,914,283	-	-	-
Billing	1,550,934	W-EE	-	-	-	-	1,550,934	-	-
Fire Protection	1,064,361	W-FF	-	-	-	-	-	-	1,064,361
Admin Support	21,624,119	W-GG	11,721,256	4,639,925	1,319,351	563,619	299,949	2,162,412	917,608
Readiness-to-Serve (Debt Service)	10,390,237	W-HH	-	-	-	-	-	10,390,237	-
Total: Water Revenue Requirements	$ 132,644,286		$ 72,327,921	$ 28,631,413	$ 8,141,268	$ 3,477,902	$ 1,850,883	$ 12,552,649	$ 5,662,251
Costs to Recover from Water Charges	**$ 132,644,286**		$ 72,327,921	$ 28,631,413	$ 8,141,268	$ 3,477,902	$ 1,850,883	$ 12,552,649	$ 5,662,251
			54.5%	21.6%	6.1%	2.6%	1.4%	9.5%	4.3%

Pittsburgh Water and Sewer Authority HJS-4W
2021 COS & Rate Design
Allocation Factor Summary

Cost Functionalization: Water										
Code	*Description*	*Supply*	*Treatment*	*Storage*	*Transmission*	*Distribution*	*Meters*	*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				37.82%	62.18%				
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						29.30%	70.70%		
W-J	Engineering & Construction		18.22%	41.60%	36.88%					3.30%

Allocation to Cost Drivers: Water								
Code	*Description*	*Base*	*Max Day*	*Peak Hour*	*Meters*	*Bills*	*Readiness-to-Serve*	*Fire Protection*
W-AA	Base	100.00%						
W-BB	Maximum Day	69.04%	29.38%					1.58%
W-CC	Peak Hour	54.81%	18.36%	19.14%				7.69%
W-DD	Customer - Meters				100.00%			
W-EE	Customer - Billing					100.00%		
W-FF	Fire Protection							100.00%
W-GG	Admin Support (Composite)	54.20%	21.46%	6.10%	2.61%	1.39%	10.00%	4.24%
W-HH	Readiness-to-Serve						100.00%	

Factor Derivations - Allocation to Functional Categories & Cost Components

Code(s)	*Description*	*Calculations*			
W-I WW-E	Customer Service - This factor allocates the 2021 customer service budget between meter- and billing-related costs.	2021 Customer Service Budget		FPFTY	Meter	Billing
		Salaries	$	3,105,381	28.60%	71.40%
		Benefits		866,363	28.60%	71.40%
		Computer & Peripherals		10,000	100.00%	0.00%
		Customer CC Fees		378,396	0.00%	100.00%
		Postage		257,500	0.00%	100.00%
		Billing Contract		618,000	0.00%	100.00%
		Consultants		26,400	100.00%	0.00%
		Meter Services		824,000	100.00%	0.00%
		Prof Service Other		678,856	20.00%	80.00%
		Office Supplies		6,000	50.00%	50.00%
		TE Airfare		2,800	50.00%	50.00%
		TE Lodging		2,800	50.00%	50.00%
		TE SeminarsConferences		5,400	50.00%	50.00%
		TE Training		15,000	50.00%	50.00%
		TE Travel Misc		100	0.00%	100.00%
		Customer Refund AP		504,000	0.00%	100.00%
		One Call		30,900	0.00%	100.00%
		Total	$	7,331,896	$2,148,090	$5,183,806
		Allocation Factors			*29.30%*	*70.70%*

W-D Water Pipe Inventory

- Allocate costs between transmission and distribution functional categories. Assumes Pipes less than or equal to 16" are Distribution-related.

Breakdown		
Distribution	34,244,035	62.2%
Transmission	20,825,193	37.8%
Total	55,069,228	100.0%

Inch-Foot Analysis		
Diameter (in)	*Linear Feet*	*Inch-Feet*
0.75	799	599
1	1,292	1,292
1.5	575	862
2	11,495	22,989
2.5	16	39
3	837	2,511
4	140,568	562,273
6	2,052,282	12,313,692
8	1,112,168	8,897,342
10	85,574	855,742
12	598,051	7,176,608
14	1,296	18,147
15	15,566	233,483
16	259,903	4,158,456
18	277	4,991
20	209,650	4,192,996
24	85,178	2,044,268
28	104	2,911
30	116,321	3,489,627
36	83,070	2,990,503
42	11,253	472,624
42.5	12,606	535,735
48	16,545	794,162
50	23,682	1,184,096
50.25	12,005	603,231
60	55,175	3,310,514
66	1,492	98,501
72	3,697	266,159
84	3,979	334,248
96	4,560	437,764
120	524	62,860
NULL	172	n/a
	4,920,710	55,069,228

Factor Derivations - Allocation to Functional Categories & Cost Components

Code(s)	*Description*	*Calculations*

W-J Engineering & Construction

- This factor uses the 2021 Water CIP costs to allocate Engineering & Construction costs to the various functional categories.

2021 Water CIP Costs	$$ Amount	Allocation
Treatment	$ 31,260,131	18.22%
Storage	71,377,720	41.60%
Trans. & Distr.	63,277,796	36.88%
Admin	5,670,528	3.30%
Total Water CIP	$ 171,586,175	100.00%

W-BB Maximum Day

- Maximum day costs are allocated using a peak day determined using system daily production records. In addition, 0.25% is allocated to fire protection service.

Plant Production Data		
2017-2019 Avg Plant Production	70.26	mgd
2017-2019 Avg. Peak Day	90.90	mgd
Peak Hour Factor (1.6)	112.42	mgd

Base	69.04%
Maximum Day	29.38%
Fire Protection	1.58%

W-CC Peak Hour

- Peak hour costs are allocated using an estimated peak hour compared to system average and maximum day processed. In addition, 0.25% is allocated to fire protection service.

Plant Production Data		
2017 Average Processed	70.26	mgd
Peak Day	90.90	mgd
Peak Hour Factor (1.6)	112.42	mgd

Peak Hour / Avg	54.81%
Max Day (Plug)	18.36%
Peak Hr / Peak Day	19.14%
Fire Protection	7.69%

Equivalency Flow Ratios

- Used to escalate metering and readiness-to-serve costs, these ratios are industry standard and obtained from the American Waterworks Association

- Fire ratios are pegged to a 1" meter.

Equivalency Ratios

	Flow
5/8"	1.00
3/4"	1.50
1"	2.50
1.5"	5.00
2"	8.00
3"	16.00
4"	25.00
6"	50.00
8"	80.00
10"	115.00
Unmetered	1.00

	Fire
1" or Less	2.50
1 1/2"-3"	8.00
4"	25.00
6" or Greater	50.00

Pittsburgh Water and Sewer Authority HJS-6W

2021 COS & Rate Design

Water Units of Service

	FY 2021 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.			
Units of Service												
Retail Service												
Residential (1)	2,719,759	2,719,759	7,451	145.0%	10,805	3,353	240.0%	17,883	7,079	822,685	764,267	-
Residential - CAP	123,761	123,761	339	145.0%	492	153	240.0%	814	322	35,877	35,454	-
Commercial (1)	3,263,531	3,263,531	8,941	165.0%	14,753	5,812	270.0%	24,141	9,388	368,331	80,767	-
Industrial	206,706	206,706	566	150.0%	849	283	200.0%	1,133	283	10,909	1,158	-
Health or Education	1,205,593	1,205,593	3,303	175.0%	5,780	2,477	290.0%	9,579	3,798	86,288	5,805	-
Municipal - Metered	225,528	225,528	617.88	165.0%	1,020	402	270.0%	1,668	649	6,120	936	-
Municipal - Unmetered (2)	36,624	36,624	100.34	165.0%	166	65	270.0%	271	105	50,562	948	-
Private Fire Systems	14,668	14,668	40	195.0%	78	38	320.0%	129	50	51,260	15,222	51,260
Public Fire	-	-	-	100.0%	-	-	100.0%	-	-	-	-	4,485,000
Subtotal: Retail Service	7,796,170	7,796,170	21,359		33,942	12,583		55,617	21,675	1,432,030	904,557	4,536,260
Wholesale & Bulk												
Wholesale	803,729	803,729	2,202	155.0%	3,413	1,211	260.0%	5,725	2,312	-	-	
Bulk	-	-	-	0.0%	-	-	0.0%	-	-	-	-	
Subtotal: Wholesale & Bulk	803,729	803,729	2,202		3,413	1,211		5,725	2,312	-	-	-
Total: Water Units of Service	8,599,899	8,599,899	23,561		37,355	13,794		61,343	23,987	1,432,030	904,557	4,536,260

(1) Includes unmetered units and equivalent usage.

(2) Assumed usage for unmetered municipal properties

	Maximum Day				Peak Hour	
	Class MM/AD	System MD/MM	Weekly Use Adjustment	**MD Peaking Factor (2)**	Estimated MH/MD	**MH Peaking Factor (2)**
Peaking Factors (1)						
Residential	1.14	1.29	1.00	**1.45**	1.66	**2.40**
Commercial	1.27	1.29	1.00	**1.65**	1.66	**2.70**
Industrial	1.17	1.29	1.00	**1.50**	1.33	**2.00**
Health or Education	1.34	1.29	1.00	**1.75**	1.66	**2.90**
Fire System	1.50	1.29	1.00	**1.95**	1.66	**3.20**
Wholesale	1.22	1.29	1.00	**1.55**	1.66	**2.60**
Riverbend	-	1.29	1.00	**-**	1.66	**-**

(1) Peaking factors determined using customer billing information from 2017-2019.

(2) Maximum Day and Maximum Hour peaking factors are rounded.

Pittsburgh Water and Sewer Authority HJS-7W
2021 COS & Rate Design
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	90,900,000	gallons
% of Maximum Day for Fire	1.58%	
Peak Hour - Fire	360,000	gallons
Peak Hour - System	4,684,000	gallons
% of Maximum Day for Fire	7.69%	

Fire Service Units	Connections	Equivalent Factor	Equivalent Units	Percent
Allocation to Public/Private				
Public Hydrants	7,475	50.00	373,750	98.87%
Private Fire				
1" or Less	1,195	2.50	2,988	
1 1/2"-3"	54	8.00	429	
4"	5	25.00	125	
6" or Greater	15	50.00	729	
Subtotal: Private Fire	1,269		4,272	1.13%
Total	8,744		378,022	

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Water Unit Cost of Service

HJS-8W

Development of Unit Costs of Service	FY 2021 FPFTY	Unit Costs						
		Base	Extra Capacity		Meters	Bills	Readiness-to-Serve	Fire Protection
			Max Day	Peak Hour				
Units of Service								
Retail		7,796,170	12,583	21,675	1,432,030	904,557	1,432,030	4,536,260
Wholesale		803,729	1,211	2,312	-	-	-	-
Total System Units		8,599,899	13,794	23,987	1,432,030	904,557	1,432,030	4,536,260
Units		*kgal*	*kgal/day*	*kgal/day*	*Eq. Cost Meter*	*Total Bills*	*Eq. Flow Meter*	*Eq. Fire Cnx*
Allocated Revenue Requirement								
Supply	$ 65,566	$ 65,566	$ -	$ -	$ -	$ -	$ -	$ -
Treatment	38,410,596	26,518,384	11,283,728	-	-	-	-	608,485
Storage	12,805,528	7,019,256	2,351,143	2,450,930	-	-	-	984,199
Transmission	20,981,289	14,485,323	6,163,590	-	-	-	-	332,377
Distribution	22,837,372	12,518,137	4,193,027	4,370,987	-	-	-	1,755,221
Meters	2,914,283	-	-	-	2,914,283	-	-	-
Billing	1,550,934	-	-	-	-	1,550,934	-	-
Fire Protection	1,064,361	-	-	-	-	-	-	1,064,361
Admin Support	21,624,119	11,721,256	4,639,925	1,319,351	563,619	299,949	2,162,412	917,608
Readiness-to-Serve (Debt Service)	10,390,237	-	-	-	-	-	10,390,237	-
Total: Revenue Requirements	$ 132,644,286	$ 72,327,921	$ 28,631,413	$ 8,141,268	$ 3,477,902	$ 1,850,883	$ 12,552,649	$ 5,662,251
Revenue Offsets	(3,221,571)	$ (1,756,649)	$ (695,380)	$ (197,729)	$ (84,469)	$ (44,953)	$ (304,870)	$ (137,521)
Total: Costs of Service	**$ 129,422,716**	**$ 70,571,271**	**$ 27,936,033**	**$ 7,943,538**	**$ 3,393,434**	**$ 1,805,930**	**$ 12,247,779**	**$ 5,524,731**
Gross Unit Cost		**$ 8.21**	**$ 2,025.23**	**$ 331.16**	**$ 2.37**	**$ 2.00**	**$ 8.55**	**$ 1.22**
Unit Cost - Retail ($ / Unit) (Includes Distribution)		$ 8.36	$ 2,054.49	$ 350.59	$ 2.37	$ 2.00	$ 8.55	$ 1.22
Unit Cost - Wholesale ($ / Unit) (Excludes Distribution)		$ 6.75	$ 1,721.26	$ 148.94	$ 2.37	$ 2.00	$ 8.55	$ 1.22

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Cost Distribution to Customer Classes

Customer Class Cost of Service	Unit Costs							Total
	Base	Extra Capacity		Meters	Bills	Readiness-to-Serve	Fire Protection	
		Max Day	Peak Hour					
Residential								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	2,719,759	3,353	7,079	822,685	764,267	822,685	-	
Cost of Service	$ 22,726,642	$ 6,888,961	$ 2,481,796	$ 1,949,489	$ 1,525,844	$ 7,036,208	$ -	$ 42,608,940
Residential - CAP								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	123,761	153	322	35,877	35,454	35,877	-	
Cost of Service	$ 1,034,163	$ 313,478	$ 112,933	$ 85,015	$ 70,783	$ 306,843	$ -	$ 1,923,214
Commercial								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	3,263,531	5,812	9,388	368,331	80,767	368,331	-	
Cost of Service	$ 27,270,459	$ 11,940,204	$ 3,291,463	$ 872,821	$ 161,250	$ 3,150,235	$ -	$ 46,686,432
Industrial								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	206,706	283	283	10,909	1,158	10,909	-	
Cost of Service	$ 1,727,261	$ 581,747	$ 99,274	$ 25,850	$ 2,312	$ 93,298	$ -	$ 2,529,740
Health or Education								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	1,205,593	2,477	3,798	86,288	5,805	86,288	-	
Cost of Service	$ 10,074,078	$ 5,089,469	$ 1,331,712	$ 204,474	$ 11,590	$ 737,999	$ -	$ 17,449,322
Municipal - Metered								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	225,528	402	649	6,120	936	6,120	-	
Cost of Service	$ 1,884,539	$ 825,134	$ 227,458	$ 14,502	$ 1,869	$ 52,343	$ -	$ 3,005,846
Municipal - Unmetered								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	36,624	65	105	50,562	948	50,562	-	
Cost of Service	$ 306,035	$ 133,995	$ 36,937	$ 119,815	$ 1,893	$ 432,444	$ -	$ 1,031,119
Private Fire System								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	14,668	38	50	51,260	15,222	51,260	51,260	
Cost of Service	$ 122,568	$ 78,434	$ 17,611	$ 121,468	$ 30,390	$ 438,409	$ 62,429	$ 871,311
Public Fire Protection								
Unit Costs ($/unit)	$ 8.356	$ 2,054.488	$ 350.594	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service							4,485,000	
Cost of Service	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,462,301	$ 5,462,301
Wholesale								
Unit Costs ($/unit)	$ 6.750	$ 1,721.256	$ 148.935	$ 2.370	$ 1.996	$ 8.553	$ 1.218	
Units of Service	803,729	1,211	2,312					
Cost of Service	$ 5,425,528	$ 2,084,610	$ 344,353	$ -	$ -	$ -	$ -	$ 7,854,491
Total: Costs of Service	**$ 70,571,271**	**$ 27,936,033**	**$ 7,943,538**	**$3,393,434**	**$1,805,930**	**$ 12,247,779**	**$ 5,524,731**	**$ 129,422,716**

Pittsburgh Water and Sewer Authority HJS-10W
2021 COS & Rate Design
Adjustments to Cost of Service - Water

Cost of Service by Class	Allocation Method			Residential	Residential - CAP	Commercial	Industrial	Health or Education	Municipal - Metered	Municipal - Unmetered	Private Fire System	Public Fire Protection	Wholesale	Total
Allocated Cost of Service (Unadjusted)				$ 42,608,940	$ 1,923,214	$ 46,686,432	$ 2,529,740	$ 17,449,322	$ 3,005,846	$ 1,031,119	$ 871,311	$ 5,462,301	$ 7,854,491	$ 129,422,716
% of COS				*32.9%*	*1.5%*	*36.1%*	*2.0%*	*13.5%*	*2.3%*	*0.8%*	*0.7%*	*4.2%*	*6.1%*	*100.0%*
	Billing	RTS	Volume											
Adjustments to Cost of Service														
Public Fire Protection	0.0%	0.0%	100.0%	1,723,107	78,409	2,067,614	130,959	763,805	142,884	-	9,293	(4,916,071)	-	-
Wholesale Contracts	0.0%	0.0%	100.0%	1,606,525	73,104	1,927,723	122,098	712,127	133,216	-	8,664	-	(4,583,457)	-
City of Pittsburgh - Phase-In	0.0%	0.0%	100.0%	710,864	32,347	852,989	54,027	315,106	(1,969,167)	-	3,834	-	-	0
City of Pittsburgh - Unmetered	0.0%	0.0%	100.0%	372,231	16,938	446,653	28,290	165,000	-	(1,031,119)	2,007	-	-	(0)
Add: Bad Debt Expense	0.0%	0.0%	100.0%	971,861	27,193	237,870	-	47,574	-	-	47,574	-	-	1,332,073
Total: Adjusted Cost of Service (Before CAP Adjustment)				**$ 47,993,529**	**$ 2,151,206**	**$52,219,281**	**$ 2,865,114**	**$19,452,933**	**$ 1,312,778**	**$ -**	**$ 942,683**	**$ 546,230**	**$ 3,271,034**	**$130,754,789**
% of COS				*36.7%*	*1.6%*	*39.9%*	*2.2%*	*14.9%*	*1.0%*	*0.0%*	*0.7%*	*0.4%*	*2.5%*	*100.0%*

Cost of Service Comparison	Revenue Under Existing Rates	Unadjusted COS	Adjusted COS	Impacts: % Increase Unadjusted	Impacts: % Increase Adjusted
All User Charge Revenue					
Residential	$ 44,459,448	$ 42,608,940	$ 47,993,529	-4.16%	7.95%
Residential - CAP	1,243,999	1,923,214	2,151,206	54.60%	72.93%
Commercial	41,860,908	46,686,432	52,219,281	11.53%	24.74%
Industrial	2,165,551	2,529,740	2,865,114	16.82%	32.30%
Health or Education	18,444,801	17,449,322	19,452,933	-5.40%	5.47%
Municipal - Metered	1,025,432	3,005,846	1,312,778	100.00%	100.00%
Municipal - Unmetered	-	1,031,119	0	100.00%	100.00%
Private Fire System	804,307	871,311	942,683	8.33%	17.20%
Public Fire Protection	-	5,462,301	546,230	100.00%	100.00%
Wholesale	2,911,475	7,854,491	3,271,034	169.78%	12.35%
Riverbend	-	-	-	#DIV/0!	#DIV/0!
Subtotal: All User Charge Revenue	$ 112,915,921	$ 129,422,716	$ 130,754,789	14.62%	15.80%

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Minimum Charge Calculation

HJS-11W

	Min. Usage	COS Rate Build-Up - Test Year: 2021											
							Adjustments					
Water	*Proposed*	*Meter*	*Billing*	*R.T.S.*	*Usage*	*Total COS Rates*	Public Fire	Wholesale	City	Bad Debt	CAP-BDP	*Proposed Rates*
Minimum Charge												
5/8"	1	$ 2.37	$ 2.00	$ 8.55	$ 13.54	$ 26.46	$ -	$ -	$ -	$ -	$ -	$ 26.46
3/4"	2	3.55	2.00	12.83	27.08	45.46	-	-	-	-	-	45.46
1"	5	5.92	2.00	21.38	67.69	96.99	-	-	-	-	-	97.00
1 1/2"	10	11.85	2.00	42.76	135.38	191.99	-	-	-	-	-	191.99
2"	17	18.96	2.00	68.42	230.15	319.52	-	-	-	-	-	319.53
3"	40	37.91	2.00	136.84	541.53	718.28	-	-	-	-	-	718.29
4"	70	59.24	2.00	213.82	947.67	1,222.73	-	-	-	-	-	1,222.73
6"	175	118.48	2.00	427.64	2,369.17	2,917.29	-	-	-	-	-	2,917.29
8"	325	189.57	2.00	684.22	4,399.89	5,275.68	-	-	-	-	-	5,275.69
10" & Above	548	272.51	2.00	983.57	7,418.89	8,676.97	-	-	-	-	-	8,676.97
Unmetered	1	2.37	2.00	8.55	13.54	26.46	-	-	-	-	-	26.46
Minimum Charge - CAP-BDP												
5/8"	1	$ 2.37	$ 2.00	$ 8.55	$ 13.54	$ 26.46	$ -	$ -	$ -	$ -	$ (26.46)	$ -
3/4"	2	3.55	2.00	12.83	27.08	45.46	-	-	-	-	(45.46)	-
1"	5	5.92	2.00	21.38	67.69	96.99	-	-	-	-	(96.99)	-
Unmetered		2.37	2.00	8.55	13.54	26.46	-	-	-	-	(26.46)	-

							Adjustments					
Monthly Fire Protection		*Meter*	*Billing*	*R.T.S.*	*Fire*	*Total*	Public Fire	Wholesale	City	Bad Debt	CAP-BDP	*Proposed Rates*
Public												
Per Hydrant		$ -	$ -	$ -	$ 60.90	$ 60.90	$ (54.81)	$ -	$ -	$ -	$ -	$ 6.09
Private												
1" or Less		$ 5.92	$ 2.00	$ 21.38	$ 3.04	$ 32.35	$ -	$ -	$ -	$ -	$ -	$ 32.35
1 1/2"-3"		18.96	2.00	68.42	9.74	99.12	-	-	-	-	-	99.12
4"		59.24	2.00	213.82	30.45	305.50	-	-	-	-	-	305.51
6" or Greater		118.48	2.00	427.64	60.90	609.01	-	-	-	-	-	609.02

Pittsburgh Water and Sewer Authority HJS-11W
2021 COS & Rate Design
Volume Charge Calculation

	Fixed Charge Revenue	Net Volumetric Rev. Req	Billed Volume	COS Rates
Volume Charge (per kgal)				
Residential	$ 22,826,933	$19,782,007	1,935,013	$ 10.22
Residential - CAP	956,445	966,769	90,435	10.69
Commercial	15,900,988	30,785,444	2,620,824	11.75
Industrial	574,756	1,954,984	187,994	10.40
Health or Education	4,293,607	13,155,715	1,022,005	12.87
Municipal - Metered	268,049	2,737,796	221,594	12.36
Municipal - Unmetered	25,081	1,006,038	36,624	27.47
Private Fire System	652,697	218,614	14,668	14.90
Wholesale	-	7,854,491	803,729	9.77
Riverbend	-	-	-	-
Total: User Charge Revenue	45,498,558	78,461,857	6,932,884	$ 11.32

	Adjusted Revenue Requirement	Fixed Charge Revenue	CAP BDP Cost (Forgone Revenue)	CAP BDP Adjustment	Total Volumetric Rev Req	Billed Volume	Proposed Rates
Volume Charge (per kgal)							
Residential + CAP	$ 50,144,734	$22,829,342	$ (956,234)	$ 380,572	$ 26,739,730	2,025,447	$ 13.20
Residential - CAP							13.20
Commercial	52,219,281	15,901,317		396,317	36,714,281	2,620,824	14.01
Industrial	2,865,114	574,762		21,745	2,312,097	187,994	12.30
Health or Education	19,452,933	4,293,637		147,637	15,306,934	1,022,005	14.98
Municipal - Metered	1,312,778	107,221		9,963	1,215,521	221,594	5.60
Private Fire System	942,683	652,738		-	289,945	14,668	19.77
Public Fire System	546,230	546,273		-	(43)	-	n/a
Wholesale	3,271,034	-		-	3,271,034	n/a	n/a
Riverbend	-	-		-	-	n/a	n/a
Total: User Charge Revenue	$ 130,754,789	44,905,290	(956,234)	956,234	85,849,498	6,092,531	14.09

Pittsburgh Water and Sewer Authority HJS-12W
2021 COS & Rate Design
Proposed Rates

	FTY Prior Tariff Rates	FPFTY Proposed Rates	Percent Difference	Dollar Difference
Existing & Proposed Rates				
Minimum Charge				
5/8"	$ 27.27	$ 26.46	-3.0%	$ (0.81)
3/4"	44.37	45.46	2.5%	1.09
1"	89.82	97.00	8.0%	7.18
1 1/2"	175.30	191.99	9.5%	16.69
2"	289.14	319.53	10.5%	30.39
3"	641.48	718.29	12.0%	76.81
4"	1,084.28	1,222.73	12.8%	138.45
6"	2,558.16	2,917.29	14.0%	359.13
8"	4,596.96	5,275.69	14.8%	678.73
10" & Above	7,515.81	8,676.97	15.4%	1,161.16
Minimum Charge - CAP (1)				
5/8"	$ 6.82	$ -	-100.0%	$ (6.82)
3/4"	11.09	-	-100.0%	(11.09)
1"	22.46	-	-100.0%	(22.46)
Fire System Charges				
Private				
1" or Less	$ 31.60	$ 32.35	2.4%	$ 0.75
1 1/2"-3"	83.30	99.12	19.0%	15.82
4"	177.57	305.51	72.1%	127.94
6" or Greater	507.98	609.02	19.9%	101.04
Public				
Per Hydrant (2)	$ -	$ 15.23	100.0%	$ 15.23
Volume Charge (3)				
Residential	$ 11.04	$ 13.20	19.6%	$ 2.16
Residential - CAP	11.04	13.20	19.6%	2.16
Commercial	10.48	14.01	33.7%	3.53
Industrial	8.81	12.30	39.6%	3.49
Health or Education	14.32	14.98	4.6%	0.66
Fire System	13.49	19.77	46.6%	6.28
Wholesale	n/a	9.77	100.0%	9.77
Unmetered Charges (per Unit)				
Residential	$ 44.36	66.06	48.9%	$ 21.70
Residential - CAP	11.09	26.40	138.1%	15.31
Commercial	88.26	82.50	-6.5%	(5.76)
DSIC (Applies to all retail customers)	0.0%	10.0%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in 2021.
(2) Public hydrant charges are presented at a 40% phase-in level.
(3) Municipal customers are charged the Commercial volumetric rate. In the FPFTY, the phase-in level is 40%.

Pittsburgh Water and Sewer Authority HJS-13W

2021 COS & Rate Design

Comparison of Base Rate Revenues by Customer Class

	FPFTY Revenue at Existing Rates	FPFTY Indicated COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 44,459,448	$ 42,608,940	-4.2%	$ (1,850,507)
Residential - CAP	1,243,999	1,923,214	54.6%	679,215
Commercial	41,860,908	46,686,432	11.5%	4,825,523
Industrial	2,165,551	2,529,740	16.8%	364,189
Health or Education	18,444,801	17,449,322	-5.4%	(995,479)
Municipal - Metered	1,025,432	3,005,846	193.1%	1,980,414
Municipal - Unmetered	-	1,031,119	100.0%	1,031,119
Private Fire System	804,307	871,311	8.3%	67,004
Public Fire Protection	-	5,462,301	100.0%	5,462,301
Wholesale	2,911,475	7,854,491	169.8%	4,943,016
Total: Base Rate Revenues	**$ 112,915,921**	**$ 129,422,716**	**14.6%**	**$ 16,506,795**

	FPFTY Indicated COS by Customer Class	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 42,608,940	$ 48,375,335	13.5%	$ 5,766,395
Residential - CAP	1,923,214	1,193,737	-37.9%	(729,477)
Commercial	46,686,432	52,615,598	12.7%	5,929,166
Industrial	2,529,740	2,886,859	14.1%	357,119
Health or Education	17,449,322	19,600,571	12.3%	2,151,249
Municipal - Metered	3,005,846	1,322,742	-56.0%	(1,683,104)
Municipal - Unmetered	1,031,119	0	-100.0%	(1,031,119)
Private Fire System	871,311	942,683	8.2%	71,372
Public Fire Protection	5,462,301	546,230	-90.0%	(4,916,071)
Wholesale	7,854,491	3,271,034	-58.4%	(4,583,457)
Total: Base Rate Revenues	**$ 129,422,716**	**$ 130,754,789**	**1.0%**	**$ 1,332,073**

	FPFTY Revenue at Existing Rates	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 44,459,448	$ 48,375,335	8.8%	$ 3,915,888
Residential - CAP	1,243,999	1,193,737	-4.0%	(50,263)
Commercial	41,860,908	52,615,598	25.7%	10,754,689
Industrial	2,165,551	2,886,859	33.3%	721,307
Health or Education	18,444,801	19,600,571	6.3%	1,155,770
Municipal - Metered	1,025,432	1,322,742	29.0%	297,310
Municipal - Unmetered	-	0	0.0%	0
Private Fire System	804,307	942,683	17.2%	138,376
Public Fire Protection	-	546,230	100.0%	546,230
Wholesale	2,911,475	3,271,034	12.3%	359,559
Total: Base Rate Revenues	**$ 112,915,921**	**$ 130,754,789**	**15.8%**	**$ 17,838,868**

	FPFTY Revenue at Existing Rates	FPFTY Revenue at Proposed Rates	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 44,459,448	$ 48,371,511	8.8%	$ 3,912,063
Residential - CAP	1,243,999	1,193,737	-4.0%	(50,263)
Commercial	41,860,908	52,619,054	25.7%	10,758,146
Industrial	2,165,551	2,887,087	33.3%	721,535
Health or Education	18,444,801	19,603,267	6.3%	1,158,466
Municipal - Metered	1,025,432	1,349,031	31.6%	323,599
Municipal - Unmetered	-	-	0.0%	-
Private Fire System	804,307	942,726	17.2%	138,419
Public Fire Protection	-	546,273	100.0%	546,273
Wholesale	2,911,475	3,271,034	12.3%	359,559
Total: Base Rate Revenues	**$ 112,915,921**	**$ 130,783,719**	**15.8%**	**$ 17,867,798**

Pittsburgh Water and Sewer Authority HJS-14W
2021 COS & Rate Design
FPFTY CCOS Comparison - Water

	Adjusted COS		Revenue at Existing Rates		Revenue at Proposed Rates		Proposed Increase	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
Base Rate Revenues								
Residential	$ 48,375,335	37.0%	$ 44,459,448	39.4%	$ 48,371,511	37.0%	$ 3,912,063	8.8%
Residential - CAP	1,193,737	0.9%	1,243,999	1.1%	1,193,737	0.9%	(50,263)	-4.0%
Commercial	52,615,598	40.2%	41,860,908	37.1%	52,619,054	40.2%	10,758,146	25.7%
Industrial	2,886,859	2.2%	2,165,551	1.9%	2,887,087	2.2%	721,535	33.3%
Health or Education	19,600,571	15.0%	18,444,801	16.3%	19,603,267	15.0%	1,158,466	6.3%
Municipal	1,322,742	1.0%	1,025,432	0.9%	1,349,031	1.0%	323,599	31.6%
Municipal - Unmetered	0	0.0%	-	0.0%	-	0.0%	-	0.0%
Private Fire System	942,683	0.7%	804,307	0.7%	942,726	0.7%	138,419	17.2%
Public Fire Protection	546,230	0.4%	-	0.0%	546,273	0.4%	546,273	100.0%
Wholesale & Bulk	3,271,034	2.5%	2,911,475	2.6%	3,271,034	2.5%	359,559	12.3%
Subtotal: Base Rate Revenues	**$ 130,754,789**	100.0%	**$ 112,915,921**	100.0%	**$ 130,783,719**	100.0%	**$ 17,867,798**	15.8%
DSIC Revenues								
Residential	n/a	n/a	$ -	0.0%	$ 4,837,151	38.1%	$ 4,837,151	
Residential - CAP	n/a	n/a	-	0.0%	119,374	0.9%	119,374	
Commercial	n/a	n/a	-	0.0%	5,261,905	41.4%	5,261,905	
Industrial	n/a	n/a	-	0.0%	288,709	2.3%	288,709	
Health or Education	n/a	n/a	-	0.0%	1,960,327	15.4%	1,960,327	
Municipal	n/a	n/a	-	0.0%	94,273	0.7%	94,273	
Private Fire System	n/a	n/a	-	0.0%	134,903	1.1%	134,903	
Subtotal: DSIC Revenues	n/a	n/a	**$ -**	100.0%	**$ 12,696,641**	100.0%	**$ 12,696,641**	
Total: User Charge Revenues	**$ 130,754,789**		**$ 112,915,921**		**$ 143,480,360**		**$ 30,564,439**	**27.1%**
Other Revenues								
Miscellaneous Revenues	3,221,571		3,221,571		3,221,571		-	0.0%
Total: Water Revenues	**$ 133,976,359**		**$ 116,137,492**		**$ 146,701,931**		**$ 30,564,439**	**26.3%**

Pittsburgh Water and Sewer Authority HJS-15W

2021 COS & Rate Design

Typical Bill Comparison

	Customer Usage	FTY Existing Rates	FPFTY Proposed Rates	Percent Difference	Dollar Difference
Customer Impacts (1)					
Residential					
5/8"	1 kgal	$ 27.27	$ 29.11	6.7%	$ 1.84
5/8"	3 kgal	49.35	58.15	17.8%	8.80
5/8"	5 kgal	71.43	87.19	22.1%	15.76
5/8"	7 kgal	93.51	116.23	24.3%	22.72
5/8"	12 kgal	148.71	188.83	27.0%	40.12
1"	20 kgal	255.42	324.50	27.0%	69.08
Commercial					
5/8"	3 kgal	$ 48.23	$ 59.93	24.3%	$ 11.70
5/8"	5 kgal	69.19	90.75	31.2%	21.56
5/8"	12 kgal	142.55	198.63	39.3%	56.08
1"	13 kgal	173.66	229.99	32.4%	56.33
2"	80 kgal	949.38	1,322.38	39.3%	373.00
4"	160 kgal	2,027.48	2,731.99	34.7%	704.51
Industrial					
1"	30 kgal	$ 310.07	$ 444.95	43.5%	$ 134.88
1"	60 kgal	574.37	850.85	48.1%	276.48
2"	100 kgal	1,020.37	1,474.47	44.5%	454.10
4"	680 kgal	6,458.38	9,598.30	48.6%	3,139.92
6"	400 kgal	4,540.41	6,253.27	37.7%	1,712.86
8"	800 kgal	8,781.71	12,230.01	39.3%	3,448.30
Health or Education					
5/8"	5 kgal	$ 84.55	$ 95.02	12.4%	$ 10.47
5/8"	10 kgal	156.15	177.41	13.6%	21.26
1"	40 kgal	591.02	683.43	15.6%	92.41
2"	50 kgal	761.70	895.26	17.5%	133.56
4"	200 kgal	2,945.88	3,487.14	18.4%	541.26
6"	650 kgal	9,360.16	11,036.07	17.9%	1,675.91

(1) FPFTY customer bills at proposed rates include a 10% DSIC.

Pittsburgh Water and Sewer Authority HJS-16W
2021 COS & Rate Design
Water Revenue Proof

	2021 Revenue @ Existing Rates			2021 Revenue @ COS Rates			2021 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
Base Rate Revenues									
Minimum Charges									
Residential									
5/8"	701,053	$ 27.27	$ 19,117,708	701,053	$ 26.46	$ 18,547,766	701,053	$ 26.46	$ 18,549,856
3/4"	30,650	44.37	1,359,960	30,650	45.46	1,393,257	30,650	45.46	1,393,369
1"	28,486	89.82	2,558,583	28,486	96.99	2,762,915	28,486	97.00	2,763,110
1 1/2"	70	175.30	12,271	70	191.99	13,439	70	191.99	13,439
2"	12	289.14	3,470	12	319.52	3,834	12	319.53	3,834
Unmetered	3,996	44.36	177,263	3,996	57.12	228,240	3,996	66.06	263,976
Subtotal: Residential	764,267		$ 23,229,254	764,267		$ 22,949,451	764,267		$ 22,987,584
Residential - CAP-BDP									
5/8"	34,947	$ 6.82	$ 238,254	34,947	$ 26.46	$ 924,603	34,947	$ -	$ -
3/4"	319	11.09	3,534	319	45.46	14,482	319	-	-
1"	176	22.46	3,946	176	96.99	17,043	176	-	-
1 1/2"	-	43.83	-	-	-	-	-	-	-
2"	-	72.29	-	-	-	-	-	-	-
Unmetered	12	11.09	133	12	47.84	574	12	26.40	317
Subtotal: Residential - CAP-BDP	35,454		$ 245,866	35,454		$ 956,702	35,454		$ 317
Commercial									
5/8"	31,327	$ 27.27	$ 854,287	31,327	$ 26.46	$ 828,819	31,327	$ 26.46	$ 828,912
3/4"	7,879	44.37	349,591	7,879	45.46	358,151	7,879	45.46	358,179
1"	15,750	89.82	1,414,665	15,750	96.99	1,527,642	15,750	97.00	1,527,750
1 1/2"	10,149	175.30	1,779,120	10,149	191.99	1,948,505	10,149	191.99	1,948,507
2"	9,412	289.14	2,721,386	9,412	319.52	3,007,359	9,412	319.53	3,007,416
3"	2,930	641.48	1,879,536	2,930	718.28	2,104,561	2,930	718.29	2,104,590
4"	2,189	1,084.28	2,373,489	2,189	1,222.73	2,676,547	2,189	1,222.73	2,676,556
6"	1,014	2,558.16	2,593,974	1,014	2,917.29	2,958,132	1,014	2,917.29	2,958,132
8"	93	4,596.96	427,517	93	5,275.68	490,638	93	5,275.69	490,639
10" & Above	-	7,515.81	-	-	8,676.97	-	-	8,676.97	-
Unmetered	24	88.26	2,118	24	73.46	1,763	24	82.50	1,980
Subtotal: Commercial	80,767		$ 14,395,684	80,767		$ 15,902,116	80,767		$ 15,902,662
Industrial									
5/8"	257	$ 27.27	$ 7,008	257	$ 26.46	$ 6,799	257	$ 26.46	$ 6,800
3/4"	161	44.37	7,144	161	45.46	7,318	161	45.46	7,319
1"	300	89.82	26,946	300	96.99	29,098	300	97.00	29,100
1 1/2"	72	175.30	12,622	72	191.99	13,823	72	191.99	13,823
2"	172	289.14	49,732	172	319.52	54,958	172	319.53	54,959
3"	24	641.48	15,396	24	718.28	17,239	24	718.29	17,239
4"	100	1,084.28	108,428	100	1,222.73	122,273	100	1,222.73	122,273
6"	24	2,558.16	61,396	24	2,917.29	70,015	24	2,917.29	70,015
8"	48	4,596.96	220,654	48	5,275.68	253,233	48	5,275.69	253,233
10" & Above	-	7,515.81	-	-	8,676.97	-	-	8,676.97	-
Subtotal: Industrial	1,158		$ 509,325	1,158		$ 574,756	1,158		$ 574,762
Health or Education									
5/8"	408	$ 27.27	$ 11,126	408	$ 26.46	$ 10,794	408	$ 26.46	$ 10,796
3/4"	101	44.37	4,481	101	45.46	4,591	101	45.46	4,591
1"	295	89.82	26,497	295	96.99	28,613	295	97.00	28,615
1 1/2"	773	175.30	135,507	773	191.99	148,408	773	191.99	148,408
2"	1,730	289.14	500,212	1,730	319.52	552,776	1,730	319.53	552,787
3"	1,156	641.48	741,551	1,156	718.28	830,332	1,156	718.29	830,343
4"	838	1,084.28	908,627	838	1,222.73	1,024,644	838	1,222.73	1,024,648
6"	444	2,558.16	1,135,823	444	2,917.29	1,295,277	444	2,917.29	1,295,277
8"	36	4,596.96	165,491	36	5,275.68	189,925	36	5,275.69	189,925
10" & Above	24	7,515.81	180,379	24	8,676.97	208,247	24	8,676.97	208,247
Subtotal: Health or Education	5,805		$ 3,809,694	5,805		$ 4,293,607	5,805		$ 4,293,637
Municipal									
5/8"	180	$ 10.91	$ 1,963	180	$ 26.46	$ 4,762	180	$ 10.58	$ 1,905
3/4"	60	17.75	1,065	60	45.46	2,727	60	18.18	1,091
1"	84	35.93	3,018	84	96.99	8,147	84	38.80	3,259
1 1/2"	288	70.12	20,195	288	191.99	55,293	288	76.80	22,117
2"	252	115.66	29,145	252	319.52	80,520	252	127.81	32,209
3"	24	256.59	6,158	24	718.28	17,239	24	287.32	6,896
4"	24	433.71	10,409	24	1,222.73	29,345	24	489.09	11,738
6"	24	1,023.26	24,558	24	2,917.29	70,015	24	1,166.92	28,006
8"	-	1,838.78	-	-	5,275.68	-	-	2,110.28	-
10" & Above	-	3,006.32	-	-	8,676.97	-	-	3,470.79	-
Subtotal: Municipal	936		$ 96,512	936		$ 268,049	936		$ 107,221
Municipal - Unmetered									
EMS / Fire / Police Station	108	$ -	$ -	108	$ 301.16	$ 32,525	108	$ -	$ -
Public Park or Playground	468	-	-	468	1,619.72	758,028	468	-	-
Swimming Pool	120	-	-	120	630.80	75,696	120	-	-
Municipal Building	48	-	-	48	81.40	3,907	48	-	-
Municipal Garage	48	-	-	48	163.81	7,863	48	-	-
Rec Center	24	-	-	24	3,817.32	91,616	24	-	-
Other	132	-	-	132	465.98	61,509	132	-	-
Subtotal: Municipal - Unmetered	948		$ -	948		$ 1,031,143	948		$ -
Subtotal: Minimum Charges			$ 42,286,335			$ 45,975,824			$ 43,866,182

Pittsburgh Water and Sewer Authority HJS-16W
2021 COS & Rate Design
Water Revenue Proof

	2021 Revenue @ Existing Rates			2021 Revenue @ COS Rates			2021 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
Fire Protection Charges									
Public (per Hydrant)	89,700	-	$ -	89,700	60.90	$ 5,462,301	89,700	6.09	$ 546,273
Private									
1" or Less	14,343	$ 31.60	$ 453,239	14,343	$ 32.35	$ 463,957	14,343	$ 32.35	$ 463,996
1 1/2"-3"	644	83.30	53,645	644	99.12	63,833	644	99.12	63,833
4"	60	177.57	10,654	60	305.50	18,330	60	305.51	18,331
6" or Greater	175	507.98	88,897	175	609.01	106,577	175	609.02	106,579
Subtotal: Fire Protection Charges			$ 606,435			$ 6,114,998			$ 1,199,011
Volume Charge									
Residential	1,923,025	$ 11.04	$ 21,230,193	1,923,025	$ 10.22	$ 19,653,313	1,923,025	$ 13.20	$ 25,383,927
Residential - CAP-BDP	90,411	11.04	998,133	90,411	10.69	966,489	90,411	13.20	1,193,420
Commercial	2,620,728	10.48	27,465,225	2,620,728	11.75	30,793,548	2,620,728	14.01	36,716,393
Industrial	187,994	8.81	1,656,226	187,994	10.40	1,955,137	187,994	12.30	2,312,325
Health or Education	1,022,005	14.32	14,635,107	1,022,005	12.87	13,153,200	1,022,005	14.98	15,309,630
Private Fire System	14,668	13.49	197,872	14,668	14.90	218,554	14,668	19.77	289,987
Municipal	221,594	4.19	928,920	221,594	12.36	2,738,896	221,594	5.60	1,241,810
Subtotal: Volume Charge	6,080,423		$ 67,111,676			$ 69,479,137			$ 82,447,491
Total: Base Rate Revenues			$ 110,004,446			$ 121,569,959			$ 127,512,685
DSIC Revenues									
Residential						$ 4,260,276			$ 4,837,151
Residential - CAP-BDP						192,319			119,374
Commercial						4,669,566			5,261,905
Industrial						252,989			288,709
Health or Education						1,744,681			1,960,327
Private Fire System						87,125			94,273
Municipal						403,809			134,903
Total: DSIC Revenues						$ 11,610,766			$ 12,696,641
Other Revenues									
Wholesale Revenues (Set by Contract)			$ 2,911,475	803,729	$ 9.77	$ 7,852,432			$ 3,271,034
Other Revenues			3,221,571			3,221,571			3,221,571
Total: Other Revenues			$ 6,133,046			$ 11,074,003			$ 6,492,605
Total: System Revenues			**$ 116,137,492**			**$ 144,254,728**			**$ 146,701,931**
FPFTY Water System Revenue Requirements						**$ 146,672,854**			**$ 146,672,854**
Difference (1)						**$ (2,418,126)**			**$ 29,077**
(1) Note difference in COS rates is bad debt. Cost is added to adjusted COS before rate design.						**$ 1,332,073**			

Pittsburgh Water and Sewer Authority HJS-17W
2021 COS & Rate Design
Projected Units of Service

	FY 2017 *Actual*	FY 2018 *Actual*	HTY FY 2019 *Actual*	FTY FY 2020 *Projected*	FPFTY FY 2021 *Projected*
Units of Service					
Number of Bills					
Residential	802,999	781,189	778,126	769,779	764,267
Residential - CAP	-	11,077	21,594	29,941	35,454
Commercial	82,317	80,365	80,767	80,767	80,767
Industrial	1,198	1,173	1,158	1,158	1,158
Health or Education	6,152	5,932	5,805	5,805	5,805
Fire System	14,563	14,673	15,222	15,222	15,222
Municipal	-	-	-	-	936
Total	907,229	894,409	902,672	902,672	903,609
Billable Consumption (kgal)					
Residential	2,091,836	2,041,350	1,874,792	1,937,089	1,923,025
Residential - CAP	-	31,049	55,055	76,347	90,411
Commercial	2,942,211	2,723,585	2,517,870	2,620,728	2,620,728
Industrial	161,491	183,343	192,645	187,994	187,994
Health or Education	1,258,763	1,068,428	975,581	1,022,005	1,022,005
Fire System	4,005	7,913	21,423	14,668	14,668
Municipal	-	-	-	221,594	221,594
Total	6,458,306	6,055,668	5,637,366	6,080,423	6,080,423
Total Consumption (kgal) (1)					
Residential	2,914,122	2,842,635	2,668,533	2,727,019	2,707,771
Residential - CAP	-	41,602	75,349	104,489	123,737
Commercial	3,587,585	3,363,268	3,163,601	3,263,435	3,263,435
Industrial	182,006	203,757	209,655	206,706	206,706
Health or Education	1,453,286	1,253,008	1,158,177	1,205,593	1,205,593
Fire System	5,001	8,887	22,506	15,697	15,697
Municipal	-	-	-	225,528	225,528
Total	8,142,000	7,713,157	7,297,821	7,748,466	7,748,466
Wholesale & Contract Consumption					
Allegheny	6,978	7,911	1,030	-	-
Aspinwall	94,552	81,386	59,842	70,614	70,616
Bay Valley Foods / Riverbend (2)	724,835	462,007	263,171	-	-
Fox Chapel	509,953	612,616	632,050	622,333	622,336
Hampton	11,023	3,607	2,997	-	-
PAWC	-	5,400	2,800	-	-
RSRV - 10"	30,678	97,405	95,941	96,673	96,676
RSRV - 6"	17,815	14,663	13,532	14,098	14,101
Sharpsburg	-	-	-	-	-
Westview	-	6,845	8,410	-	-
Total	1,395,834	1,291,840	1,079,773	803,718	803,729

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.
(2) Riverbend foods closed in July 2019.

Pittsburgh Water and Sewer Authority HJS-18W
2021 COS & Rate Design
2022 Water Revenue Requirements

Water System Revenue Requirements		**2022 Revenue Requirements**
Operating Expenses		
Direct Operating Expenses		
Administrative Division		
Executive Director	$	1,745,342
Customer Service		2,245,620
Management Information Systems		2,830,522
Finance		8,226,571
Procurement		-
Human Resources		974,759
Legal		3,298,273
Public Affairs		1,170,383
Operations Division		
Environmental Compliance		1,475,312
Ops Capital Assets		-
Warehouse		461,802
Water Treatment Plant		22,401,447
Water Quality (Lab)		1,765,712
Water Distribution		16,559,300
Sewer Operations		-
Engineering & Construction		
Engineering & Construction		19,622,967
Other Operating Expenses		
Loss / (Gain) on ALCOSAN Billings		-
Non-City Water Payments		475,975
Total Operating Expenses	$	83,253,984
Debt Service		
Existing Debt	$	32,948,192
Future Debt		19,570,663
Subtotal: Debt Service	$	52,518,855
Capital Expenditures & Transfers		
Internally Generated Funds / PAYGO	$	3,835,842
Internally Generated Funds / PAYGO (DSIC)		13,426,572
Other Transfers to Reserves		615,885
Reimbursements from Municipalities		-
Remarketing & Liquidity Charges		-
Bad Debt Expense		1,425,968
Subtotal: Capital Expenditures & Transfers	$	19,304,266
Total: Water System Revenue Requirements	**$**	**155,077,106**
Capital Costs to be Recovered through DSIC	**$**	**(13,426,572)**
Total: Water System Base Rate Revenue Requirement	**$**	**141,650,533**

Pittsburgh Water and Sewer Authority HJS-19W

2021 COS & Rate Design

Proposed Rates

	FPFTY 2021 Proposed Rates	2022 Proposed Rates	Percent Difference	Dollar Difference
Existing & Proposed Rates				
Minimum Charge				
5/8"	$ 26.46	$ 27.81	5.1%	$ 1.35
3/4"	45.46	47.78	5.1%	2.32
1"	97.00	101.95	5.1%	4.95
1 1/2"	191.99	201.78	5.1%	9.79
2"	319.53	335.83	5.1%	16.30
3"	718.29	754.92	5.1%	36.63
4"	1,222.73	1,285.09	5.1%	62.36
6"	2,917.29	3,066.07	5.1%	148.78
8"	5,275.69	5,544.75	5.1%	269.06
10" & Above	8,676.97	9,119.50	5.1%	442.53
Minimum Charge - CAP (1)				
5/8"	$ -	$ -	0.0%	$ -
3/4"	-	-	0.0%	-
1"	-	-	0.0%	-
Fire System Charges				
Private				
1" or Less	$ 32.35	$ 34.00	5.1%	$ 1.65
1 1/2"-3"	99.12	104.18	5.1%	5.06
4"	305.51	321.09	5.1%	15.58
6" or Greater	609.02	640.08	5.1%	31.06
Public				
Per Hydrant (2)	$ 15.23	$ 16.00	5.1%	$ 0.78
Volume Charge (3)				
Residential	$ 13.20	$ 13.87	5.1%	$ 0.67
Residential - CAP	13.20	13.87	5.1%	0.67
Commercial	14.01	14.72	5.1%	0.71
Industrial	12.30	12.93	5.1%	0.63
Health or Education	14.98	15.74	5.1%	0.76
Fire System	19.77	20.78	5.1%	1.01
Wholesale	9.77	10.27	5.1%	0.50
Unmetered Charges (per Unit)				
Residential	$ 66.06	$ 69.42	5.1%	$ 3.36
Residential - CAP	26.40	27.74	5.1%	1.34
Commercial	82.50	86.69	5.1%	4.19
DSIC (Applies to all retail customers)	10.0%	10.0%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in 2021 and 2022.

(2) Public hydrant charges are phased-in at 40% and 60% in 2021 and 2022, respectively.

(3) Municipal customers are charged the Commercial volumetric rate. The phase-in level is 40%. and 60% for 2021 and 2022, respectively.

Pittsburgh Water and Sewer Authority HJS-20W
2021 COS & Rate Design
Water Revenue Proof

	2022 Revenue @ 2021 Rates			2022 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue
Base Rate Revenues						
Minimum Charges						
Residential						
5/8"	701,053	$ 26.46	$ 18,549,872	701,053	$ 27.81	$ 19,496,294
3/4"	30,650	45.46	1,393,330	30,650	47.78	1,464,437
1"	28,486	97.00	2,763,114	28,486	101.95	2,904,119
1 1/2"	70	191.99	13,439	70	201.78	14,125
2"	12	319.53	3,834	12	335.83	4,030
Unmetered	3,996	66.06	263,976	3,996	69.42	277,402
Subtotal: Residential	764,267		$ 22,987,566	764,267		$ 24,160,406
Residential - CAP-BDP						
5/8"	34,947	$ -	$ -	34,947	$ -	$ -
3/4"	319	-	-	319	-	-
1"	176	-	-	176	-	-
1 1/2"	-	-	-	-	-	-
2"	-	-	-	-	-	-
Unmetered	12	26.40	317	12	27.74	333
Subtotal: Residential - CAP-BDP	35,454		$ 317	35,454		$ 333
Commercial						
5/8"	31,327	$ 26.46	$ 828,912	31,327	$ 27.81	$ 871,204
3/4"	7,879	45.46	358,179	7,879	47.78	376,459
1"	15,750	97.00	1,527,750	15,750	101.95	1,605,713
1 1/2"	10,149	191.99	1,948,507	10,149	201.78	2,047,865
2"	9,412	319.53	3,007,416	9,412	335.83	3,160,832
3"	2,930	718.29	2,104,590	2,930	754.92	2,211,916
4"	2,189	1,222.73	2,676,556	2,189	1,285.09	2,813,062
6"	1,014	2,917.29	2,958,132	1,014	3,066.07	3,108,995
8"	93	5,275.69	490,639	93	5,544.75	515,662
10" & Above	-	8,676.97	-	-	9,119.50	-
Unmetered	24	82.50	1,980	24	86.69	2,081
Subtotal: Commercial	80,767		$ 15,902,662	80,767		$ 16,713,787
Industrial						
5/8"	257	$ 26.46	$ 6,800	257	$ 27.81	$ 7,147
3/4"	161	45.46	7,319	161	47.78	7,693
1"	300	97.00	29,100	300	101.95	30,585
1 1/2"	72	191.99	13,823	72	201.78	14,528
2"	172	319.53	54,959	172	335.83	57,763
3"	24	718.29	17,239	24	754.92	18,118
4"	100	1,222.73	122,273	100	1,285.09	128,509
6"	24	2,917.29	70,015	24	3,066.07	73,586
8"	48	5,275.69	253,233	48	5,544.75	266,148
10" & Above	-	8,676.97	-	-	9,119.50	-
Subtotal: Industrial	1,158		$ 574,762	1,158		$ 604,076
Health or Education						
5/8"	408	$ 26.46	$ 10,796	408	$ 27.81	$ 11,346
3/4"	101	45.46	4,591	101	47.78	4,826
1"	295	97.00	28,615	295	101.95	30,075
1 1/2"	773	191.99	148,408	773	201.78	155,976
2"	1,730	319.53	552,787	1,730	335.83	580,986
3"	1,156	718.29	830,343	1,156	754.92	872,688
4"	838	1,222.73	1,024,648	838	1,285.09	1,076,905
6"	444	2,917.29	1,295,277	444	3,066.07	1,361,335
8"	36	5,275.69	189,925	36	5,544.75	199,611
10" & Above	24	8,676.97	208,247	24	9,119.50	218,868
Subtotal: Health or Education	5,805		$ 4,293,637	5,805		$ 4,512,616
Municipal						
5/8"	180	$ 15.88	$ 2,858	180	$ 16.69	$ 3,003
3/4"	60	27.28	1,637	60	28.67	1,720
1"	84	58.20	4,889	84	61.17	5,138
1 1/2"	288	115.19	33,176	288	121.07	34,868
2"	252	191.72	48,313	252	201.50	50,777
3"	24	430.97	10,343	24	452.95	10,871
4"	24	733.64	17,607	24	771.05	18,505
6"	24	1,750.37	42,009	24	1,839.64	44,151
8"	-	3,165.41	-	-	3,326.85	-
10" & Above	-	5,206.18	-	-	5,471.70	-
Subtotal: Municipal	936		$ 160,832	936		$ 169,034

Pittsburgh Water and Sewer Authority HJS-20W
2021 COS & Rate Design
Water Revenue Proof

	2022 Revenue @ 2021 Rates			2022 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue
Municipal - Unmetered						
EMS / Fire / Police Station	108	$ -	$ -	108	$ -	$ -
Public Park or Playground	468	-	-	468	-	-
Swimming Pool	120	-	-	120	-	-
Municipal Building	48	-	-	48	-	-
Municipal Garage	48	-	-	48	-	-
Rec Center	24	-	-	24	-	-
Other	132	-	-	132	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Subtotal: Municipal - Unmetered	948		$ -	948		$ -
Subtotal: Minimum Charges			$ 43,919,774			$ 46,160,254
Fire Protection Charges						
Public (per Hydrant)	89,700	9.14	$ 819,410	89,700	9.60	$ 861,120
Private						
1" or Less	14,343	$ 32.35	$ 463,996	14,343	$ 34.00	$ 487,662
1 1/2"-3"	644	99.12	63,833	644	104.18	67,092
4"	60	305.51	18,331	60	321.09	19,265
6" or Greater	175	609.02	106,579	175	640.08	112,014
Subtotal: Fire Protection Charges			$ 1,472,148			$ 1,547,153
Volume Charge						
Residential	1,923,025	$ 13.20	$ 25,383,926	1,923,025	$ 13.87	$ 26,672,353
Residential - CAP-BDP	90,411	13.20	1,193,421	90,411	13.87	1,253,996
Commercial	2,620,728	14.01	36,716,393	2,620,728	14.72	38,577,109
Industrial	187,994	12.30	2,312,325	187,994	12.93	2,430,761
Health or Education	1,022,005	14.98	15,309,630	1,022,005	15.74	16,086,353
Private Fire System	14,668	19.77	289,987	14,668	20.78	304,802
Municipal	221,594	8.41	1,862,715	221,594	8.83	1,957,114
Subtotal: Volume Charge	6,080,423		$ 83,068,396			$ 87,282,488
Total: Base Rate Revenues			$ 128,460,319			$ 134,989,895
DSIC Revenues						
Residential			$ 4,837,149			$ 5,083,276
Residential - CAP-BDP			119,374			125,433
Commercial			5,261,905			5,529,090
Industrial			288,709			303,484
Health or Education			1,960,327			2,059,897
Private Fire System			94,273			99,084
Municipal			202,355			212,615
Total: DSIC Revenues			$ 12,764,091			$ 13,412,877
Other Revenues						
Wholesale Revenues (Set by Contract)			$ 3,271,034			$ 3,422,624
Other Revenues			3,286,002			3,286,002
Total: Other Revenues			$ 6,557,036			$ 6,708,626
Total: System Revenues			**$ 147,781,446**			**$ 155,111,399**
Water System Revenue Requirements						**$ 155,077,106**
Difference						**$ 34,293**

Determination of 2022 Required Rate Increase	
Total Water System Revenue Requirements	$ 155,077,106
Less:	
DSIC Expenses	$ (13,426,572)
Wholesale Revenues	(3,422,624)
Other Revenues	(3,286,002)
Base Rates Net Revenue Requirement	$ 134,941,907
Base Rate Revenue at 2021 Rates	$ 128,460,319
Required 2022 Rate Increase (Rounded)	**5.1%**

Pittsburgh Water and Sewer Authority HJS-21W

2021 COS & Rate Design

Typical Bill Comparison

	Customer Usage	FPFTY 2021 Proposed Rates	2022 Proposed Rates	Percent Difference	Dollar Difference
Customer Impacts (1)					
Residential					
5/8"	1 kgal	$ 29.11	$ 30.59	5.1%	$ 1.49
5/8"	3 kgal	58.15	61.11	5.1%	2.96
5/8"	5 kgal	87.19	91.62	5.1%	4.43
5/8"	7 kgal	116.23	122.13	5.1%	5.91
5/8"	12 kgal	188.83	198.42	5.1%	9.59
1"	20 kgal	324.50	341.00	5.1%	16.50
Commercial					
5/8"	3 kgal	$ 59.93	$ 62.98	5.1%	$ 3.05
5/8"	5 kgal	90.75	95.36	5.1%	4.61
5/8"	12 kgal	198.63	208.70	5.1%	10.08
1"	13 kgal	229.99	241.68	5.1%	11.69
2"	80 kgal	1,322.38	1,389.51	5.1%	67.13
4"	160 kgal	2,731.99	2,870.88	5.1%	138.89
Industrial					
1"	30 kgal	$ 444.95	$ 467.72	5.1%	$ 22.77
1"	60 kgal	850.85	894.41	5.1%	43.56
2"	100 kgal	1,474.47	1,549.92	5.1%	75.45
4"	680 kgal	9,598.30	10,089.63	5.1%	491.33
6"	400 kgal	6,253.27	6,572.85	5.1%	319.58
8"	800 kgal	12,230.01	12,855.15	5.1%	625.14
Health or Education					
5/8"	5 kgal	$ 95.02	$ 99.85	5.1%	$ 4.83
5/8"	10 kgal	177.41	186.42	5.1%	9.01
1"	40 kgal	683.43	718.14	5.1%	34.70
2"	50 kgal	895.26	940.78	5.1%	45.52
4"	200 kgal	3,487.14	3,664.42	5.1%	177.28
6"	650 kgal	11,036.07	11,596.83	5.1%	560.76

(1) 2021 and 2022 customer bills at proposed rates include a 10% DSIC.

Pittsburgh Water and Sewer Authority HJS-22W
2021 COS & Rate Design
Projected Units of Service

	FY 2017 *Actual*	FY 2018 *Actual*	HTY FY 2019 *Actual*	FTY FY 2020 *Projected*	FPFTY FY 2021 *Projected*	FY 2022 *Projected*
Units of Service						
Number of Bills						
Residential	802,999	781,189	778,126	769,779	764,267	764,267
Residential - CAP	-	11,077	21,594	29,941	35,454	35,454
Commercial	82,317	80,365	80,767	80,767	80,767	80,767
Industrial	1,198	1,173	1,158	1,158	1,158	1,158
Health or Education	6,152	5,932	5,805	5,805	5,805	5,805
Fire System	14,563	14,673	15,222	15,222	15,222	15,222
Municipal	-	-	-	-	936	936
Total	907,229	894,409	902,672	902,672	903,609	903,609
Billable Consumption (kgal)						
Residential	2,091,836	2,041,350	1,874,792	1,937,089	1,923,025	1,923,025
Residential - CAP	-	31,049	55,055	76,347	90,411	90,411
Commercial	2,942,211	2,723,585	2,517,870	2,620,728	2,620,728	2,620,728
Industrial	161,491	183,343	192,645	187,994	187,994	187,994
Health or Education	1,258,763	1,068,428	975,581	1,022,005	1,022,005	1,022,005
Fire System	4,005	7,913	21,423	14,668	14,668	14,668
Municipal	-	-	-	221,594	221,594	221,594
Total	6,458,306	6,055,668	5,637,366	6,080,423	6,080,423	6,080,423
Total Consumption (kgal) (1)						
Residential	2,914,122	2,842,635	2,668,533	2,727,019	2,707,771	2,707,770
Residential - CAP	-	41,602	75,349	104,489	123,737	123,739
Commercial	3,587,585	3,363,268	3,163,601	3,263,435	3,263,435	3,263,435
Industrial	182,006	203,757	209,655	206,706	206,706	206,706
Health or Education	1,453,286	1,253,008	1,158,177	1,205,593	1,205,593	1,205,593
Fire System	5,001	8,887	22,506	15,697	15,697	15,697
Municipal	-	-	-	225,528	225,528	225,528
Total	8,142,000	7,713,157	7,297,821	7,748,466	7,748,466	7,748,466
Wholesale & Contract Consumption						
Allegheny	6,978	7,911	1,030	-	-	-
Aspinwall	94,552	81,386	59,842	70,614	70,616	70,616
Bay Valley Foods / Riverbend (2)	724,835	462,007	263,171	-	-	-
Fox Chapel	509,953	612,616	632,050	622,333	622,336	622,336
Hampton	11,023	3,607	2,997	-	-	-
PAWC	-	5,400	2,800	-	-	-
RSRV - 10"	30,678	97,405	95,941	96,673	96,676	96,676
RSRV - 6"	17,815	14,663	13,532	14,098	14,101	14,101
Sharpsburg	-	-	-	-	-	-
Westview	-	6,845	8,410	-	-	-
Total	1,395,834	1,291,840	1,079,773	803,718	803,729	803,729

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.
(2) Riverbend foods closed in July 2019.

Exhibits HJS-1WW

To

Exhibits HJS-21WW

Pittsburgh Water and Sewer Authority HJS-1WW
2021 COS & Rate Design
FPFTY Wastewater Conveyance Revenue Requirements

Revenue Requirements	**2021 FPFTY Revenue Requirements**
Operating Expenses	
Direct Operating Expenses	
Administrative Division	
Executive Director	$ 278,444
Customer Service	2,633,718
Management Information Systems	466,959
Finance	1,356,774
Procurement	-
Human Resources	157,121
Legal	564,014
Public Affairs	185,435
Operations Division	
Environmental Compliance	1,333,624
Ops Capital Assets	-
Warehouse	75,727
Water Treatment Plant	-
Water Quality (Lab)	-
Water Distribution	-
Sewer Operations	2,732,628
Engineering & Construction	
Engineering & Construction	6,843,154
Other Operating Expenses	
Loss / (Gain) on ALCOSAN Billings	770,497
Non-City Water Payments	-
Total Operating Expenses	$ 17,398,095
Debt Service	
Existing Debt	$ 27,873,845
Future Debt	2,889,899
Subtotal: Debt Service	$ 30,763,743
Capital Expenditures & Transfers	
Internally Generated Funds / PAYGO	$ 1,257,989
Internally Generated Funds / PAYGO (DSIC)	6,923,506
Other Transfers to Reserves	384,115
Reimbursements from Municipalities	-
Remarketing & Liquidity Charges	-
Bad Debt Expense	830,788
Subtotal: Capital Expenditures & Transfers	$ 9,396,397
Stormwater	21,559,017
Total: Wastewater Conveyance System Revenue Requirements	**$79,117,253**
Capital Costs to be Recovered through DSIC	**$ (6,923,506)**
Total: Wastewater Conveyance System Base Rate Revenue Requirement	**$72,193,747**

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Functionalization of Revenue Requirements

HJS-2WW

			Wastewater Conveyance Functional Categories			
Wastewater Conveyance Operating Costs	**FY 2021**	**Allocation**	*Collection & Conveyance*	*Meters*	*Billing*	*Admin Support*
Operating Expenses	*FPFTY*					
Direct Operating Expenses						
Administrative Division						
Executive Director	$ 278,444	WW-D				100.0%
Customer Service	2,633,718	WW-E		29.3%	70.7%	
Management Information Systems	466,959	WW-D				100.0%
Finance	1,356,774	WW-D				100.0%
Procurement	-	WW-D				100.0%
Human Resources	157,121	WW-D				100.0%
Legal	564,014	WW-D				100.0%
Public Affairs	185,435	WW-D				100.0%
Operations Division						
Environmental Compliance	1,333,624	WW-D				100.0%
Warehouse	-	WW-D				100.0%
Ops Capital Assets	75,727	WW-D				100.0%
Water Treatment Plant	-	n/a				
Water Quality (Lab)	-	n/a				
Water Distribution	-	n/a				
Sewer Operations	2,732,628	WW-A	100.0%			
Engineering & Construction Division						
Engineering & Construction	6,843,154	WW-A	100.0%			
Subtotal: Direct Operating Expenses	$ 16,627,598					
Other Operating Expenses						
Loss / (Gain) on ALCOSAN Billings	770,497	WW-D				100.0%
Non-City Water Payments	-	WW-D				100.0%
Subtotal: Other Operating Expenses	$ 770,497					
Total: Operating Expenses	**$ 17,398,095**					

Pittsburgh Water and Sewer Authority HJS-2WW
2021 COS & Rate Design
Functionalization of Revenue Requirements

			Wastewater Conveyance Functional Categories			
Wastewater Conveyance Operating Costs	**FY 2021**	**Allocation**	*Collection & Conveyance*	*Meters*	*Billing*	*Admin Support*
Operating Expenses	*FPFTY*					
Direct Operating Expenses						
Administrative Division						
Executive Director	$ 278,444	WW-D	$ -	$ -	$ -	$ 278,444
Customer Service	2,633,718	WW-E	-	771,624	1,862,095	-
Management Information Systems	466,959	WW-D	-	-	-	466,959
Finance	1,356,774	WW-D	-	-	-	1,356,774
Procurement	-	WW-D	-	-	-	-
Human Resources	157,121	WW-D	-	-	-	157,121
Legal	564,014	WW-D	-	-	-	564,014
Public Affairs	185,435	WW-D	-	-	-	185,435
Operations Division						
Environmental Compliance	1,333,624	WW-D	-	-	-	1,333,624
Warehouse	-	WW-D	-	-	-	-
Ops Capital Assets	75,727	WW-D	-	-	-	75,727
Water Treatment Plant	-	n/a	-	-	-	-
Water Quality (Lab)	-	n/a	-	-	-	-
Water Distribution	-	n/a	-	-	-	-
Sewer Operations	2,732,628	WW-A	2,732,628	-	-	-
Engineering & Construction Division						
Engineering & Construction	6,843,154	WW-A	6,843,154	-	-	-
Subtotal: Direct Operating Expenses	$ 16,627,598		$ 2,732,628	$ 771,624	$ 1,862,095	$ 4,418,098
Other Operating Expenses						
Loss / (Gain) on ALCOSAN Billings	770,497	WW-D	-	-	-	770,497
Non-City Water Payments	-	WW-D	-	-	-	-
Subtotal: Other Operating Expenses	$ 770,497		$ 9,575,782	$ -	$ -	$ 2,179,849
Total: Wastewater Conveyance Operating Costs	**$ 17,398,095**		**$ 9,575,782**	**$ 771,624**	**$ 1,862,095**	**$ 5,188,595**
Allocation Percentage			55.04%	4.44%	10.70%	29.82%

Pittsburgh Water and Sewer Authority HJS-2WW

2021 COS & Rate Design

Functionalization of Revenue Requirements

Allocated Wastewater Conveyance Assets					Wastewater Conveyance Functional Categories				
System Fixed Assets	**Acquisition Cost**	**Allocated to Wastewater**	**Allocated Costs**	**Allocation**	*Collection & Conveyance*	*Meters*	*Billing*	*Admin Support*	*Readiness-to-Serve*
Customer Service	3,404,918	70.38%	2,396,275	WW-E		29.30%	70.70%		
Distribution	268,054,032	0.00%	-	n/a				100.00%	
Engineering	2,235,799	35.39%	791,232	WW-A	100.00%				
Executive Director	969,720	25.72%	249,460	WW-D				100.00%	
Finance	79,614	25.72%	20,481	WW-D				100.00%	
Fire	14,942,263	0.00%	-	n/a					
Membrane Plant	20,355,348	0.00%	-	n/a					
Meters	31,890,342	0.00%	-	n/a					
Mgt Info Systems	12,589,169	25.72%	3,238,559	WW-D				100.00%	
Plant Operations	64,260,881	0.00%	-	n/a					
Pumping	25,727,651	0.00%	-	n/a					
Sewer Operations	397,654,629	100.00%	397,654,629	WW-A	100.00%				
Stormwater	26,127,083	100.00%	26,127,083	WW-A	100.00%				
Supply	920,461	0.00%	-	n/a				100.00%	
Warehouse	4,180,082	25.72%	1,075,325	WW-D				100.00%	
Water Quality	1,477,505	0.00%	-	n/a					
Water Storage	67,450,916	0.00%	-	n/a					
Total	**942,320,412**		**431,553,043**		$ 424,572,944	$ 702,058	$ 1,694,217	$ 4,583,824	$ -

Allocation Factors for Capital Costs					**98.38%**	**0.16%**	**0.39%**	**1.06%**	**0.00%**
Allocation of Capital Costs	*Readiness-to-Serve*								
Debt Service	0.0%	$	30,763,743		$ 30,266,159	$ 50,047	$ 120,774	$ 326,763	$ -
Rate-Funded Capital	0.0%		1,257,989		1,237,641	2,047	4,939	13,362	-
Other Transfers to Reserves	0.0%		384,115		377,902	625	1,508	4,080	-
Reimbursements from Municipalities	0.0%		-		-	-	-	-	-
Remarketing & Liquidity Charges	0.0%		-		-	-	-	-	-
Bad Debt Expense	0.0%				-	-	-	-	-
Total: Allocated Capital Costs		$	32,405,847		$ 31,881,703	$ 52,718	$ 127,221	$ 344,205	$ -

Pittsburgh Water and Sewer Authority HJS-3WW
2021 COS & Rate Design
Allocation to Cost Categories

	FY 2021 FPFTY	Allocation	Wastewater Conveyance Cost Drivers: Volume	Meter	Billing	Readiness-to-Serve	Stormwater
Wastewater Conveyance Revenue Requirements							
Functional Categories							
Collection & Conveyance	$ 41,457,485	WW-AA	100.00%				
Meters	824,342	WW-BB		100.00%			
Billing	1,989,316	WW-CC			100.00%		
Admin Support	5,532,800	WW-DD	93.64%	1.86%	4.49%		
Readiness-to-Serve (Debt)	-	WW-EE				100.00%	
Stormwater	21,559,017		100.00%		0.00%	0.00%	0.00%
Total: Wastewater Conveyance Revenue Requirements	$ 71,362,960						

	FY 2021 FPFTY	Allocation	Volume	Meter	Billing	Readiness-to-Serve	Stormwater
Wastewater Conveyance Revenue Requirements							
Functional Categories							
Collection & Conveyance	$ 41,457,485	WW-AA	$ 41,457,485	$ -	$ -	$ -	$ -
Meters	824,342	WW-BB	-	824,342	-	-	-
Billing	1,989,316	WW-CC	-	-	1,989,316	-	-
Admin Support	5,532,800	WW-DD	5,181,162	103,022	248,615	-	-
Readiness-to-Serve (Debt)	-	WW-EE	-	-	-	-	-
Stormwater	21,559,017		21,559,017	-	-	-	-
Total: Wastewater Conveyance Revenue Requirements	$ 71,362,960		$ 68,197,664	$ 927,364	$ 2,237,931	$ -	$ -
Costs to Recover from Wastewater Conveyance Charges	**$ 71,362,960**		$ 68,197,664	$ 927,364	$ 2,237,931	$ -	$ -
			95.6%	1.3%	3.1%	0.0%	

Pittsburgh Water and Sewer Authority HJS-4WW
2021 COS & Rate Design
Allocation Factor Summary

Cost Functionalization: Wastewater Conveyance					
Code	*Description*	*Coll. & Convey.*	*Meters*	*Billing*	*Admin Support*
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		29.30%	70.70%	

Allocation to Cost Drivers: Wastewater Conveyance					
Code	*Description*	*Volume*	*Meter*	*Billing*	*Readiness-to-Serve*
WW-AA	Volume	100.00%			
WW-BB	Customer - Meters		100.00%		
WW-CC	Customer - Billing			100.00%	
WW-DD	Admin Support (Composite)	93.64%	1.86%	4.49%	
WW-EE	Readiness-to-Serve				100.00%

Factor Derivations - Allocation to Functional Categories & Cost Components

Code(s)	*Description*	*Calculations*

W-I
WW-E

Customer Service

- This factor allocates the 2021 customer service budget between meter- and billing-related costs.

2021 Customer Service Budget	FPFTY	Meter	Billing
Salaries	$ 3,105,381	28.60%	71.40%
Benefits	866,363	28.60%	71.40%
Computer & Peripherals	10,000	100.00%	0.00%
Customer CC Fees	378,396	0.00%	100.00%
Postage	257,500	0.00%	100.00%
Billing Contract	618,000	0.00%	100.00%
Consultants	26,400	100.00%	0.00%
Meter Services	824,000	100.00%	0.00%
Prof Service Other	678,856	20.00%	80.00%
Office Supplies	6,000	50.00%	50.00%
TE Airfare	2,800	50.00%	50.00%
TE Lodging	2,800	50.00%	50.00%
TE SeminarsConferences	5,400	50.00%	50.00%
TE Training	15,000	50.00%	50.00%
TE Travel Misc	100	0.00%	100.00%
Customer Refund AP	504,000	0.00%	100.00%
One Call	30,900	0.00%	100.00%
Total	$ 7,331,896	$2,148,090	$5,183,806
Allocation Factors		*29.30%*	*70.70%*

W-D

Water Pipe Inventory

- Allocate costs between transmission and distribution functional categories. Assumes Pipes less than or equal to 16" are Distribution-related.

Breakdown		
Distribution	34,244,035	62.2%
Transmission	20,825,193	37.8%
Total	55,069,228	100.0%

Inch-Foot Analysis		
Diameter (in)	*Linear Feet*	*Inch-Feet*
0.75	799	599
1	1,292	1,292
1.5	575	862
2	11,495	22,989
2.5	16	39
3	837	2,511
4	140,568	562,273
6	2,052,282	12,313,692
8	1,112,168	8,897,342
10	85,574	855,742
12	598,051	7,176,608
14	1,296	18,147
15	15,566	233,483
16	259,903	4,158,456
18	277	4,991
20	209,650	4,192,996
24	85,178	2,044,268
28	104	2,911
30	116,321	3,489,627
36	83,070	2,990,503
42	11,253	472,624
42.5	12,606	535,735
48	16,545	794,162
50	23,682	1,184,096
50.25	12,005	603,231
60	55,175	3,310,514
66	1,492	98,501
72	3,697	266,159
84	3,979	334,248
96	4,560	437,764
120	524	62,860
NULL	172	n/a
	4,920,710	55,069,228

Factor Derivations - Allocation to Functional Categories & Cost Components

Code(s)	Description	Calculations

W-J Engineering & Construction

- This factor uses the 2021 Water CIP costs to allocate Engineering & Construction costs to the various functional categories.

2021 Water CIP Costs	$$ Amount	Allocation
Treatment	$ 31,260,131	18.22%
Storage	71,377,720	41.60%
Trans. & Distr.	63,277,796	36.88%
Admin	5,670,528	3.30%
Total Water CIP	$ 171,586,175	100.00%

W-BB Maximum Day

- Maximum day costs are allocated using a peak day determined using system daily production records. In addition, 0.25% is allocated to fire protection service.

Plant Production Data		
2017-2019 Avg Plant Production	70.26	mgd
2017-2019 Avg. Peak Day	90.90	mgd
Peak Hour Factor (1.6)	112.42	mgd

Base	69.04%
Maximum Day	29.38%
Fire Protection	1.58%

W-CC Peak Hour

- Peak hour costs are allocated using an estimated peak hour compared to system average and maximum day processed. In addition, 0.25% is allocated to fire protection service.

Plant Production Data		
2017 Average Processed	70.26	mgd
Peak Day	90.90	mgd
Peak Hour Factor (1.6)	112.42	mgd

Peak Hour / Avg	54.81%
Max Day (Plug)	18.36%
Peak Hr / Peak Day	19.14%
Fire Protection	7.69%

Equivalency Flow Ratios

- Used to escalate metering and readiness-to-serve costs, these ratios are industry standard and obtained from the American Waterworks Association
- Fire ratios are pegged to a 1" meter.

Equivalency Ratios				
	Flow			*Fire*
5/8"	1.00	1" or Less		2.50
3/4"	1.50	1 1/2"-3"		8.00
1"	2.50	4"		25.00
1.5"	5.00	6" or Greater		50.00
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

2021 COS & Rate Design

Wastewater Conveyance Units of Service

	Collection Factor	FY 2021 Consumption	Allocated Consumption	Average Day	Equivalent Meters	Total Bills
Retail Units of Service						
Residential	100.0%	2,765,452	2,765,452	7,577	1,085,301	1,026,360
Residential - CAP	100.0%	129,112	129,112	354	54,455	54,000
Commercial	100.0%	3,316,847	3,316,847	9,087	416,167	99,228
Industrial	100.0%	207,621	207,621	569	11,371	1,170
Health or Education	100.0%	1,205,877	1,205,877	3,304	86,288	5,805
Municipal - Metered	100.0%	226,195	226,195	620	6,192	1,008
Municipal - Unmetered	100.0%	36,624	36,624	100	948	948
Riverbend	100.0%	-	-	-	-	-
Total: Wastewater Conveyance Units of Service		7,887,726	7,887,726	21,610	1,660,720	1,188,519

Pittsburgh Water and Sewer Authority HJS-7WW
2021 COS & Rate Design
Wastewater Conveyance Unit Cost of Service

	FY 2021	Unit Costs					Total
		Volume	*Meter*	*Billing*	*Readiness-to-Serve*	*Stormwater*	
Development of Unit Costs of Service	*FPFTY*						
Units of Service							
Total System Units		7,887,726	1,660,720	1,188,519	1,660,720	1,660,720	
Units		*kgal*	*Eq. Cost Meters*	*Total Bills*	*Eq. Flow Meters*	*Eq. Flow Meters*	
Revenue Requirements							
Collection & Conveyance	$ 41,457,485	$ 41,457,485	$ -	$ -	$ -	$ -	$ 41,457,485
Meters	824,342	-	824,342	-	-	-	824,342
Billing	1,989,316	-	-	1,989,316	-	-	1,989,316
Admin Support	5,532,800	5,181,162	103,022	248,615	-	-	5,532,800
Readiness-to-Serve (Debt)	-	-	-	-	-	-	-
Stormwater	21,559,017	21,559,017	-	-	-	-	21,559,017
Total: Revenue Requirements	$ 71,362,960	$ 68,197,664	$ 927,364	$ 2,237,931	$ -	$ -	$ 71,362,960
Revenue Requirement Unit Costs ($/unit)		**$ 8.6460**	**$ 0.5584**	**$ 1.8830**	**$ -**	**$ -**	
Revenue Offsets							
Wastewater Miscellaneous Revenue	(2,342,350)	(2,238,455)	(30,439)	(73,456)	-	-	(2,342,350)
Stormwater Miscellaneous Revenue	(616,178)	(588,848)	(8,007)	(19,323)	-	-	(616,178)
Total: Revenue Offsets	$ (2,958,528)	$ (2,827,303)	$ (38,446)	$ (92,779)	$ -	$ -	$ (2,958,528)
Offset Unit Costs ($/unit)		$ (0.3584)	$ (0.0232)	$ (0.0781)	$ -	$ -	
Total Unit Costs ($/unit)		**$ 8.29**	**$ 0.54**	**$ 1.80**	**$ -**	**$ -**	
Total: Costs of Service		**$ 65,370,361**	**$ 888,918**	**$2,145,152**	**$ -**	**$ -**	**$68,404,431**

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Cost Distribution to Customer Classes

HJS-8WW

	Unit Costs					Total
	Volume	*Meter*	*Billing*	*Readiness-to-Serve*	*Stormwater*	
Customer Class Cost of Service						
Residential						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	2,765,452	1,085,301	1,026,360	1,085,301	1,085,301	
Cost of Service	$ 22,918,974	$ 580,919	$ 1,852,472	$ -	$ -	$ 25,352,364
Residential - CAP						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	129,112	54,455	54,000	54,455	54,455	
Cost of Service	$ 1,070,026	$ 29,147	$ 97,464	$ -	$ -	$ 1,196,638
Commercial						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	3,316,847	416,167	99,228	416,167	416,167	
Cost of Service	$ 27,488,718	$ 222,758	$ 179,096	$ -	$ -	$ 27,890,572
Industrial						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	207,621	11,371	1,170	11,371	11,371	
Cost of Service	$ 1,720,677	$ 6,086	$ 2,112	$ -	$ -	$ 1,728,875
Health or Education						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	1,205,877	86,288	5,805	86,288	86,288	
Cost of Service	$ 9,993,829	$ 46,187	$ 10,477	$ -	$ -	$ 10,050,493
Municipal - Metered						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	226,195	6,192	1,008	6,192	6,192	
Cost of Service	$ 1,874,611	$ 3,314	$ 1,819	$ -	$ -	$ 1,879,745
Municipal - Unmetered						
Unit Costs ($/unit)	$ 8.288	$ 0.535	$ 1.805	$ -	$ -	
Units of Service	36,624	948	948	948	948	
Cost of Service	$ 303,525	$ 507	$ 1,711	$ -	$ -	$ 305,744
Total: Wastewater Cost of Service	**$ 65,370,361**	**$ 888,918**	**$2,145,152**	**$ -**	**$ -**	**$68,404,431**

Pittsburgh Water and Sewer Authority
2021 COS & Rate Design
Adjustments to Cost of Service - Water

HJS-9WW

Cost of Service by Class	Allocation Method			Residential	Residential - CAP	Commercial	Industrial	Health or Education	Municipal - Metered	Municipal - Unmetered	Wholesale	Total
Allocated Cost of Service (Unadjusted)				$ 25,352,364	$ 1,196,638	$ 27,890,572	$ 1,728,875	$ 10,050,493	$ 1,879,745	$ 305,744	$ -	$ 68,404,431
% of COS				*37.1%*	*1.7%*	*40.8%*	*2.5%*	*14.7%*	*2.7%*	*0.4%*	*0.0%*	*100.0%*
	Billing	RTS	Volume									
Adjustments to Cost of Service												
City of Pittsburgh	0.0%	0.0%	100.0%	409,055	19,098	490,615	30,710	178,369	(1,127,847)	-	-	(0)
City of Pittsburgh - Unmetered	0.0%	0.0%	100.0%	110,889	5,177	132,999	8,325	48,353	-	(305,744)	-	-
Add: Bad Debt Expense	100.0%	0.0%	0.0%	625,111	21,057	153,850	-	30,770	-	-	-	830,788
Total: Adjusted Cost of Service (Before CAP Adjustment)				**$ 26,497,420**	**$ 1,241,970**	**$28,668,036**	**$ 1,767,911**	**$10,307,985**	**$ 751,898**	**$ -**	**$ -**	**$ 69,235,219**
% of COS				*38.3%*	*1.8%*	*41.4%*	*2.6%*	*14.9%*	*1.1%*	*0.0%*	*0.0%*	*100.0%*

Cost of Service Comparison	**Revenue Under Existing Rates**	**Unadjusted COS**	**Adjusted COS**	**Impacts** % Increase Unadjusted	**Impacts** % Increase Adjusted
All User Charge Revenue					
Residential	$ 24,283,064	$ 25,352,364	$ 26,497,420	4.40%	9.12%
Residential - CAP	817,978	1,196,638	1,241,970	46.29%	51.83%
Commercial	25,111,606	27,890,572	28,668,036	11.07%	14.16%
Industrial	1,391,598	1,728,875	1,767,911	24.24%	27.04%
Health or Education	10,291,786	10,050,493	10,307,985	-2.34%	0.16%
Municipal - Metered	629,985	1,879,745	751,898	100.00%	100.00%
Municipal - Unmetered	-	305,744	-	100.00%	100.00%
Riverbend	-	-	-	#DIV/0!	#DIV/0!
Subtotal: All User Charge Revenue	$ 62,526,017	$ 68,404,431	$ 69,235,219	9.40%	10.73%

Pittsburgh Water and Sewer Authority HJS-10WW
2021 COS & Rate Design
Minimum Charge Calculation

Wastewater Conveyance	Min. Usage Existing	COS Rate Build-Up - Test Year: 2021									Proposed Rates
		Meter	Billing	R.T.S.	Stormwater	Usage	Total COS Rates	Adjustments			
								Wholesale	City	CAP-BDP	
Minimum Charge											
5/8"	1	$ 0.54	$ 1.80	$ -	$ -	$ 7.51	$ 9.85	$ -	$ -	$ -	$ 9.86
3/4"	2	0.80	1.80	-	-	15.03	17.63	-	-	-	17.64
1"	5	1.34	1.80	-	-	37.57	40.71	-	-	-	40.71
1 1/2"	10	2.68	1.80	-	-	75.13	79.61	-	-	-	79.62
2"	17	4.28	1.80	-	-	127.72	133.81	-	-	-	133.81
3"	40	8.56	1.80	-	-	300.52	310.89	-	-	-	310.89
4"	70	13.38	1.80	-	-	525.91	541.10	-	-	-	541.10
6"	175	26.76	1.80	-	-	1,314.78	1,343.34	-	-	-	1,343.35
8"	325	42.82	1.80	-	-	2,441.73	2,486.35	-	-	-	2,486.36
10" & Above	548	61.55	1.80	-	-	4,117.13	4,180.49	-	-	-	4,180.49
Unmetered	1	0.54	1.80	-	-	7.51	9.85	-	-	-	9.86
Minimum Charge - CAP-BDP											
5/8"	1	$ 0.54	$ 1.80	$ -	$ -	$ 7.51	$ 9.85	$ -	$ -	$ (9.85)	$ -
3/4"	2	0.80	1.80	-	-	15.03	17.63	-	-	(17.63)	-
1"	5	1.34	1.80	-	-	37.57	40.71	-	-	(40.71)	-
Unmetered	1	0.54	1.80	-	-	7.51	9.85	-	-	(9.85)	-

Pittsburgh Water and Sewer Authority HJS-10WW

2021 COS & Rate Design

Volume Charge Calculation

	Fixed Charge Revenue	Net Volumetric Rev. Req	Billed Volume	COS Rates by Class
Volume Charge (per kgal)				
Residential	$11,246,614	$14,105,750	1,968,688	$ 7.17
Residential - CAP	540,396	656,242	94,772	6.92
Commercial	7,677,548	20,213,024	2,664,576	7.59
Industrial	268,862	1,460,014	188,789	7.73
Health or Education	1,909,950	8,140,543	1,022,145	7.96
Municipal - Metered	116,296	1,763,448	222,232	7.94
Municipal - Unmetered	9,341	296,403	36,624	8.09
Riverbend	-	-	-	
Total: User Charge Revenue	$21,759,666	$46,339,021	6,161,202	7.52

	Adjusted COS	Fixed Charge Revenue + CAP	CAP BDP Cost (Forgone Revenue)	CAP BDP Adjustment	Total Volume Rev Req	Billed Volume	Proposed Rates
Volume Charge (per kgal)							
Residential + CAP	27,739,390	11,253,470	(540,646)	287,573	16,232,846	2,063,460	7.87
Residential - CAP							7.87
Commercial	28,668,036	7,678,068		196,206	21,186,174	2,664,576	7.95
Industrial	1,767,911	268,867		6,871	1,505,915	188,789	7.98
Health or Education	10,307,985	1,909,970		48,808	8,446,822	1,022,145	8.26
Municipal	751,898	46,521		1,189	706,566	222,232	3.18
Riverbend	-	-		-	-	-	n/a
Total: User Charge Revenue	$69,235,219	$21,156,896	$ (540,646)	$ 540,646	48,078,323	6,161,202	7.81

Pittsburgh Water and Sewer Authority HJS-11WW
2021 COS & Rate Design
Proposed Rates

	FTY Prior Tariff Rates	FPFTY Proposed Rates	Percent Difference	Dollar Difference
Existing & Proposed Rates				
Minimum Charge				
5/8"	$ 8.28	$ 9.86	19.1%	$ 1.58
3/4"	16.77	17.64	5.2%	0.87
1"	39.82	40.71	2.2%	0.89
1 1/2"	82.24	79.62	-3.2%	(2.62)
2"	139.23	133.81	-3.9%	(5.42)
3"	317.57	310.89	-2.1%	(6.68)
4"	543.31	541.10	-0.4%	(2.21)
6"	1,302.21	1,343.35	3.2%	41.14
8"	2,358.93	2,486.36	5.4%	127.43
10" & Above	3,883.88	4,180.49	7.6%	296.61
Minimum Charge - CAP (1)				
5/8"	$ 2.07	$ -	-100.0%	$ (2.07)
3/4"	4.19	-	-100.0%	(4.19)
1"	9.96	-	-100.0%	(9.96)
Volume Charge (2)				
Residential	$ 7.43	$ 7.87	5.9%	$ 0.44
Residential - CAP	7.43	7.87	5.9%	0.44
Commercial	6.56	7.95	21.2%	1.39
Industrial	5.98	7.98	33.4%	2.00
Health or Education	8.21	8.26	0.6%	0.05
Unmetered Charges (per Unit)				
Residential	$ 25.99	33.47	28.8%	$ 7.48
Residential - CAP	6.50	15.74	142.2%	9.24
Commercial	52.47	41.66	-20.6%	(10.81)
DSIC (Applies to all retail customers)	0.0%	10.0%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in 2021.
(2) Municipal customers are charged the Commercial volumetric rate. In the FPFTY, the phase-in level is 40%.

Pittsburgh Water and Sewer Authority HJS-12WW

2021 COS & Rate Design

Comparison of Base Rate Revenues by Customer Class

	FPFTY Revenue at Existing Rates	FPFTY Indicated COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 24,283,064	$ 25,352,364	4.4%	$ 1,069,300
Residential - CAP	817,978	1,196,638	46.3%	378,660
Commercial	25,111,606	27,890,572	11.1%	2,778,966
Industrial	1,391,598	1,728,875	24.2%	337,277
Health or Education	10,291,786	10,050,493	-2.3%	(241,293)
Municipal - Metered	629,985	1,879,745	198.4%	1,249,760
Municipal - Unmetered	-	305,744	100.0%	305,744
Total: Base Rate Revenues	**$ 62,526,017**	**$ 68,404,431**	**9.4%**	**$ 5,878,414**

	FPFTY Indicated COS by Customer Class	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 25,352,364	$ 26,740,464	5.5%	$ 1,388,100
Residential - CAP	1,196,638	745,852	-37.7%	(450,786)
Commercial	27,890,572	28,864,242	3.5%	973,670
Industrial	1,728,875	1,774,782	2.7%	45,906
Health or Education	10,050,493	10,356,793	3.0%	306,299
Municipal - Metered	1,879,745	753,087	-59.9%	(1,126,658)
Municipal - Unmetered	305,744	-	-100.0%	(305,744)
Total: Base Rate Revenues	**$ 68,404,431**	**$ 69,235,219**	**1.2%**	**$ 830,788**

	FPFTY Revenue at Existing Rates	FPFTY Adjusted COS by Customer Class	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 24,283,064	$ 26,740,464	10.1%	$ 2,457,400
Residential - CAP	817,978	745,852	-8.8%	(72,126)
Commercial	25,111,606	28,864,242	14.9%	3,752,636
Industrial	1,391,598	1,774,782	27.5%	383,184
Health or Education	10,291,786	10,356,793	0.6%	65,006
Municipal - Metered	629,985	753,087	19.5%	123,102
Municipal - Unmetered	-	-	0.0%	-
Total: Base Rate Revenues	**$ 62,526,017**	**$ 69,235,219**	**10.7%**	**$ 6,709,202**

	FPFTY Revenue at Existing Rates	FPFTY Revenue at Proposed Rates	Percent Difference	Dollar Difference
User Charge Revenue				
Residential	$ 24,283,064	$ 26,747,047	10.1%	$ 2,463,983
Residential - CAP	817,978	745,852	-8.8%	(72,126)
Commercial	25,111,606	28,861,450	14.9%	3,749,845
Industrial	1,391,598	1,775,405	27.6%	383,808
Health or Education	10,291,786	10,352,885	0.6%	61,099
Municipal - Metered	629,985	753,217	19.6%	123,232
Municipal - Unmetered	-	-	0.0%	-
Total: Base Rate Revenues	**$ 62,526,017**	**$ 69,235,858**	**10.7%**	**$ 6,709,840**

Pittsburgh Water and Sewer Authority HJS-13WW

2021 COS & Rate Design

FPFTY CCOS Comparison - Wastewater Conveyance

	Adjusted COS		Revenue at Existing Rates		Revenue at Proposed Rates		Proposed Increase	
	Amount	Percent	Amount	Percent	Amount	Percent	Amount	Percent
User Charge Revenue								
Residential	$ 26,740,464	38.6%	$ 24,283,064	38.8%	$ 26,747,047	38.6%	$ 2,463,983	10.1%
Residential - CAP	745,852	1.1%	817,978	1.3%	745,852	1.1%	(72,126)	-8.8%
Commercial	28,864,242	41.7%	25,111,606	40.2%	28,861,450	41.7%	3,749,845	14.9%
Industrial	1,774,782	2.6%	1,391,598	2.2%	1,775,405	2.6%	383,808	27.6%
Health or Education	10,356,793	15.0%	10,291,786	16.5%	10,352,885	15.0%	61,099	0.6%
Municipal	753,087	1.1%	629,985	1.0%	753,217	1.1%	123,232	19.6%
Municipal - Unmetered	-	0.0%	-	0.0%	-	0.0%	-	0.0%
Subtotal: Base Rate Revenues	**$ 69,235,219**	100.0%	**$ 62,526,017**	100.0%	**$ 69,235,858**	100.0%	**$ 6,709,840**	10.7%
DSIC Revenues								
Residential	n/a	n/a	$ -	0.0%	$ 2,674,705	38.6%	$ 2,674,705	
Residential - CAP	n/a	n/a	-	0.0%	74,585	1.1%	74,585	
Commercial	n/a	n/a	-	0.0%	2,886,145	41.7%	2,886,145	
Industrial	n/a	n/a	-	0.0%	177,541	2.6%	177,541	
Health or Education	n/a	n/a	-	0.0%	1,035,289	15.0%	1,035,289	
Municipal	n/a	n/a	-	0.0%	75,322	1.1%	75,322	
Subtotal: DSIC Revenues	n/a	n/a	**$ -**	100.0%	**$ 6,923,586**	100.0%	**$ 6,923,586**	
Total: User Charge Revenues	**$ 69,235,219**		**$ 62,526,017**		**$ 76,159,444**		**$ 13,633,426**	**21.8%**
Other Revenues								
Miscellaneous Revenues	2,958,528		2,958,528		2,958,528		-	0.0%
Total: Wastewater Conveyance Revenues	**$ 72,193,747**		**$ 65,484,545**		**$ 79,117,972**		**$ 13,633,426**	**20.8%**

Pittsburgh Water and Sewer Authority HJS-14WW

2021 COS & Rate Design

Typical Bill Comparison

	Customer Usage	FTY Existing Rates	FPFTY Proposed Rates	Percent Difference	Dollar Difference
Customer Impacts (1)					
Residential					
5/8"	1 kgal	$ 8.28	$ 10.85	31.0%	$ 2.57
5/8"	3 kgal	23.14	28.16	21.7%	5.02
5/8"	5 kgal	38.00	45.47	19.7%	7.47
5/8"	7 kgal	52.86	62.79	18.8%	9.93
5/8"	12 kgal	90.01	106.07	17.8%	16.06
1"	20 kgal	151.27	174.64	15.4%	23.37
Commercial					
5/8"	3 kgal	$ 21.40	$ 28.34	32.4%	$ 6.94
5/8"	5 kgal	34.52	45.83	32.8%	11.31
5/8"	12 kgal	80.44	107.04	33.1%	26.60
1"	13 kgal	92.30	114.74	24.3%	22.44
2"	80 kgal	552.51	698.13	26.4%	145.62
4"	160 kgal	1,133.71	1,382.26	21.9%	248.55
Industrial					
1"	30 kgal	$ 189.32	$ 264.23	39.6%	$ 74.91
1"	60 kgal	368.72	527.57	43.1%	158.85
2"	100 kgal	635.57	875.77	37.8%	240.20
4"	680 kgal	4,191.11	5,949.79	42.0%	1,758.68
6"	400 kgal	2,647.71	3,452.74	30.4%	805.03
8"	800 kgal	5,199.43	6,904.55	32.8%	1,705.12
Health or Education					
5/8"	5 kgal	$ 41.12	$ 47.19	14.8%	$ 6.07
5/8"	10 kgal	82.17	92.62	12.7%	10.45
1"	40 kgal	327.17	362.79	10.9%	35.62
2"	50 kgal	410.16	447.03	9.0%	36.87
4"	200 kgal	1,610.61	1,776.39	10.3%	165.78
6"	650 kgal	5,201.96	5,793.54	11.4%	591.58

(1) FPFTY customer bills at proposed rates include a 10% DSIC.

Pittsburgh Water and Sewer Authority HJS-15WW
2021 COS & Rate Design
Revenue Proof

	2021 Revenue @ Existing Rates			2021 Revenue @ COS Rates			2021 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
Base Rate Revenues									
Minimum Charges									
Residential									
5/8"	962,582	$ 8.28	$ 7,970,179	962,582	$ 9.85	$ 9,484,478	962,582	$ 9.86	$ 9,491,059
3/4"	30,973	16.77	519,422	30,973	17.63	546,177	30,973	17.64	546,369
1"	28,727	39.82	1,143,896	28,727	40.71	1,169,408	28,727	40.71	1,169,463
1 1/2"	70	82.24	5,757	70	79.61	5,573	70	79.62	5,573
2"	12	139.23	1,671	12	133.81	1,606	12	133.81	1,606
Unmetered	3,996	25.99	103,856	3,996	31.36	125,327	3,996	33.47	133,746
Subtotal: Residential	1,026,360		$ 9,744,781	1,026,360		$ 11,332,568	1,026,360		$ 11,347,816
Residential - CAP-BDP									
5/8"	53,466	$ 2.07	$ 110,675	53,466	$ 9.85	$ 526,812	53,466	$ -	$ -
3/4"	358	4.19	1,501	358	17.63	6,313	358	-	-
1"	176	9.96	1,749	176	40.71	7,153	176	-	-
1 1/2"	-	20.56	-	-	-	-	-	-	-
2"	-	34.81	-	-	-	-	-	-	-
Unmetered	12	6.50	78	12	23.69	284	12	15.74	189
Subtotal: Residential - CAP-BDP	54,012		$ 114,003	54,012		$ 540,562	54,012		$ 189
Commercial									
5/8"	43,455	$ 8.28	$ 359,807	43,455	$ 9.85	$ 428,169	43,455	$ 9.86	$ 428,466
3/4"	9,293	16.77	155,844	9,293	17.63	163,871	9,293	17.64	163,929
1"	18,706	39.82	744,873	18,706	40.71	761,485	18,706	40.71	761,521
1 1/2"	10,614	82.24	872,895	10,614	79.61	844,994	10,614	79.62	845,087
2"	10,534	139.23	1,466,649	10,534	133.81	1,409,535	10,534	133.81	1,409,555
3"	2,911	317.57	924,446	2,911	310.89	904,999	2,911	310.89	905,001
4"	2,383	543.31	1,294,708	2,383	541.10	1,289,434	2,383	541.10	1,289,441
6"	1,205	1,302.21	1,569,163	1,205	1,343.34	1,618,730	1,205	1,343.35	1,618,737
8"	103	2,358.93	242,970	103	2,486.35	256,094	103	2,486.36	256,095
10" & Above	-	3,883.88	-	-	4,180.49	-	-	4,180.49	-
Unmetered	24	52.47	1,259	24	40.21	965	24	41.66	1,000
Subtotal: Commercial	99,228		$ 7,632,614	99,228		$ 7,678,276	99,228		$ 7,678,831
Industrial									
5/8"	245	$ 8.28	$ 2,029	245	$ 9.85	$ 2,414	245	$ 9.86	$ 2,416
3/4"	149	16.77	2,499	149	17.63	2,627	149	17.64	2,628
1"	300	39.82	11,946	300	40.71	12,212	300	40.71	12,213
1 1/2"	72	82.24	5,921	72	79.61	5,732	72	79.62	5,733
2"	196	139.23	27,289	196	133.81	26,226	196	133.81	26,227
3"	24	317.57	7,622	24	310.89	7,461	24	310.89	7,461
4"	112	543.31	60,851	112	541.10	60,603	112	541.10	60,603
6"	24	1,302.21	31,253	24	1,343.34	32,240	24	1,343.35	32,240
8"	48	2,358.93	113,229	48	2,486.35	119,345	48	2,486.36	119,345
10" & Above	-	3,883.88	-	-	4,180.49	-	-	4,180.49	-
Subtotal: Industrial	1,170		$ 262,638	1,170		$ 268,862	1,170		$ 268,867
Health or Education									
5/8"	408	$ 8.28	$ 3,378	408	$ 9.85	$ 4,020	408	$ 9.86	$ 4,023
3/4"	101	16.77	1,694	101	17.63	1,781	101	17.64	1,782
1"	295	39.82	11,747	295	40.71	12,009	295	40.71	12,009
1 1/2"	773	82.24	63,572	773	79.61	61,540	773	79.62	61,546
2"	1,730	139.23	240,868	1,730	133.81	231,488	1,730	133.81	231,491
3"	1,156	317.57	367,111	1,156	310.89	359,388	1,156	310.89	359,389
4"	838	543.31	455,294	838	541.10	453,439	838	541.10	453,442
6"	444	1,302.21	578,181	444	1,343.34	596,445	444	1,343.35	596,447
8"	36	2,358.93	84,921	36	2,486.35	89,509	36	2,486.36	89,509
10" & Above	24	3,883.88	93,213	24	4,180.49	100,332	24	4,180.49	100,332
Subtotal: Health or Education	5,805		$ 1,899,979	5,805		$ 1,909,950	5,805		$ 1,909,970
Municipal									
5/8"	252	$ 3.31	$ 835	252	$ 9.85	$ 2,483	252	$ 3.94	$ 994
3/4"	60	6.71	402	60	17.63	1,058	60	7.06	423
1"	84	15.93	1,338	84	40.71	3,419	84	16.28	1,368
1 1/2"	288	32.90	9,474	288	79.61	22,928	288	31.85	9,172
2"	252	55.69	14,034	252	133.81	33,720	252	53.52	13,488
3"	24	127.03	3,049	24	310.89	7,461	24	124.36	2,985
4"	24	217.32	5,216	24	541.10	12,986	24	216.44	5,195
6"	24	520.88	12,501	24	1,343.34	32,240	24	537.34	12,896
8"	-	943.57	-	-	2,486.35	-	-	994.54	-
10" & Above	-	1,553.55	-	-	4,180.49	-	-	1,672.20	-
Subtotal: Municipal	1,008		$ 46,849	1,008		$ 116,296	1,008		$ 46,521
Municipal - Unmetered									
EMS / Fire / Police Station	108	$ -	$ -	108	$ 90.75	$ 9,801	108	$ 35.74	$ -
Public Park or Playground	468	-	-	468	479.07	224,206	468	188.38	-
Swimming Pool	120	-	-	120	187.83	22,540	120	73.90	-
Municipal Building	48	-	-	48	26.03	1,250	48	10.30	-
Municipal Garage	48	-	-	48	50.30	2,415	48	19.84	-
Rec Center	24	-	-	24	1,126.27	27,031	24	442.78	-
Other	132	-	-	132	139.29	18,387	132	54.82	-
Subtotal: Municipal - Unmetered	948		$ -	948		$ 305,629	948		$ -
Subtotal: Minimum Charges			$ 19,700,864			$ 22,152,144			$ 21,252,193

Pittsburgh Water and Sewer Authority HJS-15WW
2021 COS & Rate Design
Revenue Proof

	2021 Revenue @ Existing Rates			2021 Revenue @ COS Rates			2021 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue	Units	Rates	Revenue
Volume Charge									
Residential	1,956,700	$ 7.43	$ 14,538,283	1,956,700	$ 7.17	$ 14,029,541	1,956,700	$ 7.87	$ 15,399,231
Residential - CAP	94,748	7.43	703,975	94,748	6.92	655,653	94,748	7.87	745,663
Commercial	2,664,480	6.56	17,478,992	2,664,480	7.59	20,223,406	2,664,480	7.95	21,182,619
Industrial	188,789	5.98	1,128,960	188,789	7.73	1,459,341	188,789	7.98	1,506,539
Health or Education	1,022,145	8.21	8,391,808	1,022,145	7.96	8,136,271	1,022,145	8.26	8,442,915
Municipal	222,232	2.62	583,136	222,232	7.94	1,764,519	222,232	3.18	706,697
Riverbend									
Subtotal: Volume Charge			$ 42,825,153			$ 46,268,733			$ 47,983,664
Total: Base Rate Revenues			$ 62,526,017			$ 68,420,877			$ 69,235,858
DSIC Revenues									
Residential						$ 2,536,211			$ 2,674,705
Residential - CAP-BDP						119,622			74,585
Commercial						2,790,168			2,886,145
Industrial						172,820			177,541
Health or Education						1,004,622			1,035,289
Municipal						218,644			75,322
Total: DSIC Revenues						$ 6,842,088			$ 6,923,586
Other Revenues									
Wholesale and Contract Revenues			$ -			$ -			$ -
Other Revenues			2,958,528			2,958,528			2,958,528
Total: Other Revenues			$ 2,958,528			$ 2,958,528			$ 2,958,528
Total: System Revenues			**$ 65,484,545**			**$ 78,221,492**			**$ 79,117,972**
FPFTY Wastewater Conveyance Revenue Requirements						**$ 79,117,253**			**$ 79,117,253**
Difference						**$ (895,761)**			**$ 719**

(1) Note difference in COS rates is bad debt. Cost is added to adjusted COS before rate design.

Pittsburgh Water and Sewer Authority HJS-16WW

2021 COS & Rate Design

Projected Units of Service

	FY 2017 *Actual*	FY 2018 *Actual*	HTY FY 2019 *Actual*	FTY FY 2020 *Projected*	FPFTY FY 2021 *Projected*
Units of Service					
Number of Bills					
Residential	1,095,920	1,057,206	1,047,476	1,034,759	1,026,360
Residential - CAP	-	20,369	32,883	45,600	54,000
Commercial	100,291	99,177	99,228	99,228	99,228
Industrial	1,205	1,181	1,170	1,170	1,170
Health or Education	6,141	5,932	5,805	5,805	5,805
Municipal	-	-	-	-	1,008
Total	1,203,557	1,183,865	1,186,562	1,186,562	1,187,571
Billable Consumption (kgal)					
Residential	2,121,585	2,079,046	1,907,840	1,971,439	1,956,700
Residential - CAP	-	33,580	57,696	80,009	94,748
Commercial	3,003,282	2,769,596	2,559,365	2,664,480	2,664,480
Industrial	162,184	184,208	193,370	188,789	188,789
Health or Education	1,257,865	1,068,859	975,430	1,022,145	1,022,145
Municipal	-	-	-	222,232	222,232
Total	6,544,915	6,135,290	5,693,701	6,149,094	6,149,094
Total Consumption (kgal) (1)					
Residential	2,959,361	2,892,984	2,713,748	2,773,544	2,753,464
Residential - CAP	-	44,701	78,607	109,007	129,088
Commercial	3,673,542	3,419,287	3,214,214	3,316,751	3,316,751
Industrial	182,821	204,745	210,497	207,621	207,621
Health or Education	1,451,777	1,253,574	1,158,179	1,205,877	1,205,877
Municipal	-	-	-	226,195	226,195
Total	8,267,500	7,815,291	7,375,245	7,838,994	7,838,994
Wholesale & Contract Consumption					
Bay Valley Foods / Riverbend (2)	180,000	180,000	90,000	-	-

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.

(2) Riverbend foods closed in July 2019.

Pittsburgh Water and Sewer Authority HJS-17WW
2021 COS & Rate Design
2022 Wastewater Conveyance Revenue Requirements

Revenue Requirements	**2022 Revenue Requirements**
Operating Expenses	
Direct Operating Expenses	
Administrative Division	
Executive Director	$ 293,301
Customer Service	2,791,584
Management Information Systems	475,663
Finance	1,382,457
Procurement	-
Human Resources	163,806
Legal	554,268
Public Affairs	196,680
Operations Division	
Environmental Compliance	1,369,932
Ops Capital Assets	-
Warehouse	77,605
Water Treatment Plant	-
Water Quality (Lab)	-
Water Distribution	-
Sewer Operations	2,864,899
Engineering & Construction	
Engineering & Construction	7,167,645
Other Operating Expenses	
Loss / (Gain) on ALCOSAN Billings	778,202
Non-City Water Payments	-
Total Operating Expenses	$ 18,116,043
Debt Service	
Existing Debt	$ 27,838,295
Future Debt	6,019,752
Subtotal: Debt Service	$ 33,858,046
Capital Expenditures & Transfers	
Internally Generated Funds / PAYGO	$ 694,957
Internally Generated Funds / PAYGO (DSIC)	7,573,428
Other Transfers to Reserves	384,115
Reimbursements from Municipalities	-
Remarketing & Liquidity Charges	-
Bad Debt Expense	889,348
Subtotal: Capital Expenditures & Transfers	$ 9,541,848
Stormwater	24,743,550
Total: Wastewater Conveyance System Revenue Requirements	**$86,259,487**
Capital Costs to be Recovered through DSIC	**$ (7,573,428)**
Total: Wastewater Conveyance System Base Rate Revenue Requirement	**$78,686,059**

Pittsburgh Water and Sewer Authority HJS-18WW

2021 COS & Rate Design

Proposed Rates

	FPFTY 2021 Proposed Rates	2022 Proposed Rates	Percent Difference	Dollar Difference
Existing & Proposed Rates				
Minimum Charge				
5/8"	$ 9.86	$ 10.72	8.7%	$ 0.86
3/4"	17.64	19.17	8.7%	1.53
1"	40.71	44.25	8.7%	3.54
1 1/2"	79.62	86.55	8.7%	6.93
2"	133.81	145.45	8.7%	11.64
3"	310.89	337.94	8.7%	27.05
4"	541.10	588.18	8.7%	47.08
6"	1,343.35	1,460.22	8.7%	116.87
8"	2,486.36	2,702.67	8.7%	216.31
10" & Above	4,180.49	4,544.19	8.7%	363.70
Minimum Charge - CAP (1)				
5/8"	$ -	$ -	0.0%	$ -
3/4"	-	-	0.0%	-
1"	-	-	0.0%	-
Volume Charge (2)				
Residential	$ 7.87	$ 8.55	8.6%	$ 0.68
Residential - CAP	7.87	8.55	8.6%	0.68
Commercial	7.95	8.64	8.7%	0.69
Industrial	7.98	8.67	8.6%	0.69
Health or Education	8.26	8.98	8.7%	0.72
Unmetered Charges (per Unit)				
Residential	$ 33.47	$ 36.37	8.7%	$ 2.90
Residential - CAP	15.74	17.10	8.6%	1.36
Commercial	41.66	45.28	8.7%	3.62
DSIC (Applies to all retail customers)	10.0%	10.0%	n/a	n/a

(1) Proposed 100% discount on Minimum Charge for CAP-BDP customers in 2021 and 2022.

(2) Municipal customers are charged the Commercial volumetric rate. The phase in level is 40% and 60% for 2021 and 2022, respectively.

Pittsburgh Water and Sewer Authority HJS-19WW
2021 COS & Rate Design
Wastewater Conveyance Revenue Proof

	2022 Revenue @ 2021 Rates			2022 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue
Base Rate Revenues						
Minimum Charges						
Residential						
5/8"	962,582	$ 9.86	$ 9,491,061	962,582	$ 10.72	$ 10,318,882
3/4"	30,973	17.64	546,364	30,973	19.17	593,752
1"	28,727	40.71	1,169,465	28,727	44.25	1,271,157
1 1/2"	70	79.62	5,573	70	86.55	6,059
2"	12	133.81	1,606	12	145.45	1,745
Unmetered	3,996	33.47	133,746	3,996	36.37	145,335
Subtotal: Residential	1,026,360		$ 11,347,815	1,026,360		$ 12,336,930
Residential - CAP-BDP						
5/8"	53,466	$ -	$ -	53,466	$ -	$ -
3/4"	358	-	-	358	-	-
1"	176	-	-	176	-	-
1 1/2"	-	-	-	-	-	-
2"	-	-	-	-	-	-
Unmetered	12	15.74	189	12	17.10	205
Subtotal: Residential - CAP-BDP	54,012		$ 189	54,012		$ 205
Commercial						
5/8"	43,455	$ 9.86	$ 428,466	43,455	$ 10.72	$ 465,838
3/4"	9,293	17.64	163,929	9,293	19.17	178,147
1"	18,706	40.71	761,521	18,706	44.25	827,741
1 1/2"	10,614	79.62	845,087	10,614	86.55	918,642
2"	10,534	133.81	1,409,555	10,534	145.45	1,532,170
3"	2,911	310.89	905,001	2,911	337.94	983,743
4"	2,383	541.10	1,289,441	2,383	588.18	1,401,633
6"	1,205	1,343.35	1,618,737	1,205	1,460.22	1,759,565
8"	103	2,486.36	256,095	103	2,702.67	278,375
10" & Above	-	4,180.49	-	-	4,544.19	-
Unmetered	24	41.66	1,000	24	45.28	1,087
Subtotal: Commercial	99,228		$ 7,678,831	99,228		$ 8,346,940
Industrial						
5/8"	245	$ 9.86	$ 2,416	245	$ 10.72	$ 2,626
3/4"	149	17.64	2,628	149	19.17	2,856
1"	300	40.71	12,213	300	44.25	13,275
1 1/2"	72	79.62	5,733	72	86.55	6,232
2"	196	133.81	26,227	196	145.45	28,508
3"	24	310.89	7,461	24	337.94	8,111
4"	112	541.10	60,603	112	588.18	65,876
6"	24	1,343.35	32,240	24	1,460.22	35,045
8"	48	2,486.36	119,345	48	2,702.67	129,728
10" & Above	-	4,180.49	-	-	4,544.19	-
Subtotal: Industrial	1,170		$ 268,867	1,170		$ 292,258
Health or Education						
5/8"	408	$ 9.86	$ 4,023	408	$ 10.72	$ 4,374
3/4"	101	17.64	1,782	101	19.17	1,936
1"	295	40.71	12,009	295	44.25	13,054
1 1/2"	773	79.62	61,546	773	86.55	66,903
2"	1,730	133.81	231,491	1,730	145.45	251,629
3"	1,156	310.89	359,389	1,156	337.94	390,659
4"	838	541.10	453,442	838	588.18	492,895
6"	444	1,343.35	596,447	444	1,460.22	648,338
8"	36	2,486.36	89,509	36	2,702.67	97,296
10" & Above	24	4,180.49	100,332	24	4,544.19	109,061
Subtotal: Health or Education	5,805		$ 1,909,970	5,805		$ 2,076,143
Municipal						
5/8"	252	$ 5.92	$ 1,491	252	$ 6.43	$ 1,621
3/4"	60	10.58	635	60	11.50	690
1"	84	24.43	2,052	84	26.55	2,230
1 1/2"	288	47.77	13,758	288	51.93	14,956
2"	252	80.29	20,232	252	87.27	21,992
3"	24	186.53	4,477	24	202.76	4,866
4"	24	324.66	7,792	24	352.91	8,470
6"	24	806.01	19,344	24	876.13	21,027
8"	-	1,491.82	-	-	1,621.60	-
10" & Above	-	2,508.29	-	-	2,726.51	-
Subtotal: Municipal	1,008		$ 69,781	1,008		$ 75,852

Pittsburgh Water and Sewer Authority HJS-19WW
2021 COS & Rate Design
Wastewater Conveyance Revenue Proof

	2022 Revenue @ 2021 Rates			2022 Revenue @ Proposed Rates		
	Units	Rates	Revenue	Units	Rates	Revenue
Municipal - Unmetered						
EMS / Fire / Police Station	108	$ -	$ -	108	$ -	$ -
Public Park or Playground	468	-	-	468	-	-
Swimming Pool	120	-	-	120	-	-
Municipal Building	48	-	-	48	-	-
Municipal Garage	48	-	-	48	-	-
Rec Center	24	-	-	24	-	-
Other	132	-	-	132	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Placeholder	-	-	-	-	-	-
Subtotal: Municipal - Unmetered	948		$ -	948		$ -
Subtotal: Minimum Charges			$ 21,275,453			$ 23,128,328
Volume Charge						
Residential	1,956,700	$ 7.87	$ 15,399,233	1,956,700	$ 8.55	$ 16,729,789
Residential - CAP	94,747	7.87	745,662	94,747	8.55	810,091
Commercial	2,664,480	7.95	21,182,619	2,664,480	8.64	23,021,111
Industrial	188,789	7.98	1,506,539	188,789	8.67	1,636,803
Health or Education	1,022,145	8.26	8,442,915	1,022,145	8.98	9,178,859
Municipal	222,232	4.77	1,060,045	222,232	5.18	1,152,049
Riverbend						
Subtotal: Volume Charge			$ 48,337,013			$ 52,528,701
Total: Base Rate Revenues			$ 69,612,465			$ 75,657,030
DSIC Revenues						
Residential			$ 1,539,923			$ 2,906,672
Residential - CAP-BDP			74,566			81,030
Commercial			2,118,262			3,136,805
Industrial			176,263			192,906
Health or Education			847,516			1,125,500
Municipal			59,645			122,790
Total: DSIC Revenues			$ 4,816,175			$ 7,565,703
Other Revenues						
Wholesale and Contract Revenues			$ -			$ -
Other Revenues			3,017,699			3,017,699
Total: Other Revenues			$ 3,017,699			$ 3,017,699
Total: System Revenues			**$ 77,446,339**			**$ 86,240,432**
Wastewater Conveyance Revenue Requirements						**$ 86,259,487**
Difference						**$ (19,055)**

Determination of 2022 Required Rate Increase	
Total Water System Revenue Requirements	$ 86,259,487
Less:	
DSIC Expenses	$ (7,573,428)
Other Revenues	(3,017,699)
Base Rates Net Revenue Requirement	$ 75,668,360
Base Rate Revenue at 2021 Rates	$ 69,612,465
Required 2022 Rate Increase (Rounded)	**8.7%**

Pittsburgh Water and Sewer Authority HJS-20WW

2021 COS & Rate Design

Typical Bill Comparison

	Customer Usage	FPFTY 2021 Existing Rates	2022 Proposed Rates	Percent Difference	Dollar Difference
Customer Impacts (1)					
Residential					
5/8"	1 kgal	$ 10.85	$ 11.79	8.7%	$ 0.95
5/8"	3 kgal	28.16	30.60	8.7%	2.44
5/8"	5 kgal	45.47	49.41	8.7%	3.94
5/8"	7 kgal	62.79	68.22	8.7%	5.43
5/8"	12 kgal	106.07	115.25	8.6%	9.17
1"	20 kgal	174.64	189.75	8.7%	15.11
Commercial					
5/8"	3 kgal	$ 28.34	$ 30.80	8.7%	$ 2.46
5/8"	5 kgal	45.83	49.81	8.7%	3.98
5/8"	12 kgal	107.04	116.34	8.7%	9.30
1"	13 kgal	114.74	124.71	8.7%	9.97
2"	80 kgal	698.13	758.75	8.7%	60.62
4"	160 kgal	1,382.26	1,502.36	8.7%	120.10
Industrial					
1"	30 kgal	$ 264.23	$ 287.10	8.7%	$ 22.87
1"	60 kgal	527.57	573.21	8.7%	45.64
2"	100 kgal	875.77	951.57	8.7%	75.80
4"	680 kgal	5,949.79	6,464.57	8.7%	514.78
6"	400 kgal	3,452.74	3,752.07	8.7%	299.33
8"	800 kgal	6,904.55	7,503.01	8.7%	598.47
Health or Education					
5/8"	5 kgal	$ 47.19	$ 51.30	8.7%	$ 4.11
5/8"	10 kgal	92.62	100.69	8.7%	8.07
1"	40 kgal	362.79	394.41	8.7%	31.61
2"	50 kgal	447.03	485.97	8.7%	38.94
4"	200 kgal	1,776.39	1,931.14	8.7%	154.75
6"	650 kgal	5,793.54	6,298.29	8.7%	504.76

(1) 2021 and 2022 customer bills at proposed rates include a 10% DSIC.

Pittsburgh Water and Sewer Authority HJS-21WW

2021 COS & Rate Design

Projected Units of Service

	FY 2017 *Actual*	FY 2018 *Actual*	HTY FY 2019 *Actual*	FTY FY 2020 *Projected*	FPFTY FY 2021 *Projected*	FY 2022 *Projected*
Units of Service						
Number of Bills						
Residential	1,095,920	1,057,206	1,047,476	1,034,759	1,026,360	1,026,360
Residential - CAP	-	20,369	32,883	45,600	54,000	54,000
Commercial	100,291	99,177	99,228	99,228	99,228	99,228
Industrial	1,205	1,181	1,170	1,170	1,170	1,170
Health or Education	6,141	5,932	5,805	5,805	5,805	5,805
Municipal	-	-	-	-	1,008	1,008
Total	1,203,557	1,183,865	1,186,562	1,186,562	1,187,571	1,187,571
Billable Consumption (kgal)						
Residential	2,121,585	2,079,046	1,907,840	1,971,439	1,956,700	1,956,700
Residential - CAP	-	33,580	57,696	80,009	94,748	94,747
Commercial	3,003,282	2,769,596	2,559,365	2,664,480	2,664,480	2,664,480
Industrial	162,184	184,208	193,370	188,789	188,789	188,789
Health or Education	1,257,865	1,068,859	975,430	1,022,145	1,022,145	1,022,145
Municipal	-	-	-	222,232	222,232	222,232
Total	6,544,915	6,135,290	5,693,701	6,149,094	6,149,094	6,149,094
Total Consumption (kgal) (1)						
Residential	2,959,361	2,892,984	2,713,748	2,773,544	2,753,464	2,753,463
Residential - CAP	-	44,701	78,607	109,007	129,088	129,088
Commercial	3,673,542	3,419,287	3,214,214	3,316,751	3,316,751	3,316,751
Industrial	182,821	204,745	210,497	207,621	207,621	207,621
Health or Education	1,451,777	1,253,574	1,158,179	1,205,877	1,205,877	1,205,877
Municipal	-	-	-	226,195	226,195	226,195
Total	8,267,500	7,815,291	7,375,245	7,838,994	7,838,994	7,838,994
Wholesale & Contract Consumption						
Bay Valley Foods / Riverbend (2)	180,000	180,000	90,000	-	-	-

(1) Total consumption represents actual customer usage including the usage captured in minimum allowance.

(2) Riverbend foods closed in July 2019.

TAB
8

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

JULIE QUIGLEY

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:
Customer Service and Collections Updates
Household Affordability Analysis
Low Income Customer Assistance Programs
Customer Notice and Impacts of Multiyear Rate Plan
Water and Wastewater Tariffs

March 6, 2020

Table of Contents

TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Julie A. Quigley. My position with The Pittsburgh Water and Sewer Authority ("PWSA" or "Authority") is Director of Administration.

Q. HOW LONG HAVE YOU HELD THIS POSITION?

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

Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES?

A. In my current position, I am responsible for oversight and management of the Customer Service department; including the day to day operations of AMI and Billing, Collections, Contact Center, Emergency Dispatch, and Permitting. I am also the driving force for inter- and intra-departmental initiatives and innovative partnerships with third party providers.

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A. I obtained a Bachelor of Arts degree at Duquesne University, and I have 30 years of utility billing experience. My initial role at PWSA was entry level while in college. When I left employment in 2011, I was PWSA's Customer Services Manager. In the private sector, I processed electronic Earned Income Tax ("EIT") employer filings. I then designed, developed, launched, and managed monthly/quarterly sewage, stormwater, and refuse billing and collection for 24 municipalities with less than 10 employees.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I submitted written Direct and Rebuttal testimony in PWSA's Initial Tariff and Rate Case at Docket Numbers R-2018-3002645 (water) and R-2018-3002647 (wastewater). I

also submitted written Direct, Supplemental Direct and Rebuttal testimony in PWSA's combined Compliance Plan Stage 1 and Long-Term Infrastructure Improvement Plan ("LTIIP") proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to: (1) update the current status of PWSA's customer service and collections issues; (2) introduce the Household Affordability Analysis undertaken since PWSA's last rate case; (3) discuss PWSA's low income customer assistance programs to include a description of previous settlement commitments and an explanation of proposed revisions to the programs; (4) provide information about customer notice and impacts of the proposed multiyear rate plan; and (5) sponsor the proposed water and wastewater tariff supplements.

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the Proposed Water and Wastewater Tariffs which are marked as Exhibits JAQ-1 through JAQ-4 and included with Volume III of the rate filing package. I am also sponsoring Exhibits JAQ-5 and JAQ-6 relating to PWSA's Household Affordability Analysis and the proposed PGH2o CARES Program. Both of these two exhibits are attached to this testimony.

II. CUSTOMER SERVICE AND COLLECTIONS UPDATES

Q. HOW HAS COMING UNDER THE JURISDICTION OF THE COMMISSION IMPACTED PWSA'S CUSTOMER SERVICE AND COLLECTIONS PROCESSES?

A. Since the Commission assumed jurisdiction over PWSA in 2018, a significant amount of effort (with resulting increases to operations related costs) has been expended to bring PWSA's systems into compliance with Commission requirements and to improve the

overall customer experience. This effort has included implementing better data tracking[1] and information reporting,[2] undertaking a complete redesign of customer bills,[3] revising nearly every aspect of our service termination processes, and updating our customer service infrastructure, including a newly redesigned website, to better interact with our customers. With the modernization of our customer service processes, we have been able to better focus on ensuring that we are addressing customers' concerns while also being able to more aggressively target service terminations where appropriate and consistent with Commission residential termination of service requirements. Our Non-Access Campaign continues to identify potential aging/failing meters so that the meters can be upgraded, if necessary, to ensure that actual meter readings are received and are utilized for billing by PWSA. We are also continuously working to improve collections by targeting some of our largest outstanding commercial accounts. We have been able to resolve the outstanding debt for many of these commercial customers through settlements, enabling PWSA to receive some payment on the accounts. Where settlement agreements cannot be reached, PWSA is working our collections process on these accounts; up to and including the issuance of notices of intent to lien when the water

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1 PWSA conducts regular review of informal complaint trends which has resulted in identifying trends that can be further explored. PWSA reports on this progress as part of the Quarterly Compliance Plan Progress Report. See, e.g., Pittsburgh Water and Sewer Authority Quarterly Compliance Plan Progress Report dated January 31, 2020, filed at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater) at 10.

2 PWSA collects and reports on call center metrics and prepares a monthly customer service report that is included with Appendix E of the Quarterly Compliance Plan Progress Report. See, e.g., Pittsburgh Water and Sewer Authority Quarterly Compliance Plan Progress Report dated January 31, 2020, filed at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater).

3 Consistent with the Initial Rate Case Settlement ("RCS"), initial draft bill changes were provided to interested parties and BCS on March 29, 2019. RCS Section III.D.3. PWSA received twenty-nine change requests and worked with its print and mail vendor to incorporate all the requested changes. The most recent draft bill changes were sent to interested parties and BCS for review on October 9, 2019 and December 31, 2019. PWSA plans to implement the redesigned bill format in the second quarter of 2020.

service is already terminated. The remaining commercial accounts with outstanding debt are in the process of being addressed either through pending bankruptcy actions and/or proceedings at the Commission.

Q. PLEASE PROVIDE A STATUS UPDATE REGARDING HOW DEBTS PREVIOUSLY PLACED WITH JORDAN TAX SERVICE, INC. ("JTS") ARE BEING PROCESSED.

A. Previously, most unpaid water and wastewater conveyance charges that were more than 90 days past due were placed with Jordan Tax Service, Inc. ("JTS") for collection. PWSA terminated its contract with JTS effective June 30, 2019.[4] Currently, PWSA is in the process of identifying the outstanding debt that had been previously referred to JTS and reflecting those amounts in the appropriate PWSA customer account records so that the outstanding debt will become subject to PWSA's current collection activities. Though a tedious, manual process, steady progress is being made. All debts less than four years old are on track to be returned to PWSA's customer account records with anticipated completion in 2020. Previously, when these debts were sent to JTS for collection, they were marked as removed from PWSA's customer account record as JTS pursued payment. With the termination of the JTS contract and the new collection tools provided to PWSA pursuant to the Public Utility Code, returning the outstanding debt to PWSA's customer account records will enable PWSA to pursue collection actions consistent with the Public Utility Code and Commission requirements. For the outstanding debt that is older than four years old, PWSA will utilize its lien collection tools in recognition of the Public Utility Code's statute of limitations.

4. Per the Initial Rate Case Settlement, PWSA agreed to suspend the use of JTS upon the effective date of the Commission's final order approving the settlement. RCS Section III.E.5.

Q. DO YOU HAVE ANY INFORMATION ABOUT HOW PWSA'S EFFORTS ARE BEING RECEIVED BY ITS CUSTOMERS?

A. Yes. Consistent with my testimony in PWSA's Initial Rate Case, PWSA remains committed to the goal of becoming a highly responsive and trusted public utility that is recognized for excellence and valued by the customers it serves. Though this is a long process that involves a significant amount of change to processes and procedures that have been in place for decades, and which were previously governed pursuant to a different set of rules and requirements, we are seeing positive progress. I am particularly pleased to report that, in 2019, PWSA's Customer Service department maintained a 97.5% or higher customer satisfaction rate based on the handling of 178,854 customer calls. At the closing of each of these calls, the customer is asked whether he or she is satisfied with the information provided. Of these calls, 174,383 of the customers reported that they were satisfied with PWSA's handling of their issue. Only 4,471 of the callers indicated that they were not satisfied. When this occurs, an Inquiry Lock is placed on the account and the call is escalated to a Senior Representative who then works with the customer to determine whether a Dispute Lock is needed to enable the customer to proceed with available Commission processes to address the issue. Though this illustration addresses our handling of customers who contact our customer service contact center, I believe it is representative of the success of PWSA's overall efforts to better serve its customers. With the passage of time and the on-going evolution of our processes, PWSA will continue to work to improve its processes so as to achieve its goal of becoming a highly responsive and trusted public utility that is recognized for excellence and valued by the customers it serves.

III. HOUSEHOLD AFFORDABILITY ANALYSIS AND PROJECTED IMPACT OF PROPOSED RATE INCREASE

Q. HAS PWSA EVAULATED THE WATER AND WASTEWATER UTILITY BURDEN ON HOUSEHOLDS IN ITS SERVICE AREA?

A. Yes. PWSA engaged its financial consultant, Raftelis,[5] to undertake a household affordability analysis intended to provide a baseline understanding of affordability in its service area.[6] The scope of the study was not to define what is "affordable" but to better understand the water and wastewater utility burden on households in the community. As PWSA had not undertaken any such analysis previously, this was an important step to understanding the specific characteristics of PWSA's customers.

A. Description and Results of Household Affordability Analysis

Q. PLEASE EXPLAIN WHAT WAS EVALUATED AS PART OF THE HOUSEHOLD AFFORDABILITY ANALYSIS.

A. As a starting point, the analysis looked at the typical annual water, wastewater conveyance and ALCOSAN treatment charges paid[7] by low, median and high-consumption customers and calculated a Household Burden Indicator to see how the bills for these services compare with the overall household income. Two income levels were

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5 With more than 70 specialized consultants, Raftelis has the largest and most experienced water, wastewater, and stormwater utility financial and management consulting practice in the nation. Regarding affordability, Raftelis has worked alongside utilities, regulators, and industry associations to help further the discussion on measuring affordability and applying affordability metrics properly. Raftelis has evaluated affordability and implemented programs for major utilities across the country. For more information see: https://www.raftelis.com/capabilities/finance/affordability-analysis-program-development/

6 The Household Affordability Analysis – Final Report Overview dated December 2019 is attached as Exh. JAQ-5.

7 *Final December 2019 Study* at 14-15. All three of these charges are billed by PWSA. Although the wastewater treatment services provided by ALCOSAN are not regulated by the Commission and PWSA has no role in the setting ALCOSAN's rates, PWSA (per existing contractual agreements) bills ALCOSAN's wastewater treatment services to PWSA's customers, purchases 100% of ALCOSAN's receivables and pursues nonpayment of the ALCOSAN charges through the tools available to PWSA. There are no additional charges assessed by PWSA to customers to cover the costs of this billing arrangement with ALCOSAN or to recover the costs associated with uncollectible accounts expense incurred due to unpaid ALCOSAN charges.

compared for the analysis: (1) the Median Household Income (representative of a typical customer)[8]; and, (2) the Lowest Quintile Income (representative of a vulnerable customer).[9] The Household Affordability Analysis also looked at census tract data and accessibility to PWSA services to identify the top areas to target outreach to those who could most benefit from PWSA's low income customer assistance programs. Finally, the Household Affordability Analysis took a deeper look at the impact of PWSA's bills on low income customers and the effectiveness of assistance provided through PWSA's low income customer assistance programs.

Q. WHAT DID THE HOUSEHOLD AFFORDABILITY STUDY REVEAL ABOUT PWSA'S CUSTOMERS?

A. For the typical customer (the Median Household Income), PWSA's bills account for 2.0% (for low water consumption), 2.7% (for median water consumption) and 4.1% (for high water consumption) of the overall household income.[10] The household burdens for vulnerable customers (the Lowest Quintile Income) are 5% (for low water consumption), 6.7% (for median water consumption) and 10.2% (for high water consumption).[11] ALCOSAN's wastewater treatment charges are included in this calculation and have a

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8 A "typical customer" is defined as a residential customer who receives both water and wastewater conveyance service from PWSA as well as wastewater treatment service from ALCOSAN, and has a 5/8" meter size. Income data from American Community Survey ("ACS") was utilized. *Final December 2019 Study* at *9, 14*.

9 An income quintile is a measure of neighborhood socioeconomic status that divides the population into five income groups (from lowest income to highest income) so that approximately 20% of the population is in each group. The Upper Limit of the Lowest Quintile Income was used to be representative of a vulnerable customer.

10 *Final December 2019 Study* at 17, Table 5.

11 *Final December 2019 Study* at 17, Table 5.

significant contribution on the customer burden, as they compromise approximately 30% of a customer's PWSA bill.[12]

Q. HOW DO THESE RESULTS COMPARE WITH VARIOUS MEASURES OF AFFORDABILITY THAT CURRENTLY EXIST?

A. There are no standards of affordability for water and wastewater services established by the Commission. However, guidelines from the U.S. Environmental Protection Agency ("EPA") from 1997[13] are still used today and would consider a combined annual water and wastewater bill of less than 4.5% of Median Household Income to be affordable (2.5% for water, plus 2% for wastewater services and combined service overflow controls). Using this metric, PWSA's bills are affordable for the typical customer (the Median Household Income) but not for vulnerable customers (the Lowest Quintile Income).[14] There are other available metrics for evaluating affordability, including a new approach for assessing community and household affordability for water services proposed by the American Water Works Association, National Association of Clean Water Agencies and Water Environment Federation.[15] This proposal uses a combination of (1) the Household Burden Indicator (HBI), which is defined as basic water service costs (combined) as a percent of the 20th percentile household income (i.e., the Lowest Quintile of Income (LQI) for the Service Area; and (2) Poverty Prevalence Indicator (PPI), defined as the percentage of community households at or below 200% of the

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12 Isolating charges for PWSA's water and wastewater conveyance services shows that PWSA's portion of the affordability burden is 4.8% of income for a low-income customer with median usage in contrast with 6.7% when ALCOSAN charges are included. *Final December 2019 Study* at 17-18, Table 6.

13 *Final December 2019 Study* at 6.

14 *Final December 2019 Study* at 17.

15 See, https://www.awwa.org/Portals/0/AWWA/Government/DevelopingNewFrameworkForAffordabilityReport.pdf

Federal Poverty Level (FPL). Applying these metrics to the data from this study results in an HBI of 6.7% and a PPI of 43.7% which places the burden of PWSA's bills on customers in the "Moderate-High Burden" as shown in the below table:

Table 1 PWSA's Burden on Customers as Measured by the Latest AWWA Method

HBI - Water Costs as a Percent of Income at LQI	PPI - Percent of Household Below 200% of FPL		
	>=35%	20% to 35%	<20%
>=10%	Very High Burden	High Burden	Moderate-High Burden
7% to 10%	High Burden	Moderate-High Burden	Moderate-Low Burden
<7%	Moderate-High Burden	Moderate-Low Burden	Low Burden

Q. WHAT ARE THE KEY FINDINGS FROM PWSA'S AFFORDABILITY STUDY REGARDING LOW INCOME CUSTOMERS?

A. The income and poverty statistics show that Pittsburgh is a diverse city with a wide range of income and poverty levels. Approximately 34% of the population lives at or below 150% of the Federal Poverty Level.[16] PWSA's bills make up a larger amount of the household income for those customers at 50% of the FPL, and, within this group of customers, those who are using the highest amounts of water are being impacted twice as much as those with lower water consumption. The analysis also revealed that the Bill Discount Program is providing positive benefits (in terms of reducing overall cost burden as a percentage of income for the customer) with those using the highest water consumption receiving less of a benefit.[17]

Q. DID PWSA FURTHER ANALYZE THE TYPICAL BILLS FOR CUSTOMERS AT VARIOUS PERCENTAGES OF FPL?

A. Yes. Because PWSA does not know the poverty level of all residential customers, PWSA collected the incomes and poverty levels of 2,398 customers who reported their

16 *Final December 2019 Study* at 30.

17 *Final December 2019 Study* at 28-29, Tables 10 and 11.

information to PWSA to obtain an income based payment arrangement. All of these customers were confirmed at FPL levels of 150% or less, with 591 of these customers identified as living at 50% or lower of the FPL. PWSA then matched these incomes and poverty levels to the customer's 2018 water consumption to recreate the customers' bills and gauge affordability. Though this is only a small group of PWSA's customers and may not be representative of all residential customers, utilizing the available data to assess our programs was informative.

Q. HOW WAS THIS INFORMATION USED TO IDENTIFY THE PERCENT OF INCOME BURDEN EXPERIENCED BY CUSTOMERS AT VARIOUS PERCENTAGES OF FPL?

A. For the 2,398 customers, we calculated each customer's bills and divided that number into their stated household income to calculate that customer's individual burden level as a percentage. We then identified the median burden level within each percentage of FPL group to determine what a typical person in that FPL group is experiencing.

Q. WHAT ARE THE TYPICAL ANNUAL BILL AMOUNTS FOR CUSTOMERS AT PERCENTAGES OF FPL WHO ARE NOT RECEIVING A BILL DISCOUNT?

A. Based on the sample group:

Table 2 Typical Annual Bill Amounts At % of FPL Not Receiving Bill Discount

Poverty Level	Median Consumption (Kgal/Month)	Water	Sewer	ALCOSAN	Total
0 - 50%	4.0	$725	$367	$448	$1,539
51- 100%	4.0	$725	$367	$448	$1,539
101 - 150%	4.0	$725	$367	$448	$1,539
>151%	3.0	$592	$278	$353	$1,222

Q. WHAT ARE THE TYPICAL ANNUAL BILL AMOUNTS FOR CUSTOMERS AT PERCENTAGES OF FPL WHO RECEIVE A BILL DISCOUNT?

A. The typical annual bill amounts for customers at percentages of FPL who receive both a Bill Discount from PWSA as well as a grant from the ALCOSAN Clean Water Assistance Fund, are as follows:

Table 3 Typical Annual Bill Amounts At % of FPL Receiving Bill Discount

Poverty Level	Median Consumption (Kgal/Month)	PWSA Water	PWSA Sewer	ALCOSAN	Total
0 - 50%	4.0	$479	$292	$320	$1,091
51- 100%	4.0	$479	$292	$320	$1,091
101 - 150%	4.0	$479	$292	$320	$1,091
>151%	3.0	$347	$203	$225	$775

Q. HOW WAS THE MEDIAN BURDEN LEVEL WITHIN EACH PERCENTAGE OF FPL USED TO ANALYZE THE IMPACT OF PWSA'S BILL DISCOUNT PROGRAM?

A. Once we identified the median burden level, we were then able to see the impact on household burden that resulted from the application of the Bill Discount Program as set forth in the tables below:

Table 5 Assumes NO Bill Discount Applied

Poverty Level	Median Household Burden of Group
0 - 50%	21.2%
51- 100%	10.1%
101 - 150%	6.6%
>151%	4.3%

Table 4 Assumes 75% Bill Discount Applied

Poverty Level	Median Household Burden of Group
0 - 50%	15.6%
51- 100%	6.9%
101 - 150%	4.6%
>151%	2.9%

B. Impact Of Proposed Rate Increase On Future Affordability

Q. DID PWSA CONSIDER THE IMPACT OF ITS PROPOSED RATE INCREASE FOR CUSTOMERS?

A. Yes. Below are tables showing the expected impact of PWSA's proposals for its customers. It is important to note, however, that the actual impact of the rate increase (factoring in approval of a 10% DSIC) will vary depending on usage, given that PWSA's rate structure includes a minimum charge and a volumetric charge. The table below presents the monthly impact of both in dollars and percentage for the customer.

Table 6 Monthly Impact Proposed Rate Increase for Residential Customer

Minimum Charges	Monthly Usage (1,000 gal)	2020 Existing Water	2020 Existing Sewer	2020 Existing Total	2021 Proposed Water	2021 Proposed Sewer	2021 Proposed Total	Monthly Impact $	Monthly Impact %
5/8"	1	$27.27	$8.28	**$35.55**	**$29.11**	**10.85**	**$39.95**	$4.40	12.4%
5/8"	3	49.35	23.14	**72.49**	**58.15**	**28.16**	**86.31**	13.82	19.1%
5/8"	5	71.43	38.00	**109.43**	**87.19**	**45.47**	**132.66**	23.23	21.2%
5/8"	7	93.51	52.86	**146.37**	**116.23**	**62.79**	**179.01**	32.64	22.3%
5/8"	12	148.71	90.01	**238.72**	**188.83**	**106.07**	**294.90**	56.18	23.5%
1"	20	255.42	151.27	**406.69**	**324.50**	**174.64**	**499.14**	92.45	22.7%

Table 7 Monthly Impact Proposed Rate Increase for Non-Residential Customers

Meter Size	Monthly Usage (1,000 gal)	2020 Existing Water	2020 Existing Sewer	2020 Existing Total	2021 Proposed Water	2021 Proposed Sewer	2021 Proposed Total	Monthly Impact $	Monthly Impact %
Commercial									
5/8"	12	$142.55	$80.44	$222.99	**$198.63**	**$107.04**	**$305.67**	**$82.68**	**37.1%**
1"	13	173.66	92.30	265.96	**229.99**	**114.74**	**344.73**	**78.77**	**29.6%**
2"	80	949.38	552.51	1,501.89	**1,322.38**	**698.13**	**2,020.50**	**518.61**	**34.5%**
4"	160	2,027.48	1,133.71	3,161.19	**2,731.99**	**1,382.26**	**4,114.25**	**953.06**	**30.1%**
Industrial									
2"	100	$1,020.37	$635.57	$1,655.94	$1,474.47	$875.77	$2,350.24	$694.30	41.9%
4"	680	6,458.38	4,191.11	10,649.49	9,598.30	5,949.79	15,548.09	4,898.60	46.0%
6"	400	4,540.41	2,647.71	7,188.12	6,253.27	3,452.74	9,706.00	2,517.88	35.0%
8"	800	8,781.71	5,199.43	13,981.14	12,230.01	6,904.55	19,134.56	5,153.42	36.9%
Health or Education									
1"	40	$591.02	$327.17	$918.19	$683.43	$362.79	$1,046.22	$128.03	13.9%
2"	50	761.70	410.16	1,171.86	895.26	447.03	1,342.29	170.43	14.5%
4"	200	2,945.88	1,610.61	4,556.49	3,487.14	1,776.39	5,263.53	707.04	15.5%
6"	650	9,360.16	5,201.96	14,562.12	11,036.07	5,793.54	16,829.60	2,267.48	15.6%

Q. IS PWSA PROPOSING TO MAKE ANY CHANGES TO ITS CURRENT RATE STRUCTURE?

A. Not at this time. PWSA evaluated removing the current minimum allowance that is included within its rate structure. However, PWSA identified both physical and practical constraints to altering its current rate structure that are insurmountable in the near term but considered achievable in the future. One constraint is the Customer Information System ("CIS"), which was implemented in 2013 with the understanding that the rates would contain a base facility charge, including a usage allowance, and that the usage

allowance would be determined by the size of the water meter. Other issues involved with removing the minimum charge in this rate case are discussed in the testimony of Mr. Smith.

Q. DOES PWSA'S CURRENT RATE STRUCTURE PROVIDE CUSTOMERS WITH AN OPPORTUNITY TO LESSEN THE BURDEN OF THE INCREASED CHARGES?

A. Yes. While we recognize that any rate increase can have a negative impact on our customers, as explained by PWSA's other witnesses, PWSA has taken every reasonable step to operate efficiently and to keep costs down. Notwithstanding the significant efforts made by PWSA in this regard, and as explained through the testimony of PWSA's witnesses, the requested rate increase is needed to support PWSA's continued rebuilding and upgrading of the infrastructure to include the construction and operating costs required to do so. Given PWSA's current rate structure, customers electing to utilize lower volumes of water will experience less of an increase than higher volume customers. This presents customers with an opportunity to manage their water use in a way that lessens the impact of the rate increase.

Q. HAS PWSA CONSIDERED HOW ITS PROPOSED RATE INCREASE WILL SPECIFICALLY IMPACT ITS LOW INCOME CUSTOMERS?

A. Yes. PWSA has considered how its proposed rate increase would impact low income customers, including those eligible to participate in the current customer assistance programs, in the context of considering changes to its current low income customer program design. As I will describe more fully in the next section, PWSA is electing to

propose some changes to the design of its current low income customer assistance programs, which will result in the following rate impacts:

Table 8 Low Income Customer Receiving 100% Off Minimum Charge 2021

Minimum Charges	Monthly Usage (1,000 gal)	2020 Existing Water	2020 Existing Sewer	2020 Existing Total	2021 Proposed Water	2021 Proposed Sewer	2021 Proposed Total	Monthly Impact $	Monthly Impact %
5/8"	1	$6.82	$2.07	$8.89	$0.00	$0.00	$0.00	- $8.89	-100.00%
5/8"	2	17.86	9.50	27.36	14.52	8.66	23.18	- 4.18	-15.28%
5/8"	3	28.90	16.93	45.83	29.04	17.31	46.35	0.53	1.15%
5/8"	4	39.94	24.36	64.30	43.56	25.97	69.53	5.23	8.14%
5/8"	5	50.98	31.79	82.77	58.08	34.63	92.71	9.94	12.01%

IV. LOW INCOME CUSTOMER ASSISTANCE PROGRAMS

Q. DOES PWSA OFFER PROGRAMS TO ASSIST QUALIFYING LOW INCOME RESIDENTIAL CUSTOMERS WITH PAYING THEIR BILLS?

A. Yes. Although PWSA had not historically offered such programs, PWSA began to recognize a need for assistance beyond income-based payment arrangements and, in the fall of 2017 (prior to being regulated by the Commission), began to implement the various low income customer assistance programs that exist today.

Q. PLEASE DESCRIBE THE CURRENT PWSA LOW INCOME CUSTOMER ASSISTANCE PROGRAMS THAT ARE AVAILABLE.

A. PWSA offers the following programs to provide financial assistance to qualifying low-income residential customers:

- **Winter Shut Off Moratorium** - December 1st through March 31st for customers who are at or below 250% of the Federal Poverty Level. This program was applied to 2,715 customers during the 2018-2019 Winter Shut Off Moratorium period.

- **Bill Discount Program** - 75% reduction of fixed monthly water and sewer conveyance charges for customers who are at or below 150% of the

Federal Poverty Level. There were a total of 2,179 customers enrolled in the Bill Discount Program as of January 2, 2020.

- **Hardship Program** – Cash grants up to $300 per year for customers at or below 150% of the Federal Poverty Level; 55 customers have applied for grants via the 2019-2020 Hardship Program grant season, which began October 1, 2019.

- **Free Private Lead Service Line Replacement Project**[18] – PWSA has recently received approval from the Pennsylvania Department of Environmental Protection to increase the income eligibility level for our Free Lead Line Replacement Program from 250% to 300% of the Federal Poverty Level. This increase is expected to allow more residents (who are not already part of our current work areas for the Lead Service Line Replacement program) to qualify for free service line replacements. Over 375 customers have benefited from this program as of January 10, 2020.

Q. SINCE THE INITIAL RATE CASE, HAS PWSA CONTINUED TO EVALUATE THESE PROGRAMS?

A. Yes. PWSA continues to gain more experience with these programs through its own interactions with customers and through the feedback received as part of the Low Income Assistance Advisory Committee ("LIAAC"). Since the last rate case, PWSA has also been able to evaluate the impact of its programs on its customers, including those receiving the financial assistance, as well as the costs to those customers who are not receiving the assistance. Also, as discussed previously, PWSA engaged its financial consultant, Raftelis, to undertake a household affordability analysis, which has been used to inform its view of the effectiveness of its low income customer assistance programs.

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[18] Though PWSA's Free Private Lead Service Line Replacement Project is included along with the discussion about PWSA's other low income customer assistance programs, this particular program is offered pursuant to a settlement with the Department of Environmental Protection ("DEP"), it is not included in PWSA's Commission approved tariffs nor is PWSA seeking approval from the Commission for the program as it is not within the Commission's jurisdiction. *In the Matter of Pittsburgh Water and Sewer Authority Violation of the Pennsylvania Safe Drinking Water Act and the Rules and Regulations Promulgated Pursuant Thereto Regarding the Lead and Copper Rule*, Consent Order and Agreement dated November 17, 2017, Paragraph 4.b. at 17-18 ("Up to. . . $1,800,000 of the civil penalty. . . may be paid by PWSA by performing a Community Environmental Project acceptable to the Department.") More information about PWSA's Free Private Lead Service Line Replacement Project is available at: http://lead.pgh2o.com/resources/free-private-lead-line-replacement-project/.

A. Prior Settlement Provisions Related To Low Income Customers

Q. WERE PWSA'S LOW INCOME CUSTOMER ASSISTANCE PROGRAMS EVAULATED DURING THE INITIAL RATE CASE?

A. Yes. PWSA's Initial Rate Case was the first rate request filing made by PWSA after coming under the jurisdiction of the Commission. As such, parties to the rate case proceeding reviewed PWSA's low income customer assistance programs, offered the results of their evaluations, and negotiated specific settlement terms related to the low income customer assistance programs.

Q. WHAT DID THE INITIAL RATE CASE SETTLEMENT PROVIDE REGARDING PWSA'S LOW INCOME CUSTOMER ASSISTANCE PROGRAMS IN THE CONTEXT OF THIS SECOND BASE RATE PROCEEDING?

A. There were several interrelated components of the Initial Rate Case Settlement relevant to PWSA's low income customer assistance programs. These components included: (1) data collection; (2) an increase to the then-existing Bill Discount Program credit; (3) formation of the LIAAC; (4) use of social security numbers as part of application process; (5) continuation of outreach efforts; (5) submission of a detailed plan outlining the program parameters for each program consisting of the information identified in the Initial Rate Case Settlement; and (6) a proposal to align any proposed revisions to the Bill Discount Program with any newly designed rate structures.[19]

Q. SETTING ASIDE THE SUBMISSION TO BE PROVIDED IN THIS PROCEEDING, HAS PWSA COMPLIED WITH ALL THE OTHER AGREED-UPON COMMITMENTS RELATED TO LOW INCOME CUSTOMER ISSUES?

A. Yes. Regarding data collection, PWSA is reporting the data set forth in the Initial Rate Case Settlement on a quarterly basis as part of its Quarterly Compliance Plan Progress

[19] RCS Section III.F. Relatedly, and as discussed previously, PWSA also agreed to suspend the use of JTS and terminated the contract with JTS effective June 30, 2019.

Report.[20] PWSA formed the LIAAC committee in March 2019. Through February 14, 2020, PWSA has facilitated seven meetings of the LIAAC and one Question and Answer session. PWSA's customer outreach is continuing, with PWSA participating in upwards of 100 community meetings annually and participating in coordinated outreach efforts as part of PWSA's membership in the Western Pennsylvania Utilities Group. PWSA is also proposing as part of this proceeding to implement a new canvassing program.

Q. REGARDING THE SUBMISSION TO BE INCLUDED AS PART OF THIS PROCEEDING, DID THE COMPLIANCE PLAN STAGE 1 SETTLEMENT PROVIDE FURTHER DETAIL ABOUT THE PROCESS?

A. Yes. While customer service issues are reserved for Stage 2 of the Compliance Plan process, the parties negotiated terms regarding PWSA's low income customer assistance programs in the Compliance Plan Stage 1 Partial Settlement. More specifically, the Compliance Plan Stage 1 Partial Settlement acknowledges the presentation and discussion of PWSA's Affordability Analysis. PWSA also agreed to provide a written draft of the proposed revisions to its low income customer assistance programs that it was considering during the September LIAAC meeting. LIAAC members were then asked to provide written recommendations and feedback. PWSA agreed to seriously consider all feedback received and incorporate anything with which it agreed. Regarding any programmatic recommendations offered that PWSA elected not to incorporate, PWSA agreed to set forth its specific rationale for the rejection as part of this proceeding.[21]

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[20] See, e.g., Pittsburgh Water and Sewer Authority Quarterly Compliance Plan Progress Report dated January 31, 2020, filed at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water) and P-2018-3005039 (wastewater) at Appendix D.

[21] CP Stage 1 Settlement Section III.NN.3.b.

B. Revisions To Existing Low Income Customer Assistance Programs

***1.* Household Affordability Analysis**

Q. WAS THE HOUSEHOLD AFFORABILITY ANALYSIS DISCUSSED WITH THE LIAAC?

A. Yes; we discussed the Household Affordability Analysis at a number of the LIAAC meetings. At the second meeting of the LIAAC, on June 3, 2019, a presentation detailing the initial residential Household Affordability Analysis for PWSA's service area by census tract was given. A follow-up question and answer session was held on July 15, 2019 to enable a more in-depth discussion about the Household Affordability Analysis. At the third LIAAC meeting, on August 12, 2019, we shared PWSA's initial thoughts regarding potential enhancements for its low income customer assistance programs. During the September 23, 2019 LIAAC meeting, PWSA further detailed the revisions it was considering for its low income customer assistance programs. Finally, at the October 15, 2019 LIAAC meeting, discussion about PWSA's proposed revisions as well as the Household Affordability Analysis occurred. LIAAC members were presented with an initial version of the Household Affordability Analysis Final Report dated October 31, 2019 on November 2, 2019.

The October 2019 Report was also shared with members of the Water Equity Taskforce (which includes PWSA, the City of Pittsburgh and multiple community based organizations).[22] Based on the review by the Water Equity Taskforce, changes to the October 2019 Report were needed regarding the display of neighborhoods. Those

[22] The Water Equity Taskforce is an endeavor of the US Water Alliance which is tasked with developing more equitable water policies and practices and is working on issuing a Water Equity Roadmap later this year. *See* http://uswateralliance.org/initiatives/water-equity/taskforce.

changes were made, and the revised final December 15, 2019 Report was circulated to the LIAAC members on February 14, 2020.

Q. PLEASE PROVIDE MORE DETAIL ABOUT THE CHANGES MADE TO THE OCTOBER 2019 REPORT AND WHETHER THESE CHANGES SUBSTANTIALLY ALTERED THE RESULTS OF THE EVALUATION.

A. The changes involved choosing which census tracts were included or not included in the service area socioeconomic analyses. Census tracts are the smallest geographic unit reported by the U.S. Census Bureaut's American Community Survey, which was the principal source of socioeconomic information for the report. Raftelis' analysis of PWSA customer location data showed small numbers of customers in some areas that the Water Equity Taskforce determined should not be included in the analysis, so as not to unduly sway service area statistics.[23] The service area income, poverty, and affordability statistics were rerun based on the adjusted list of census tracts (service area statistics were derived from an average of all the tracts in the service area). All maps and figures were rerun to reflect these adjustments. Service area annual household incomes were slightly reduced (less than $1,000). While the changes made affordability statistics worsen slightly, the change was not enough to warrant any revisions regarding the key statistics or conclusions.

[23] The specific areas impacted included excluding: (a) the Bellevue-Westview area (census tract 4297); (b) the Wilkinsburg area (census tract 5605); and, (c) two tracts in the Reserve Township area (4281 and 4282). Two other non-substantive changes included renaming the following two areas: (a) the Edgewood-Swissvale area (census tract 5154.01) to Swisshelm Park; and, (2) the Millvale-Cherry City (census tract 4272) to Cherry City.

2. **Initial Program Revisions as Presented To LIAAC**

Q. WHAT CHANGES FOR ITS EXISTING LOW INCOME CUSTOMER ASSISTANCE PROGRAMS HAS PWSA ALREADY PRESENTED TO THE LIAAC?

A. PWSA proposed to include all the low income customer assistance programs under the new brand "PGH2o Cares" and to ramp up efforts to increase enrollment as well as incentivize conservation. We also proposed to revise the Bill Discount Program to provide a 100% discount for consumers who are at or below 50% of the federal poverty level. Finally, we proposed to lower the amount of the required bill payments in the three months before a customer could be considered eligible for a Hardship Cash Assistance Grant.

Q. PLEASE PROVIDE MORE DETAIL ABOUT THE "PGH2O CARES" PROPOSAL AS PRESENTED BY PWSA DURING THE LIAAC METINGS.

A. PWSA proposed to combine all assistance programs under the "PGH2o Cares" label that would have dedicated staff and a budget. The team would include a Coordinator, three Team Members, field and in-home safety training, a vehicle, and printed conservation marketing and enrollment materials.

Q. HAS PWSA INCLUDED A PROJECTED BUDGET FOR THE PROGRAM?

A. Yes, we are projecting a budget of $243,080 for 2021. At this point in time, we anticipate repurposing some of the current compliance staff to accomplish the proposed in-field tasks, funding for our proposed outreach will come from the public affairs department, and we are expecting to repurpose a vehicle allocated to the CIP budget to utilize as needed. Since we are only in the early stages of developing this program, we have elected flexibility regarding the funding for the proposed budget until we gain more experience with the actual costs that are involved.

Q. WHAT TASKS WOULD BE PERFORMED BY THE PGH2O CARES TEAM?

A. Initially, the PGH2o Cares team would focus its efforts on customers who are at or below 50% of the federal poverty level and have higher than average consumption identified during the pre-bill editing process. The goal would be to increase enrollment in PGH2o Cares for these consumers via conservation marketing, enrollment materials, and in-home canvassing efforts. Given our analysis at the time that this proposal was presented to the LIAAC, decreasing consumption for these customers would better utilize the benefit provided by PWSA's Bill Discount Program.

Q. WHAT PROJECTED IMPACT FROM REDUCING MONTHLY CONSUMPTION DID YOU IDENIFY DURING THE SEPTEMBER 23, 2019 LIAAC MEETING?

A. At that time, we projected that increasing the Bill Discount to 100% for customers who are at or below 50% of the federal poverty level would increase total customer savings from $319.95 to $426.60. Customers reducing monthly consumption by 1 unit would save an additional $316.92 per year (on both PWSA and ALCOSAN charges). Thus, we projected that adding the consumption reduction savings of $316.92 to the new 100% discount savings of $426.60 would result in a total annual savings of $871.52. Subtracting this total savings amount of $871.52 from the average annual water, wastewater conveyance and wastewater treatment (ALCOSAN) bill of $1,539, would reduce the bill for customers who are at or below 50% of the federal poverty level by 57% to $667.48.

Q. DID YOU DISCUSS OTHER POTENTAL CHANGES TO THE LOW INCOME CUSTOMER ASSISTANCE PROGRAMS DURING THE SEPTEMBER 23, 2019 LIAAC MEETING?

A. Yes. We proposed to increase the Bill Discount from 75% to 100% for customers who are at or below 50% of FPL based on the analysis I discussed previously. We also

proposed to decrease the up-front payment burden to receive a Hardship Cash Assistance grant.

Q. PLEASE PROVIDE MORE INFORMATION ABOUT THE CHANGES TO THE HARDSHIP CASH ASSISTANCE PROGRAM DISCUSSED DURING THE LIAAC MEETINGS.

A. To be considered for a Hardship Cash Assistance grant, applicants must have made a sincere effort to pay their utility bills within three months of applying for the Hardship grant. Applicants less than 62 years of age are currently required to make payments totaling $150 in the three months prior to applying for the grant, while applicants 62 and older are required to make payments totaling $75 in the three months prior.[24] PWSA's proposal is to reduce these required payments from $150 to $75 for those under 62 years of age and from $75 to $37.50 for those aged 62 year and older. The benefits of this proposed change will be to lessen the customer's payment burden and to drive adoption rates for those on the margin.

Q. HAS PWSA RECEIVED FEEDBACK FROM MEMBERS OF THE COMMITTEE?

A. Yes. Time was allocated at the October 15, 2019 LIAAC meeting to receive feedback from committee members about PWSA's initial proposals. We did receive oral feedback from the LIAAC committee members during the October 15, 2019 LIAAC meeting and also written informal comments from OCA, the Thomas Merton Center, and Pittsburgh UNITED.

Q. HAVE YOU SERIOUSLY CONSIDERED ALL OF THIS FEEDBACK?

A. Yes. PWSA appreciates the thoughtful suggestions offered by the LIAAC members.

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[24] For customers of Pennsylvania American Water, applicants must have paid at least $100 on their water account in the past three months. Senior Citizens must have paid at least $50. *See* https://www.dollarenergy.org/need-help/pennsylvania/hardship-program/

3. **Final Proposed Revisions**

Q. IS PWSA MAKING ANY CHANGES TO THE REVISIONS SHARED DURING THE SEPTEMBER 23, 2019 LIAAC MEETING AS A RESULT OF THE FEEDBACK RECEIVED FROM LIAAC MEMBERS?

A. Yes

Q. IS PWSA PROPOSING ANY ADDITIONAL CHANGES TO ITS WINTER SHUT OFF MORATORIM PROGRAM?

A. Yes. In our proposed changes presented to the LIAAC on September 23, 2019, we did not offer any proposal to revise the Winter Moratorium program. We received feedback from the Thomas Merton Center to consider a permanent prevention of water service termination. The impact of implementing this proposal would require PWSA to continue to provide service to an account that is not being paid without any ability to terminate service to that account. PWSA would be required to collect the nonpayment for that account that can never be terminated from all of its other ratepayers. Thus, a permanent moratorium on PWSA's ability to terminate water service would unfairly burden the customers who are able to pay their monthly PWSA charges. However, in consideration of the concerns raised, PWSA has opted to extend Winter Moratorium coverage from up to 150% of FPL to up to 300% of FPL, thereby making the program available to more consumers. Under PWSA's new proposal, the income eligibility for one individual would increase from $31,900 to $38,280, and the income eligibility for a family of four would increase from $65,500 to $78,600.

Q. IS PWSA PROPOSING ADDITIONAL REVISIONS TO ITS BILL DISCOUNT PROGRAM?

A. Yes. PWSA is proposing two additional revisions beyond what was discussed during the September 23, 2019 LIAAC meeting. First, PWSA is proposing to increase the current discount from 75% to 100% for all qualifying customers who are at or below 150% of the

federal poverty level.[25] Previously, PWSA only proposed to expand the discount for those qualifying customers who were at or below 50% of the federal poverty level.

Second, PWSA is proposing to lengthen the recertification interval of the Bill Discount Program to every two years. This additional proposal is based on feedback from Pittsburgh UNITED and additional discussions with Dollar Energy Fund about the recertification intervals utilized by other utilities. PWSA believes that this further change will lessen the burden on the low income customer because they will have a longer period of time to receive the benefit before going through the recertification process.

Q. IS PWSA PROPOSING ANY FURTHER CHANGES REGARDING ITS HARDSHIP PROGRAM?

A. No; we are not proposing to make any additional revisions beyond the ones discussed earlier to reduce the required eligibility payments from $150 to $75 for those under 62 years of age and from $75 to $37.50 for those aged 62 years and older.

Q. HAVE YOU PREPARED A DETAILED PLAN OUTLINING THE PROGRAM PARAMETERS FOR EACH OF THE LOW INCOME CUSTOMER ASSISTANCE PROGRAMS?

A. Yes. As PWSA agreed to do in the Initial Rate Case Settlement, I have prepared a "PGH2o Cares Program Plan," which is a detailed plan outlining the low income customer assistance programs and is attached hereto as Exhibit JAQ-6. This document includes:

- the program elements that are being proposed as part of this proceeding;
- eligibility requirements and procedures for enrollment;
- projected budget/cost of customer benefits; and,
- an assessment of need and projected enrollment.

[25] The monthly impact of this change is displayed above in *Table 8 Low Income Customer Receiving 100% Off Minimum Charge 2021.*

Also included in the PGH2o CARES Program Plan is planned outreach activities generally and in connection with the newly proposed Conservation in the Home Program.[26] Other plan elements required by the Initial Rate Case Settlement are included in the Household Affordability Analysis – Final Report December 15, 2019 (needs assessment) and this testimony (details of average bill at percentage of FPL).

Q. DOES THE PGH2o CARES PROGRAM PLAN INCLUDE A PROPOSAL FOR HOW TO ADDRESS ALL CONSENSUS ISSUES ADOPTED BY THE LIAAC?

A. No. The focus of the PGH2o CARES Program Plan is describing the various low income customer assistance programs available to assist customers with their PWSA bills. As such, addressing LIAAC procedures did not seem to be an appropriate fit for this document. Also, my experience with the LIAAC to date is that it has offered a good place for interested stakeholders to share their views with PWSA and we have been receptive to hearing these concerns and addressing them when possible. As we all gain more experience with PWSA's programs and continue our discussions through LIAAC, future agreements on program changes and/or other ideas can be addressed as appropriate to the situation at the time. Given the infancy of PWSA's programs, I do not support creating too rigid a process at this stage.

***4.* Evaluation of Feedback Provided By OCA and UNITED**

Q. PLEASE DESCRIBE THE WRITTEN FEEDBACK YOU RECEIVED FROM OCA AND UNITED.

A. In addition to the discussions that occurred during the LIAAC meeting, both OCA and UNITED offered written feedback regarding PWSA's proposals. OCA identified

[26] The outreach plan includes a proposed budget and a neighborhood canvassing aspect to target areas of PWSA's service territory identified through the Household Affordability Study as agreed-to in the Compliance Plan Stage 1 Partial Settlement. CP Stage 1 Settlement at III.NN.4.b.

"methodological problems" with PWSA's Household Affordability Analysis, and UNITED offered recommendations for the drafting of PWSA's detailed plan outlining the program parameters for each of its low income assistance programs. Both also offered policy and programmatic recommendations for PWSA's consideration including: (1) removal of the minimum allowance; (2) restructuring of the Bill Discount Program to include adding arrearage forgiveness; (3) expansion of PWSA's proposed conservation efforts; (4) increasing available funding for the Hardship Program; and (5) development of a canvassing strategy for outreach.

Q. DOES OCA OFFER ANY RECOMMENDATIONS BASED ON ITS VIEW THAT THE HOUSEHOLD AFFORABILITY ANALYSIS IS INCOMPLETE?

A. No. While OCA concludes that PWSA's Household Affordability Analysis is "incomplete" and explains the basis for this determination, OCA's bottom line is that PWSA's proposals do not "seem to adequately address the scope of the issue." As explained previously, the purpose of the Household Affordability Analysis was to provide a baseline understanding of affordability in PWSA's service area and not to define what is "affordable." Moreover, the design of PWSA's low income customer assistance programs needs to balance addressing the specific needs of its low income customers while also considering the impact of these programs on PWSA's remaining customers who will bear the costs of the programs. Ultimately, what is "affordable" for PWSA's low income customers will be affected in large part by factors beyond the ability of PWSA (or the Commission) to control, and, in any event, are well beyond this proceeding.

Q. DID YOU RELY ON FEEDBACK FROM UNITED TO DRAFT THE PGH2O CARES PROGRAM PARAMETERS (EXHIBIT JAQ-6)?

A. Yes. UNITED provided detailed information about what it recommended PWSA include in its plan. To the extent practicable, these recommendations on plan layout and content were accepted and incorporated.

a. Removal of Minimum Allowance

Q. WHAT RECOMMENDATIONS DID OCA AND UNITED MAKE REGARDING PWSA'S CURRENT MINIMUM ALLOWANCE?

A. OCA takes the view that residential customers "frequently" have usage less than the 1,000 gallons per month that is included in the minimum charge and states that "an affordability program should address the usage in the minimum charge to properly address affordability." While UNITED does not specifically advocate for removal of the minimum allowance or a discount for usage less than 1,000 gallons, it does propose (as an alternative to other recommendations) that PWSA provide tiered discounts on both the minimum charge and the volumetric charge. According to UNITED, such an approach would better withstand any changes driven by the removal of PWSA's minimum allowance, while also providing a discount applicable to the full bill rather than just the fixed base charges.

Q. PLEASE EXPLAIN YOUR VIEW OF THESE RECOMMENDATIONS.

A. For the reasons I stated previously (and as further explained by Mr. Smith), PWSA is not proposing to remove the minimum allowance at this time. Implementing a discount that is based on volumetric usage (whether it is for those using less than 1,000 gallons or those using more than 1,000 gallons) is not possible at this time. In 2013, PWSA implemented its current CIS with knowledge of the existing rate structure. The current CIS does not support billing under the logic and rules of an alternative rate structure.

Furthermore, any enhancements to the billing calculation methodology would be costly to the ratepayers, would potentially not function as designed, and may negatively affect other aspects of the billing process that are currently working as designed.

b. Restructuring of the BDP to Include Adding Arrearage Forgiveness

Q. WHAT RECOMMENDATIONS DOES UNITED OFFER TO RESTRUCTURE PWSA'S CURRENT BILL DISCOUNT PROGRAM?

A. UNITED offers several recommendations. Primarily, UNITED advocates that the Bill Discount Program be restructured so that the amount qualifying customers would be required to pay would be dependent on a pre-defined income tier. So, for example, a customer within 0-50% of FPL would pay a certain percentage of their income for their PWSA bill. This amount would only be based on income and not on the amount of water used or any other discount off the fixed base charge. Alternatively, UNITED recommends PWSA consider expanding the discount to the entire PWSA bill, so that customers would receive a credit for both the fixed base charges and the amount charged for usage. Finally, UNITED recommends that PWSA implement an arrearage forgiveness program that would allow participants to earn forgiveness on debt accrued prior to participation in the Bill Discount Program.

Q. IS PWSA PROPOSING TO IMPLEMENT ANY OF THESE RECOMMENDATIONS?

A. No. A complete restructuring of the Bill Discount Program to require payment based on a percentage of income is not feasible at this time. Such a change would require significant programming changes, resolution of complex policy decisions including what would be the appropriate level of required payment based on income, and it would be the first program of this type implemented by a Commission regulated water utility. I recognize that UNITED is drawing from the experience of this approach used by the

electric and natural gas industry, but I also understand that the development of the appropriate tiers for payment is one that has taken years and been embroiled in significant controversy amongst various stakeholders. Without any guidance from the Commission, with likely disagreement from stakeholders about how this could be structured, and with the need to develop new programming and the increased cost impact to PWSA's ratepayers not participating in the program, implementation of UNITED's recommendation is not feasible at this time.

Regarding the recommendation to expand the discount to a customer's entire bill (i.e. the fixed base charge and the volumetric charge), this too is a recommendation that would require significant programming development, as well as an evaluation as to how such a change would impact PWSA's overall revenue requirements and cash flow.

Similarly, PWSA is not adopting UNITED's recommendation to implement an arrearage forgiveness program because PWSA could not currently sustain the manual processes that would be required to implement such a program.

c. Expansion of Proposed Conservation Efforts

Q. PLEASE EXPLAIN WHY OCA AND UNITED WERE CRITICAL OF PWSA'S PROPOSED CONSERVATION EFFORTS.

A. OCA is skeptical that significant reductions can be achieved as part of PWSA's conservation program. Similarly, UNITED describes PWSA's conservation program as "vague" and "not likely to achieve the necessary water savings," in part based on its opinion that "the offered services will be insufficient."

Q. WHAT IS YOUR VIEW OF THESE CRITICISMS?

A. I am concerned about the cost impacts on other ratepayers of developing a conservation program as comprehensive as proposed by UNITED, which includes installing water

conservation measures in customers' homes such as low flow showerheads, faucet aerators, replacement of toilets and faucets that leak with more water saving devices, as well as repairing and/or replacing water service lines. While I recognize that PWSA committed to proposing a "line repair and conservation program,"[27] upon further evaluation, PWSA is not able to commit to conservation measures that involve working inside a customer's home at this time. The only source of funding for such tasks would be from other ratepayers as PWSA does not have any type of "charitable arm" or shareholder funding from which to draw financial resources. To determine whether asking other ratepayers to fund in-the-home work by PWSA, a cost benefit analysis would need to be undertaken to evaluate whether the costs to other ratepayers and the potential resulting benefit to the recipients of the measures justify implementing a program. I am aware that other utilities have ratepayer funded usage reduction programs for low income customers, but I understand such programs have been developed through well-vetted processes that have taken a significant amount of time to finalize. PWSA is not similarly situated at this time to undertake such a process nor does PWSA believe it to be a prudent use of ratepayer money at this time to further investigate this approach given all of the other matters PWSA is undertaking at the moment. Interestingly, OCA comments that no utility has devoted the resources to fully fund usage reduction programs to reach its entire low income populations, and OCA is skeptical that PWSA's proposal would have any significant impact. Thus, rather than embarking upon a significantly costly program that may not lead to any significant results, PWSA's measured approach to conservation is a reasonable place to start. By implementing the

[27] RCS Section III.F.4.a.iv at 19.

conservation program as proposed, PWSA will be able to gather valuable data to assess its effectiveness and progress to then evaluate, at a later date, whether further cost-efficient changes could be made to improve the outcome. Given all that PWSA is undertaking at the present moment, it is simply not in a position to commit to a more robust conservation program at this time.

d. Increasing Funding for Hardship Program

Q. WHAT RECOMMEDATIONS DO OCA AND UNITED OFFER REGARDING PWSA'S HARDSHIP PROGRAM?

A. Both express concerns about the ability to continue funding this program. Currently the Hardship Program is funded from the proceeds related to a litigation settlement. OCA recognizes that any increase to the current $300 grant would faster deplete the amount of money available to fund the grants. UNITED recommends that PWSA develop a plan for seeking additional contributions to the fund, while also expanding the availability of the grant to households who do not make the required eligibility payments.

Q. WHY DOES PWSA NOT SUPPORT THESE SUGGESTIONS AT THIS TIME?

A. Based on existing program parameters and experienced take rates, PWSA does not anticipate the need to replenish the funding for the Hardship Grants for the next several years. The available balance for Hardship Cash Assistance grants as of February 28, 2020 is $356,000, with 291 grants of $300.00 or less issued since the program's inception in 2018. Based on this information, the grant money should remain available through 2022 and most likely for several years beyond that date. Soliciting our current customers for voluntary contributions, or permitting them to round up their bill payment to the $5 increment, will involve programming changes that we are not prepared to make at this time in our current CIS. In addition, we recognize that this rate request will result in

requiring customers to pay more to enable PWSA to continue to provide service; therefore, we do not believe it is reasonable at this time to solicit additional dollars from our customers (particularly since it is not yet needed). Likewise, proposals which would faster deplete the fund's reserves (either by removing the good faith payment requirement entirely or by increasing the amount of the grant) are unwise at this time because we are unable to make the necessary programming changes in our current CIS.

e. Canvassing Strategy for Outreach

Q. WHAT FEEDBACK DID UNITED OFFER REGARDING PWSA'S PROPOSED OUTREACH ACTIVITIES?

A. UNITED viewed PWSA's proposal to be limited to outreach in the context of its proposed conservation education programming for those with income between 0-50% of the Federal Poverty Level and deemed the plan "inadequate."

Q. HAS UNITED FAIRLY CHARACTERIZED PWSA'S PLANNED OUTREACH REGARDING ITS LOW INCOME CUSTOMER ASSISTANCE PROGRAMS?

A. No. Customer education and outreach is an on-going process that involves many different facets. PWSA is committed to communicating with all of its customers on a regular basis through many different channels. As Mr. Weimar describes in his testimony, PWSA's newly revamped website is focused on providing customers with easy and understandable access regarding all of the issues that matter to them. PWSA also regularly attends community engagement events, where it provides information about its low income customer assistance programs. Some of the more recent community engagement areas have included:

- January 6th, 7th, 8th, and 15th, 2020 - County of Allegheny Department of Health and Human Services' senior and veterans home companion programs
- January 23, 2020 – Homewood Operation Better Block
- January 28, 2020 – Lawrenceville Community Meeting

- January 29, 2020 – Manchester Concerned Citizens
- February 4, 2020 – Hill District Community Meeting
- February 12, 2020 – Marshall-Shadeland Community Meeting

Q. HOW DOES PWSA PLAN TO EXPAND UPON THESE OUTREACH EFFORTS IN THE FUTURE?

A. In addition to attending community events and specifically identifying high consumption users for targeted in-home visits, PWSA hopes to continue its work with the LIAAC on suggestions and ideas for additional targeted outreach. To that purpose, the Household Affordability Analysis is a good starting point for identifying those communities where we can specifically reach customers who may be eligible for our low income customer assistance programs. In my view, working with this data and involving local community leaders and volunteers will be the most effective way to reach compromised customers.

V. CUSTOMER NOTICE AND IMPACTS OF MULTIYEAR RATE PLAN

Q. HOW WILL PWSA NOTIFY AND EDUCATE CUSTOMERS ABOUT THIS PROPOSAL AND HOW THE MULTIYEAR RATE PLAN WILL OPERATE?

A. PWSA will provide notice of the multiyear rate plan to customers at a variety of points in the approval and implementation process as required by the Public Utility Code. The Authority provided notice of the multiyear proposal when it notified customers of the proposed rate increase in this proceeding, including a summary of the proposed rate increases and the effective date of each increase.[28] After this proceeding concludes, the Authority will notify customers of the Commission's decision on the proposal, provide an updated schedule for the rate increases and effective dates included in the multiyear plan, and include any other information as required by the Commission. Further, PWSA will

[28] A copy of the Customer Notice of Proposed Rate Changes is included with Volume I, Tab 2 of PWSA's rate filing package.

provide an additional notice prior to the second rate increase taking effect in 2022. Each of these notices will be provided to customers through bill inserts and will be posted on PWSA's website.

Q. DOES PWSA'S MULTIYEAR RATE PLAN OFFER OTHER BENEFITS FOR CUSTOMERS?

A. Yes. In her testimony, Ms. Presutti discussed the value of the multiyear rate plan of relieving ratepayers of the expense of another rate case. In addition to this, the approval of the multiyear rate plan will also provide predictable rates for customers through 2022. Customers will be able to anticipate and plan for the rate increases, which are necessary for all the reasons discussed through the testimony of PWSA's witnesses.

Q. WHAT IMPACT WILL THE MULTIYEAR PLAN HAVE ON PWSA'S CUSTOMER ASSISTANCE PROGRAMS?

A. The average projected increase from the proposed 2021 volumetric rates to the proposed 2022 volumetric rates for a residential customer using 3,000 gallons of water per month will be about 6.4%. The minimum charge for all consumers will also increase between 2021 and 2022, however, qualifying customers participating in the Bill Discount Program will continue to receive a 100% credit for their minimum charges. Thus, the level of the projected increase from 2021 to 2022 in combination with the changes we are making to the low income customer assistance program and the ability to plan for the ahead for the 2022 rate increase weigh in favor of our proposed multiyear rate plan approach, even for our low income customers.

VI. WATER AND WASTEWATER TARIFF REVISIONS

Q. PLEASE EXPLAIN THE DEVELOPMENT OF PWSA'S CURRENT COMMISSION-APPROVED WATER AND WASTEWATER TARIFFS.

A. Prior to the Commission assuming jurisdiction of PWSA, PWSA's rates and service rules were set forth in written "Rules and Regulations," which consisted of six chapters. In its Final Implementation Order, the Commission directed PWSA to file "the documents that will serve as the official PWSA Prior Tariff" no later than April 1, 2018.[29] In accordance with this directive, PWSA filed its then-existing Rules and Regulations on March 30, 2018. Subsequently, on July 1, 2018, PWSA submitted its proposed initial tariffs for water and wastewater services. Ultimately, the Commission approved PWSA's currently effective tariffs: (1) Tariff Water – Pa. P.U.C. No. 1; and, (2) Tariff Wastewater – Pa. P.U.C. No. 2. Both tariffs became effective on March 1, 2019.

Q. IS PWSA PROPOSING REVISIONS TO THE WATER AND WASTEWATER TARIFFS AS PART OF THIS RATE CASE?

A. Yes, the revisions we are proposing are shown in PWSA Exhibits JAQ-1 through JAQ-4.

Q. DOES PWSA ANTICIPATE MAKING ADDITIONAL REVISIONS TO ITS CURRENT WATER AND WASTEWATER TARIFFS SUBSEQUENT TO THIS RATE FILING?

A. Yes. We anticipate tariff revisions will need to be made as a result of the Commission's final decision in the Compliance Plan Stage 1 proceeding. If the Commission approves the Partial Settlement, then compliance tariff supplements will be needed to implement several of the agreed-upon terms including: (1) revisions related to the private fire protection rates; (2) Multiple Premises; and (3) costs related to metering unmetered non-

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

City properties. Additional revisions may be necessary, depending upon how the Commission resolves the issues that were reserved for litigation.

Q. HAVE YOU INCLUDED SOME OF THESE ANTICIPATED REVISIONS WITH THE WATER AMD WASTEWATER TARIFFS SUBMITTED AS PART OF THIS RATE CASE?

A. Yes. The water tariff revisions related to the private fire protection rates, as well as the costs related to metering unmetered non-City properties, are ones that we are agreeing to as part of the Compliance Plan Stage 1 Settlement. While not yet approved by the Commission (as noted in the proposed water tariff), we have included those revisions in the proposed water tariff here because they are so intertwined with our development of the rates and the rate structure.

Q. DO THE TARRIFS ALSO INCLUDE PROVISIONS RELATED TO THE NEW CITY COOPERATION AGREEMENT THAT WAS FILED WITH THE COMMISSION ON DECEMBER 20, 2019 AT DOCKET NO. U-2020-3015258?

A. Yes. While PWSA recognizes that approval of its proposals related to the City of Pittsburgh are pending further Commission direction (in either the context of the Compliance Plan Stage 1 proceeding or the Commission's review of the as-filed new City Cooperation Agreement), PWSA's rate assumptions have been based on the terms as agreed to in the filed new City Cooperation Agreement. Therefore, we have revised the tariffs to appropriately note these assumptions where applicable.

Q. ARE THERE OTHER PROPOSED REVISIONS TO THE WATER AND WASTEWATER TARIFFS THAT YOU WISH TO HIGHLIGHT HERE?

A. Yes. Because PWSA is seeking approval of a multiyear rate plan, the proposed tariffs include rates for both 2021 and 2022. The proposed water tariff also includes a rate for bulk resale water customers consistent with our agreement to do so in previous cases. In addition, the discount for the Bill Discount Program has been updated in both proposed

tariffs to reflect our proposal to provide a 100% discount to qualifying low income customers and the new bi-annual recertification process. Further, the existing tariff provisions related to the Distribution System Improvement Charge ("DSIC") have been edited to be consistent with our request to implement a DSIC. Finally, in both proposed tariffs, we also corrected existing language regarding the calculation of the late payment charge and fixing outdated references in the Turn On Charge to PWSA's prior rule numbers.

Q. ARE YOU SPONSORING PWSA'S PROPOSED INITIAL STORMWATER TARIFF?

A. No; Ms. Dutton is sponsoring this proposed tariff, as we are submitting it as part of this rate case for form only at this time. As explained further by Ms. Dutton, PWSA is not proposing to begin charging stormwater rates pursuant to the stormwater tariff until a later date.

VII. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and P-2018-3005039 (wastewater).

VERIFICATION

I, Julie Quigley, hereby state that: (1) I am the Director of Administration 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: 3/4/20

Julie A. Quigley
Director of Administration
The Pittsburgh Water and Sewer Authority

Exhibit JAQ-1

Supplement No. 1
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 6, 2020 Effective: May 5, 2020

BY: Robert A. Weimar, P.E., BCEE, Executive Director
1200 Penn Avenue, Pittsburgh, PA 15222
Tel: 412-255-8800

NOTICE

This tariff makes increases in existing rates.

[L0739517.2]

LIST OF CHANGES

LIST OF CHANGES
New Page 2A

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A – RATES FOR METERED SERVICE (PAGE NO. 8)
Rates for minimum charges and consumption charges for all customer classes changed for effective dates of January 1, 2021 and January 1, 2022. Rate changes are increases with the exception of the minimum charge for 5/8 meter size using a minimum of 1,000 which is a decrease effective January 1, 2022. New text added regarding the billing for City of Pittsburgh Municipal Accounts and the applicability of the Industrial Consumption Charge to any new bulk water customers.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 – RATES FOR UNMETERED SERVICE (PAGE NO. 9)
Rates for the per month customer charge increased effective January 1, 2021 and January 1, 2022. Outdated text deleted.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION B.1 – FIRE PROTECTION RATES (PAGE NO. 10)
Rates for Private Fire Protection increased effective January 1, 2021 and January 1, 2022. Text added to clarify rate is only applicable for non-residential private fire protection service.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION B.2 – FIRE PROTECTION RATES (PAGE NO. 11)
New Rates for Public Fire Protection added for January 1, 2021 and January 1, 2022. Outdated text deleted. Text addressing billing for Pittsburgh Public Fire Hydrants added.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION I – SALES FOR RESALE (PAGE NO. 16)
New Rates for Sales for Resale (Wholesale) added for January 1, 2021 and January 1, 2022

LIST OF CHANGES (con't)

RIDER BDP – BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 19)
Decreased rate qualifying low income customers must pay for Minimum Service Charge under Part I, Section A; also changed verification requirements to bi-annual.

PART III: RULES AND REGULATIONS, SECTION B, CONSTRUCTION AND MAINTENANCE OF FACILITIES, PARAGRAPH NO. 12(A) (PAGE NO. 34)
Text added to address the phased in of operation and maintenance responsibility regarding City of Pittsburgh water service lines.

PART III: RULES AND REGULATIONS, SECTION A, PARAGRAPH NO. 13 CONVERSION OF PARTY WATER SERVICE LINES (PAGE NO. 36-37)
Added clarifying text, moved text from Page No. 36 to Page No. 37, added new subsection (c) to address the costs of metering City of Pittsburgh non-metered municipal properties.

PART III: RULES AND REGULATIONS, SECTION C, PARAGRAPH NO. 4 TURN-ON CHARGE (PAGE NO. 41)
Text corrected and clarified regarding citations to other tariff provisions.

PART III: RULES AND REGULATIONS, SECTION E, BILLING AND COLLECTION, PARAGRAPH NO. 13 (PAGE NO. 44)
Text corrected regarding the calculation of the late payment charge.

PART V: SURCHARGES – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (PAGE NOS. 59, 60, 62)
New rate of 10% added, text regarding optional quarterly rate adjustments added, 10% cap for the amount billed to customers added.

PART I: SCHEDULE OF RATES AND CHARGES

Section A - Rates for Metered Service

1. Minimum Charge: Each customer will be assessed a service charge based upon the size of the customer's meter as follows:

Meter Size	Minimum Gallons	Minimum Charge Per Month (Effective January 1, 2021)	Minimum Charge Per Month (Effective January 1, 2022)	
5/8"	1,000	$26.46	$27.81	(D)/(I)
3/4"	2,000	$45.46	$47.78	(I)/(I)
1"	5,000	$97.00	$101.95	(I)/(I)
1 ½"	10,000	$191.99	$201.78	(I)/(I)
2"	17,000	$319.53	$335.83	(I)/(I)
3"	40,000	$718.29	$754.92	(I)/(I)
4"	70,000	$1,222.73	$1,285.09	(I)/(I)
6"	175,000	$2,917.29	$3,066.07	(I)/(I)
8"	325,000	$5,275.69	$5,544.75	(I)/(I)
10" or Larger	548,000	$8,676.97	$9,119.50	(I)/(I)

2. Consumption Charge: In addition to the Minimum Charge, the following water consumption charges will apply for each 1,000 gallons above the Minimum Gallons for each meter size:

Customer Class	Consumption Charge Rate per 1000 Gals. Effective January 1, 2021	Consumption Charge Rate per 1000 Gals. Effective January 1, 2022	
Residential	$13.20	$13.87	(I)/(I)
Commercial*	$14.01	$14.72	(I)/(I)
Industrial**	$12.30	$12.93	(I)/(I)
Health or Education	$14.98	$15.74	(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, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024* (C)

*** Rate applies to any new bulk water customers.*

(I)= Increase, (D)= Decrease, (C)= Change

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:

	Customer Charge Per Month		
Customer Class	**Effective January 1, 2021**	**Effective January 1, 2022**	
Residential (per unit)	$66.06	$69.42	**(I)/(I)**
Commercial	$82.50	$86.69	**(I)/(I)**

(I)= Increase

Section B - Fire Protection Rates

1. Private Fire Protection: A customer charge for non-residential private fire protection service will be assessed as follows: (C)

Meter Size	Line Size (if unmetered)	Customer Charge Per Month		
		Effective January 1, 2021	Effective January 1, 2022	
1" or Less	2"	$32.35	$34.00	(I)/(I)
1 ½"-3"	3"	$99.12	$104.18	(I)/(I)
4"	4"	$305.51	$321.09	(I)/(I)
6" or Greater	6" or Greater	$609.02	$640.08	(I)/(I)

In addition to any customer charge as applicable above, all customers shall be charged for consumption pursuant to the following terms: (C)

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.		
	Effective January 1, 2021	Effective January 1, 2022	(I)/(I)
Private Fire Protection	$19.77	$20.78	(I)/(I)

(I)= Increase, (C)= Change

2. Public Fire Protection: For public fire protection, the charges will be assessed as follows:

	Per Hydrant Charge Per Month		
	Effective January 1, 2021	Effective January 1, 2022	
Public Fire Protection*	$15.23	$16.00	(C)/(I)

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.

Note that the use of public fire hydrants and abatement equipment for other purposes will be billed at the consumption charge for private fire protection. Water used from public fire hydrants for these purposes will be based on meter readings where possible. If a meter is not used, the Authority will estimate the usage.

**Rate applies to City of Pittsburgh Public Fire Hydrants but, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024* (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: (C)

Consumption Charge Rate per 1000 Gals.

	Effective January 1, 2021	Effective January 1, 2022	
Sales for Resale	$9.77	$10.27	(C)/(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. (C)

(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 150% of the Federal Poverty Level.

   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 on a bi-annual basis. (C)

3. Rate: The rates for residential service under this tariff 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. (D)

(D)= Decrease (C)= Change

12. Ownership and Maintenance of Water Service Lines:

a. The Authority has maintenance responsibility for the Curb Stop, the Curb Box, and for that portion of the Water Service Line running from the Curb Stop to the Water Main for Residential water service lines 1-inch diameter and smaller. The Residential Property Owner owns and is responsible for the maintenance of that portion of the Water Service Line running from the Premises being served with Authority water to the Curb Stop, including the connection to the Curb Stop but not the Curb Stop itself, for water service lines 1-inch diameter and smaller. All Residential service lines larger than 1-inch in diameter and all Non-Residential service lines, regardless of diameter, are the responsibility of the property owner, including the section from the Curb Stop, the Curb Box, and that portion of the Water Service Line running from the Curb Stop to the Water Main.*

**Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, ownership and maintenance responsibility for water service lines of the City of Pittsburgh shall be phased in from 2020-2025.* (C)

b. If the Curb Box or Curb Stop is damaged by the Customer and/or Property Owner, or the Curb Box or Curb Stop is covered so as to preclude or interfere with access, the Customer or property Owner, as applicable, is responsible for the cost of the Authority's work in uncovering, repairing, or replacing the Curb Stop and/or Curb Box, and for the cost of restoring adjacent landscaping, sidewalks, or other property affected by the work.

c. Customers and property Owners may not use or operate the Curb Stop. When water service has been terminated by the Authority or a Person authorized by the Authority, only the Authority or a Person authorized by the Authority shall operate the Curb Stop to restore service. Unauthorized use of the Curb Stop to restore service is theft of water service subject to a fine in the amount of $500.00 and to prosecution under applicable law. Further, such unauthorized operation of the Curb Stop will result in charges for all water used, termination charges, and such other deposits, charges, or fees authorized by the PUC, PWSA's Water Tariff and these Supplemental Service Conditions.

(C)= Change

could impair access to the Curb Box, they shall contact the Authority for repair or replacement of the Curb Box.

g. Customers and property Owners may not cover, obscure, damage, tamper, or interfere with the Curb Stop or Curb Box. Customers and property Owners shall not interfere in any way with the Authority's access to or use of the Curb Stop. If the Curb Box or Curb Stop is damaged by the Customer and/or Property Owner, or the Curb Box or Curb Stop is covered so as to preclude or interfere with access, the Customer or property Owner, as applicable, is responsible for the cost of the Authority's work in uncovering, repairing, or replacing the Curb Stop and/or Curb Box, and for the cost of restoring adjacent landscaping, sidewalks, or other property affected by the work.

13. Conversion of Party Water Service Lines and Converting Flat Rate or Unmetered Customers to Metered Customers: (C)

a. Non-Municipal Residential Property Owners whose properties are served by a Party Water Service Line must install separate services lines to each individual property. Each Customer shall have an individual Water Service Line and Meter of a size, type, location, and setting approved by the Authority. The cost of installation of the Water Service Line from the residence to the Curb Stop is the responsibility of the property Owner. Installation and the cost of installation of the Water Service Line from the Water Main to and including the Curb Stop is the responsibility of the Authority. Only the tapping fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed under these circumstances. No connections fees, service fees and/or customer facilities fee (under Part III Section G.2 of this Tariff regarding Line Extensions) will be imposed. All plans for installation of the Water Service Lines and the scheduling of such work is subject to the permitting process and the prior approval of the Authority. (C)

(C)= Change

b. Non-Municipal Non-Residential Property Owners whose properties are provided with water under a flat rate or are served by a Party Service Water Line are required to have a Meter of a size, type, and setting approved by the Authority and a Backflow prevention device approved by the Authority. The installation and the cost of installing the entire Water Service Line, including the Corporation Stop or mechanical joint tee, is the responsibility of the property Owner. Only the tapping fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed under these circumstances. No connections fees, service fees and/or customer facilities fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed. All plans for installation of the Water Service Lines and the scheduling of such work shall be subject to the permitting process and the prior approval of the Authority. (C)

c. Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, PWSA will provide a meter installation and, if necessary, a meter vault as prescribed in the PWSA Developer Manual and in accordance with Commission meter requirements for unmetered City of Pittsburgh municipal properties. The cost of the meter and meter vault installation shall be shared equally by PWSA and the City of Pittsburgh. The City of Pittsburgh 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. (C)

(C)= Change

electronic service has been received by the Authority; or, if neither of these methods is available or effective or the electronic notice is returned as undeliverable, by personal contact or posting a notice of termination on the Premises 3 days prior to the termination of service

k. The Authority will not terminate service to a premises when a customer has submitted a valid medical certificate signed by a licensed physician, nurse practitioner or physician's assistant certifying that a customer or member of the customer's household is seriously ill or has been diagnosed with a medical condition which requires the continuation of service to treat the medical condition consistent with 66 Pa.C.S. §§1403 and 1406(f).

4. Turn-on Charge: Whenever service is discontinued or terminated pursuant to Paragraph C.2 or C.3 of this Section, service shall be turned on by the Authority only upon the payment by the customer of a turn-on charge pursuant to Part I, Section E and the resolution of the problem that gave rise to the termination if under Paragraph C.3. **(C)**

(C)= Change

Section E - Billing and Collection

1. Issuance of Bills: The Authority will bill each customer within fifteen (15) days of the last day of each billing period.
2. Billing Due Date: The due date for payment of a bill for nonresidential service shall be no less than fifteen (15) days from the date of transmittal. The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Authority are not open to the general public, the due date shall be extended to the next business day. The Authority may not impose a late-payment charge unless payment is received more than five (5) days after the stated due date.
3. Late Payment Charge: All amounts not paid when due shall accrue a late payment charge at the rate of 0.83 percent per billing period, not to exceed ten percent (10%) per year when not paid as prescribed in Rule 2 of this Section. (C)
4. Change in Billing Address: Where a customer fails to notify the Authority of a change in billing address, the customer shall remain responsible to remit payment by the billing due date.
5. Application of Payment: Utility bills rendered by the Authority shall include only the amount due for water service. Where a customer remittance to the Authority includes payment for any non-utility services, proceeds will be applied first to pay all outstanding regulated utility charges. For combined water/wastewater customers, any partial remittance will be applied to the water bill first and any remaining remittance will be applied to the wastewater bill.
6. Return Check Charges: The customer will be responsible for the payment of a charge for each time a check presented to the Authority for payment on that customer's utility bill is returned by the payor bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date, account garnished, or unauthorized signature. This charge is in addition to any charge which may be assessed against the

(C)= Change

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 10.0% will apply consistent with the Commission Order dated _____ at Docket No. _____, 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

c. Effective Date: The DSIC will become effective upon one (1) day notice after submission of a compliance tariff in compliance with a Commission order.

2. Computation of the DSIC

a. Calculation: The DSIC shall be calculated to recover the fixed costs of eligible plant additions that have not previously been reflected in the Utility's rates and have been or are projected to be placed in service in the calendar year in which the DSIC is charged. The DSIC charge shall be levelized so that, on an annual basis, it will collect the recoverable costs for eligible plant additions that have been or are anticipated to be placed in service during the calendar year. DSIC charges shall be reconciled and may be adjusted on a calendar quarter basis for: 1) actual experienced sales volumes; and 2) revisions to projected DSIC eligible capital expenditures.

The dates and types of changes in the DSIC rate will occur as follows:

Effective Date of Change	**Date to which DSIC-Eligible Plant Additions Reflected**	
April 1	Annual levelized C-factor rate adjustments	
July 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**
October 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**
January 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**

b. Recoverable Costs: The recoverable costs shall be amounts reasonably expended or incurred to purchase and install eligible property and associated financing costs, if any, including debt service, debt service coverage, and issuance costs.

(C) = Change

4. Customer Safeguards

a. Cap: The DSIC is capped at 10.0% of the amount billed to customers for distribution service (including all applicable clauses and riders), exclusive of amounts billed for annual reconciliation pursuant to the "e" factor set forth above, as determined on an annualized basis. (C)

b. Audit/Reconciliation: The DSIC is subject to audit at intervals determined by the Commission. Any cost determined by the Commission not to comply with any provision of 66 Pa C.S. §§ 1350, et seq., shall be credited to customer accounts. The DSIC is subject to annual reconciliation based on a reconciliation period consisting of the twelve months ending December 31 of each year. The revenue received under the DSIC for the reconciliation period will be compared to the Authority's eligible costs for that period. The difference between revenue and costs will be recouped or refunded, as appropriate, in accordance with Section 1307(e), over a one-year period commencing on April 1 of each year. If DSIC revenues exceed DSIC-eligible costs, such over-collections will be refunded with interest. Interest on over-collections and credits will be calculated at the residential mortgage lending specified by the Secretary of Banking in accordance with the Loan Interest and Protection Law (41 P.S. §§ 101, et seq.) and will be refunded in the same manner as an over-collection.

c. Customer Notice: Customers shall be notified of changes in the DSIC by including appropriate information on the first bill they receive following any change. An explanatory bill insert shall also be included with the first billing.

d. All customer classes: The DSIC shall be applied equally to all customer classes. Provided that, the DSIC will not apply to public fire protection customers.

(C)= Change

Exhibit JAQ-2

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 6, 2020~~February 28, 2019~~ Effective: May 5, 2020 ~~March 1, 2019~~

BY: Robert A. Weimar, P.E., BCEE, Executive Director
1200 Penn Avenue, Pittsburgh, PA 15222
Tel: 412-255-8800

NOTICE

~~Filed in compliance with the Order of the Pennsylvania Public Utility Commission entered February 27, 2019, at Docket No. R-2018-3002645. This Tariff Water - Pa. P.U.C. No. 1 cancels and supersedes Pittsburgh Water & Sewer Authority's Official Prior Tariff filed on March 30, 2018 at Docket No. M-2018-2640802.~~

This tariff makes increases ~~and changes~~ in existing rates~~, rules, and regulations~~.

LIST OF CHANGES

LIST OF CHANGES
New Page 2A

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A – RATES FOR METERED SERVICE (PAGE NO. 8)
Rates for minimum charges and consumption charges for all customer classes changed for effective dates of January 1, 2021 and January 1, 2022. Rate changes are increases with the exception of the minimum charge for 5/8 meter size using a minimum of 1,000 which is a decrease effective January 1, 2022. New text added regarding the billing for City of Pittsburgh Municipal Accounts and the applicability of the Industrial Consumption Charge to any new bulk water customers.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 – RATES FOR UNMETERED SERVICE (PAGE NO. 9)
Rates for the per month customer charge increased effective January 1, 2021 and January 1, 2022. Outdated text deleted.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION B.1 – FIRE PROTECTION RATES (PAGE NO. 10)
Rates for Private Fire Protection increased effective January 1, 2021 and January 1, 2022. Text added to clarify rate is only applicable for non-residential private fire protection service.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION B.2 – FIRE PROTECTION RATES (PAGE NO. 11)
New Rates for Public Fire Protection added for January 1, 2021 and January 1, 2022. Outdated text deleted. Text addressing billing for Pittsburgh Public Fire Hydrants added.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION I – SALES FOR RESALE (PAGE NO. 16)
New Rates for Sales for Resale (Wholesale) added for January 1, 2021 and January 1, 2022

LIST OF CHANGES (con't)

RIDER BDP – BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 19)
Decreased rate qualifying low income customers must pay for Minimum Service Charge under Part I, Section A; also changed verification requirements to bi-annual.

PART III: RULES AND REGULATIONS, SECTION B, CONSTRUCTION AND MAINTENANCE OF FACILITIES, PARAGRAPH NO. 12(A) (PAGE NO. 34)
Text added to address the phased in of operation and maintenance responsibility regarding City of Pittsburgh water service lines.

PART III: RULES AND REGULATIONS, SECTION A, PARAGRAPH NO. 13 CONVERSION OF PARTY WATER SERVICE LINES (PAGE NO. 36-37)
Added clarifying text, moved text from Page No. 36 to Page No. 37, added new subsection (c) to address the costs of metering City of Pittsburgh non-metered municipal properties.

PART III: RULES AND REGULATIONS, SECTION C, PARAGRAPH NO. 4 TURN-ON CHARGE (PAGE NO. 41)
Text corrected and clarified regarding citations to other tariff provisions.

PART III: RULES AND REGULATIONS, SECTION E, BILLING AND COLLECTION, PARAGRAPH NO. 13 (PAGE NO. 44)
Text corrected regarding the calculation of the late payment charge.

PART V: SURCHARGES – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (PAGE NOS. 59, 60, 62)
New rate of 10% added, text regarding optional quarterly rate adjustments added, 10% cap for the amount billed to customers added.

PART I: SCHEDULE OF RATES AND CHARGES

Section A - Rates for Metered Service

1. Minimum Charge: Each customer will be assessed a service charge based upon the size of the customer's meter as follows:

Meter Size	~~Per Month~~	Minimum Gallons	**Minimum Charge Per Month (Effective January 1, 2021)**	**(Effective January 1, 2022)**	
5/8"	~~$27.27~~	1,000	$26.46	$27.81	(D)/(I)
3/4"	~~$44.37~~	2,000	$45.46	$47.78	(I)/(I)
1"	~~$89.82~~	5,000	$97.00	$101.95	(I)/(I)
1 ½"	~~$175.30~~	10,000	$191.99	$201.78	(I)/(I)
2"	~~$289.14~~	17,000	$319.53	$335.83	(I)/(I)
3"	~~$641.48~~	40,000	$718.29	$754.92	(I)/(I)
4"	~~$1,084.28~~	70,000	$1,222.73	$1,285.09	(I)/(I)
6"	~~$2,558.16~~	175,000	$2,917.29	$3,066.07	(I)/(I)
8"	~~$4,596.96~~	325,000	$5,275.69	$5,544.75	(I)/(I)
10" or Larger	~~$7,515.81~~	548,000	$8,676.97	$9,119.50	(I)/(I)

2. Consumption Charge: In addition to the Minimum Charge, the following water consumption charges will apply for each 1,000 gallons above the Minimum Gallons for each meter size:

Customer Class	**Consumption Charge Rate per 1000 Gals. Effective January 1, 2021**	**Effective January 1, 2022**	
Residential	$13.20~~$11.04~~	$13.87	(I)/(I)
Commercial*	$14.01~~$10.48~~	$14.72	(I)/(I)
Industrial**	$12.30~~$8.81~~	$12.93	(I)/(I)
Health or Education	$14.98~~$14.32~~	$15.74	(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, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024* (C)

*** Rate applies to any new bulk water customers.*

(I)= Increase, (D)= Decrease, (C)= Change

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:

Customer Charge
Per Month

Customer Class	**Effective January 1, 2021**	**Effective January 1, 2022**	
Residential (per unit)	$66.06 ~~44.36~~	$69.42	**(I)/(I)**
Commercial	$82.50 ~~88.26~~	$86.69	**(I)/(I)**

~~The continuation of unmetered service is subject to change. The Authority will develop and implement a metering plan which will identify all unmetered customers/accounts and provide for plans and timeframes for metering of all unmetered customers/accounts.~~

~~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.~~

(I)= Increase

Section B - Fire Protection Rates

1. Private Fire Protection: A customer charge for non-residential private fire protection service will be assessed as follows: (C)

Meter Size	*Line Size (if unmetered)*	**Customer Charge Per Month**		
		Effective January 1, 2021	**Effective January 1, 2022**	
1" or Less	2"	$32.35 ~~$31.60~~	$34.00	(I)/(I)
1 ½"-3"	3"	$99.12 ~~$83.30~~	$104.18	(I)/(I)
4"	4"	$305.51~~$177.57~~	$321.09	(I)/(I)
6" or Greater	6" or Greater	$609.02~~$507.98~~	$640.08	(I)/(I)

In addition to any customer charge as applicable above, all customers shall be charged for consumption pursuant to the following terms: (C)

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.		
	Effective January 1, 2021	**Effective January 1, 2022**	**(I)/(I)**
Private Fire Protection	$19.77~~$13.49~~	$20.78	(I)/(I)

(I)= Increase, (C)= Change

2. Public Fire Protection: For public fire protection, the charges will be assessed as follows: ~~shall be $ 0.00 per hydrant per year.~~

	Per Hydrant Charge Per Month		
	Effective January 1, 2021	Effective January 1, 2022	
Public Fire Protection*	$15.23	$16.00	(C)/(I)

~~The continuation of the zero charge for each public fire hydrant is subject to change. The rates charged for public fire hydrants may be changed, consistent with 66 Pa.C.S. § 1328, in later rate proceeding.~~

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.

Note that the use of public fire hydrants and abatement equipment for other purposes will be billed at the consumption charge for private fire protection. Water used from public fire hydrants for these purposes will be based on meter readings where possible. If a meter is not used, the Authority will estimate the usage.

**Rate applies to City of Pittsburgh Public Fire Hydrants but, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024* (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: (C)

Consumption Charge
Rate per 1000 Gals.

	Effective January 1, 2021	Effective January 1, 2022	
Sales for Resale	$9.77	$10.27	(C)/(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. (C)

(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 150% of the Federal Poverty Level.

   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 on a~~n~~ bi-annual basis. (C)

3. Rate: The rates for residential service under this tariff will be ~~25~~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. (D)

(D)= Decrease (C)= Change

12. Ownership and Maintenance of Water Service Lines:

a. The Authority has maintenance responsibility for the Curb Stop, the Curb Box, and for that portion of the Water Service Line running from the Curb Stop to the Water Main for Residential water service lines 1-inch diameter and smaller. The Residential Property Owner owns and is responsible for the maintenance of that portion of the Water Service Line running from the Premises being served with Authority water to the Curb Stop, including the connection to the Curb Stop but not the Curb Stop itself, for water service lines 1-inch diameter and smaller. All Residential service lines larger than 1-inch in diameter and all Non-Residential service lines, regardless of diameter, are the responsibility of the property owner, including the section from the Curb Stop, the Curb Box, and that portion of the Water Service Line running from the Curb Stop to the Water Main.*

**Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, ownership and maintenance responsibility for water service lines of the City of Pittsburgh shall be phased in from 2020-2025.* (C)

b. If the Curb Box or Curb Stop is damaged by the Customer and/or Property Owner, or the Curb Box or Curb Stop is covered so as to preclude or interfere with access, the Customer or property Owner, as applicable, is responsible for the cost of the Authority's work in uncovering, repairing, or replacing the Curb Stop and/or Curb Box, and for the cost of restoring adjacent landscaping, sidewalks, or other property affected by the work.

c. Customers and property Owners may not use or operate the Curb Stop. When water service has been terminated by the Authority or a Person authorized by the Authority, only the Authority or a Person authorized by the Authority shall operate the Curb Stop to restore service. Unauthorized use of the Curb Stop to restore service is theft of water service subject to a fine in the amount of $500.00 and to prosecution under applicable law. Further, such unauthorized operation of the Curb Stop will result in charges for all water used, termination charges, and such other deposits, charges, or fees authorized by the PUC, PWSA's Water Tariff and these Supplemental Service Conditions.

(C)= Change

could impair access to the Curb Box, they shall contact the Authority for repair or replacement of the Curb Box.

g. Customers and property Owners may not cover, obscure, damage, tamper, or interfere with the Curb Stop or Curb Box. Customers and property Owners shall not interfere in any way with the Authority's access to or use of the Curb Stop. If the Curb Box or Curb Stop is damaged by the Customer and/or Property Owner, or the Curb Box or Curb Stop is covered so as to preclude or interfere with access, the Customer or property Owner, as applicable, is responsible for the cost of the Authority's work in uncovering, repairing, or replacing the Curb Stop and/or Curb Box, and for the cost of restoring adjacent landscaping, sidewalks, or other property affected by the work.

13. Conversion of Party Water Service Lines and Converting Flat Rate or Unmetered Customers to Metered Customers: (C)

a. Non-Municipal Residential Property Owners whose properties are served by a Party Water Service Line must install separate services lines to each individual property. Each Customer shall have an individual Water Service Line and Meter of a size, type, location, and setting approved by the Authority. The cost of installation of the Water Service Line from the residence to the Curb Stop is the responsibility of the property Owner. Installation and the cost of installation of the Water Service Line from the Water Main to and including the Curb Stop is the responsibility of the Authority. Only the tapping fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed under these circumstances. No connections fees, service fees and/or customer facilities fee (under Part III Section G.2 of this Tariff regarding Line Extensions) will be imposed. All plans for installation of the Water Service Lines and the scheduling of such work is subject to the permitting process and the prior approval of the Authority. (C)

(C) = Change

b. Non-Municipal Non-Residential Property Owners whose properties are provided with water under a flat rate or are served by a Party Service Water Line are required to have a Meter of a size, type, and setting approved by the Authority and a Backflow prevention device approved by the Authority. The installation and the cost of installing the entire Water Service Line, including the Corporation Stop or mechanical joint tee, is the responsibility of the property Owner. Only the tapping fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed under these circumstances. No connections fees, service fees and/or customer facilities fee (under Part III, Section G.2 of this Tariff regarding Line Extensions) will be imposed. All plans for installation of the Water Service Lines and the scheduling of such work shall be subject to the permitting process and the prior approval of the Authority. (C)

c. Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, PWSA will provide a meter installation and, if necessary, a meter vault as prescribed in the PWSA Developer Manual and in accordance with Commission meter requirements for unmetered City of Pittsburgh municipal properties. The cost of the meter and meter vault installation shall be shared equally by PWSA and the City of Pittsburgh. The City of Pittsburgh 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. (C)

(C) = Change

electronic service has been received by the Authority; or, if neither of these methods is available or effective or the electronic notice is returned as undeliverable, by personal contact or posting a notice of termination on the Premises 3 days prior to the termination of service

k. The Authority will not terminate service to a premises when a customer has submitted a valid medical certificate signed by a licensed physician, nurse practitioner or physician's assistant certifying that a customer or member of the customer's household is seriously ill or has been diagnosed with a medical condition which requires the continuation of service to treat the medical condition consistent with 66 Pa.C.S. §§1403 and 1406(f).

4. Turn-on Charge: Whenever service is discontinued or terminated pursuant to ~~Rule~~ Paragraph C.2 or ~~Rule~~ C.3 of this Section, service shall be turned on by the Authority only upon the payment by the customer of a turn-on charge pursuant to Part I, Section E and the resolution of the problem that gave rise to the termination if under ~~Rule~~ Paragraph C.3. (C)

(C)= Change

Section E - Billing and Collection

1. Issuance of Bills: The Authority will bill each customer within fifteen (15) days of the last day of each billing period.

2. Billing Due Date: The due date for payment of a bill for nonresidential service shall be no less than fifteen (15) days from the date of transmittal. The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Authority are not open to the general public, the due date shall be extended to the next business day. The Authority may not impose a late-payment charge unless payment is received more than five (5) days after the stated due date.

3. Late Payment Charge: All amounts not paid when due shall accrue a late payment charge at the rate of 0.~~00~~83 percent per billing period, not to exceed ten percent (10%) per year when not paid as prescribed in Rule 2 of this Section. (C)

4. Change in Billing Address: Where a customer fails to notify the Authority of a change in billing address, the customer shall remain responsible to remit payment by the billing due date.

5. Application of Payment: Utility bills rendered by the Authority shall include only the amount due for water service. Where a customer remittance to the Authority includes payment for any non-utility services, proceeds will be applied first to pay all outstanding regulated utility charges. For combined water/wastewater customers, any partial remittance will be applied to the water bill first and any remaining remittance will be applied to the wastewater bill.

6. Return Check Charges: The customer will be responsible for the payment of a charge for each time a check presented to the Authority for payment on that customer's utility bill is returned by the payor bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date, account garnished, or unauthorized signature. This charge is in addition to any charge which may be assessed against the

(C)= Change

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 10.0% will apply consistent with the Commission Order dated _____ at Docket No. _____, 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

c. Effective Date: The DSIC will become effective upon one (1) day notice after submission of a compliance tariff in compliance with a Commission order.

2. Computation of the DSIC

a. Calculation: The DSIC shall be calculated to recover the fixed costs of eligible plant additions that have not previously been reflected in the Utility's rates and have been or are projected to be placed in service in the calendar year in which the DSIC is charged. The DSIC charge shall be levelized so that, on an annual basis, it will collect the recoverable costs for eligible plant additions that have been or are anticipated to be placed in service during the calendar year. DSIC charges shall be reconciled and may be adjusted on a calendar quarter basis for: 1) actual experienced sales volumes; and 2) revisions to projected DSIC eligible capital expenditures.

The dates and types of changes in the DSIC rate will occur as follows:

Effective Date of Change	**Date to which DSIC-Eligible Plant Additions Reflected**	
April 1	Annual levelized C-factor rate adjustments	
July 1	~~Adjustment prior year~~ Optional rate adjustment for +/- 2% over/under collection	(C)
October 1	Optional rate adjustment for +/- 2% over/under collection	(C)
January 1	Optional rate ~~A~~adjustment for +/- 2% over/under collection	(C)

b. Recoverable Costs: The recoverable costs shall be amounts reasonably expended or incurred to purchase and install eligible property and associated financing costs, if any, including debt service, debt service coverage, and issuance costs.

(C) = Change

4. Customer Safeguards

a. Cap: The DSIC is capped at ~~5~~10.0% of the amount billed to customers for distribution service (including all applicable clauses and riders), ~~inclusive~~ exclusive of amounts billed for annual reconciliation pursuant to the "e" factor set forth above, as determined on an annualized basis. (C)

b. Audit/Reconciliation: The DSIC is subject to audit at intervals determined by the Commission. Any cost determined by the Commission not to comply with any provision of 66 Pa C.S. §§ 1350, et seq., shall be credited to customer accounts. The DSIC is subject to annual reconciliation based on a reconciliation period consisting of the twelve months ending December 31 of each year. The revenue received under the DSIC for the reconciliation period will be compared to the Authority's eligible costs for that period. The difference between revenue and costs will be recouped or refunded, as appropriate, in accordance with Section 1307(e), over a one-year period commencing on April 1 of each year. If DSIC revenues exceed DSIC-eligible costs, such over-collections will be refunded with interest. Interest on over-collections and credits will be calculated at the residential mortgage lending specified by the Secretary of Banking in accordance with the Loan Interest and Protection Law (41 P.S. §§ 101, et seq.) and will be refunded in the same manner as an over-collection.

c. Customer Notice: Customers shall be notified of changes in the DSIC by including appropriate information on the first bill they receive following any change. An explanatory bill insert shall also be included with the first billing.

d. All customer classes: The DSIC shall be applied equally to all customer classes. Provided that, the DSIC will not apply to public fire protection customers.

(C)= Change

Exhibit JAQ-3

Supplement No. 1
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: March 6, 2020 Effective: May 5, 2020

BY: Robert A. Weimar, P.E., BCEE, Executive Director
1200 Penn Avenue, Pittsburgh, PA 15222
Tel: 412-255-8800

NOTICE

This tariff makes increases in existing rates.

LIST OF CHANGES

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A – WASTEWATER CONVEYANCE (PAGE NO. 9)

Rates for minimum charges increased for most meter sizes effective dates of January 1, 2021 and increased for all meter sizes January 1, 2022. Conveyance Charges increased effective January 1, 2021 and January 1, 2020. Text added addressing billing for City of Pittsburgh.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 – WASTEWATER CONVEYANCE (UNMETERED SERVICE) (PAGE NO. 11)

Rates for the per month customer charge increased for Residential and decreased for Commercial customer classes effective January 1, 2021. Effective January 1, 2022, rates increased for both classes. Outdated text deleted.

RIDER BDP – BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 17)

Decreased rate qualifying low income customers must pay for Minimum Service Charge under Part I, Section A.; also changed verification requirements to bi-annual.

PART III: RULES AND REGULATIONS, SECTION B, CONSTRUCTION AND MAINTENANCE OF FACILITIES, PARAGRAPH NO. 7 (PAGE NO. 35)

Text added to address the phased in of operation and maintenance responsibility regarding City of Pittsburgh water service lines.

PART III: RULES AND REGULATIONS, SECTION C, PARAGRAPH NO. 4 TURN-ON CHARGE (PAGE NO. 41)

Text corrected and clarified regarding citations to other tariff provisions.

PART III: RULES AND REGULATIONS, SECTION E, BILLING AND COLLECTION, PARAGRAPH NO. 3 (PAGE NO. 42)

Text corrected regarding the calculation of the late payment charge.

PART V: SURCHARGES – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (PAGE NOS. 64,65,67)

New rate of 10% added, text regarding optional quarterly rate adjustments added, 10% cap for the amount billed to customers added.

PART I: SCHEDULE OF RATES AND CHARGES

Section A – Wastewater Conveyance

1. Minimum Charge: Each customer will be assessed a service charge based upon the size of the customer's water meter as follows:

Meter Size	Minimum Gallons	Minimum Charge Per Month (Effective January 1, 2021)	Minimum Charge Per Month (Effective January 1, 2022)	
5/8"	1,000	$9.86	$10.72	(I)/(I)
3/4"	2,000	$17.64	$19.17	(I)/(I)
1"	5,000	$40.71	$44.25	(I)/(I)
1 1/2"	10,000	$79.62	$86.55	(D)/(I)
2"	17,000	$133.81	$145.45	(D)/(I)
3"	40,000	$310.89	$337.94	(D)/(I)
4"	70,000	$541.10	$588.18	(D)/(I)
6"	175,000	$1,343.35	$1,460.22	(I)/(I)
8"	325,000	$2,486.36	$2,702.67	(I)/(I)
10" or Larger	548,000	$4,180.49	$4,544.19	(I)/(I)

2. Conveyance Charge: In addition to the Minimum 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:

Customer Class	Conveyance Charge Rate Per 1000 Gals. (Effective January 1, 2021)	Conveyance Charge Rate Per 1000 Gals. (Effective January 1, 2022)	
Residential	$7.87	$8.55	(I)/(I)
Commercial*	$7.95	$8.64	(I)/(I)
Industrial	$7.98	$8.67	(I)/(I)
Health or Education	$8.26	$8.98	(I)/(I)

(C)

** Rate applies to City of Pittsburgh Municipal Accounts but, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024* (C)

(I)= Increase, (D)= Decrease, (C)= Change

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:

Customer Charge Per Month

Customer Class	**Effective January 1, 2021**	**Effective January 1, 2022**	
Residential (per unit)	$33.47	$36.37	**(I)/(I)**
Commercial	$41.66	$45.28	**(D)/(I)**

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.

(I)= Increase, (D)= Decrease

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 150% based on the Federal Poverty Level.

   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 on a bi-annual basis. (C)

3. Rate: The rates for residential service under this tariff 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. (D)

(D)= Decrease; (C)= Change

facilities in good order and repair. The pump and equipment shall meet specifications as provided by the Authority.

7. Ownership and Maintenance of Sewer Laterals:

a. Ownership of Sewer Laterals serving Residential and Non-Residential Properties, up to and including the connection of the Sewer Lateral to the Sewer Main, lies with the property Owner. The property Owner is responsible for the operation, inspection, maintenance, repair, replacement, abandonment, and removal of the Sewer Lateral as so described.*

**Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, ownership and maintenance responsibility for Sewer Laterals of the City of Pittsburgh shall be phased in from 2020-2025.* (C)

b. Should the condition of a Sewer Lateral be such that there is a risk to public health or safety or of damage to public property, and the property Owner fails to take prompt action to cure the problem following notice to do so, the Authority shall have the right, but not the duty, to make the necessary repair or replacement and to charge the property Owner with the reasonable cost of the repair or replacement. Should the property Owner fail to reimburse the Authority within 30 days of the Authority's invoice therefor, the Authority shall have the right to file a lien against the property or properties served by the Sewer Lateral.

c. The use of trenchless or no-dig techniques for the maintenance or repair of a Sewer Lateral must be pre-approved by the Authority.

(C)= Change

electronic notice is returned as undeliverable, by personal contact or posting a notice of termination on the Premises 3 days prior to the termination of service.

k. The Authority will not terminate service to a premises when a customer has submitted a valid medical certificate signed by a licensed physician, nurse practitioner or physician's assistant certifying that a customer or member of the customer's household is seriously ill or has been diagnosed with a medical condition which requires the continuation of service to treat the medical condition consistent with 66 Pa.C.S. §§1403 and 1406(f).

The Authority reserves the right to deny wastewater service for violation of any provision of these Rules and Regulations, subject to PUC rules and regulations.

4. Turn-on Charge: Whenever service is discontinued or terminated pursuant to Paragraph C.2 or C.3 of this Section, service shall be turned on by the Authority only upon the payment by the customer of a turn-on charge pursuant to Part I, Section E and the resolution of the problem that gave rise to the termination if under Paragraph C.3. (C)

Section D - Reserved

(C)= Change

Section E - Billing and Collection

1. Issuance of Bills: The Authority will bill each customer within fifteen (15) days of the last day of each billing period.

2. Billing Due Date: The due date for payment of a bill for nonresidential service shall be no less than fifteen (15) days from the date of transmittal. The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Authority are not open to the general public, the due date shall be extended to the next business day. The Authority may not impose a late-payment charge unless payment is received more than five (5) days after the stated due date.

3. Late Payment Charge: All amounts not paid when due shall accrue a late payment charge at the rate of 0.83 percent per billing period, not to exceed ten percent (10%) per year when not paid as prescribed in Rule 2 of this Section. (C)

4. Change in Billing Address: Where a customer fails to notify the Authority of a change in billing address, the customer shall remain responsible to remit payment by the billing due date.

5. Application of Payment: Utility bills rendered by the Authority shall include only the amount due for water service. Where a customer remittance to the Authority includes payment for any non-utility services, proceeds will be applied first to pay all outstanding regulated utility charges. For combined water/wastewater customers, any partial remittance will be applied to the water bill first and any remaining remittance will be applied to the wastewater bill.

6. Return Check Charges: The customer will be responsible for the payment of a charge for each time a check presented to the Authority for payment on that customer's utility bill is returned by the payor bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date,

(C)= Change

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 10.0% will apply consistent with the Commission Order dated _____ at Docket No. _____, 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

- Collection main extensions installed to implement solutions to wastewater problems that present a significant health and safety concern for customers currently receiving service from the wastewater utility; Accounts (360, 361 and 363)• Collection main rehabilitation including inflow and infiltration projects; Accounts (360, 361 and 363)
- Unreimbursed costs related to highway relocation projects where a wastewater utility must relocate its facilities; and
- Other related capitalized costs.

c. Effective Date: The DSIC will become effective upon one (1) day notice after submission of a compliance tariff in compliance with a Commission order.

2. Computation of the DSIC

a. Calculation: The DSIC shall be calculated to recover the fixed costs of eligible plant additions that have not previously been reflected in the Utility's rates and have been or are projected to be placed in service in the calendar year in which the DSIC is charged. The DSIC charge shall be levelized so that, on an annual basis, it will collect the recoverable costs for eligible plant additions that have been or are anticipated to be placed in service during the calendar year. DSIC charges shall be reconciled and may be adjusted on a calendar quarter basis for: 1) actual experienced sales volumes; and 2) revisions to projected DSIC eligible capital expenditures.

The dates and types of changes in the DSIC rate will occur as follows:

Effective Date of Change	**Date to which DSIC-Eligible Plant Additions Reflected**	
April 1	Annual levelized C-factor rate adjustments	
July 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**
October 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**
January 1	Optional rate adjustment for +/- 2% over/under collection	**(C)**

(C)= Change

4. Customer Safeguards

a. Cap: The DSIC is capped at 10.0% of the amount billed to customers for distribution service (including all applicable clauses and riders), exclusive of amounts billed for annual reconciliation pursuant to the "e" factor set forth above, as determined on an annualized basis (C)

b. Audit/Reconciliation: The DSIC is subject to audit at intervals determined by the Commission. Any cost determined by the Commission not to comply with any provision of 66 Pa C.S. §§ 1350, et seq., shall be credited to customer accounts. The DSIC is subject to annual reconciliation based on a reconciliation period consisting of the twelve months ending December 31 of each year. The revenue received under the DSIC for the reconciliation period will be compared to the Authority's eligible costs for that period. The difference between revenue and costs will be recouped or refunded, as appropriate, in accordance with Section 1307(e), over a one-year period commencing on April 1 of each year. If DSIC revenues exceed DSIC-eligible costs, such over-collections will be refunded with interest. Interest on over-collections and credits will be calculated at the residential mortgage lending specified by the Secretary of Banking in accordance with the Loan Interest and Protection Law (41 P.S. §§ 101, et seq.) and will be refunded in the same manner as an over-collection.

c. Customer Notice: Customers shall be notified of changes in the DSIC by including appropriate information on the first bill they receive following any change. An explanatory bill insert shall also be included with the first billing.

d. All customer classes: The DSIC shall be applied equally to all customer classes.

(C)= Change

Exhibit JAQ-4

Supplement No. 1
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: March 6, 2020~~February 28, 2019~~ Effective: May 5, 2020~~March 1, 2019~~

BY: Robert A. Weimar, P.E., BCEE, Executive Director
1200 Penn Avenue, Pittsburgh, PA 15222
Tel: 412-255-8800

NOTICE

This tariff makes increases in existing rates.

~~Filed in compliance with the Order of the Pennsylvania Public Utility Commission entered February 27, 2019, at Docket No. R-2018-3002647. This Tariff Wastewater – Pa. P.U.C. No. 1 cancels and supersedes Pittsburgh Water & Sewer Authority's Official Prior Tariff filed on March 30, 2018 at Docket No. M-2018-2640803.~~

~~This tariff makes increases and changes in existing rates, rules, and regulations.~~

LIST OF CHANGES

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A – WASTEWATER CONVEYANCE (PAGE NO. 9)

Rates for minimum charges increased for most meter sizes effective dates of January 1, 2021 and increased for all meter sizes January 1, 2022. Conveyance Charges increased effective January 1, 2021 and January 1, 2020. Text added addressing billing for City of Pittsburgh.

PART I: SCHEDULE OF RATES AND CHARGES, SECTION A.1 – WASTEWATER CONVEYANCE (UNMETERED SERVICE) (PAGE NO. 11)

Rates for the per month customer charge increased for Residential and decreased for Commercial customer classes effective January 1, 2021. Effective January 1, 2022, rates increased for both classes. Outdated text deleted.

RIDER BDP – BILL DISCOUNT PROGRAM (RESIDENTIAL) (PAGE NO. 17)

Decreased rate qualifying low income customers must pay for Minimum Service Charge under Part I, Section A.; also changed verification requirements to bi-annual.

PART III: RULES AND REGULATIONS, SECTION B, CONSTRUCTION AND MAINTENANCE OF FACILITIES, PARAGRAPH NO. 7 (PAGE NO. 35)

Text added to address the phased in of operation and maintenance responsibility regarding City of Pittsburgh water service lines.

PART III: RULES AND REGULATIONS, SECTION C, PARAGRAPH NO. 4 TURN-ON CHARGE (PAGE NO. 41)

Text corrected and clarified regarding citations to other tariff provisions.

PART III: RULES AND REGULATIONS, SECTION E, BILLING AND COLLECTION, PARAGRAPH NO. 3 (PAGE NO. 42)

Text corrected regarding the calculation of the late payment charge.

PART V: SURCHARGES – DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (PAGE NOS. 64,65,67)

New rate of 10% added, text regarding optional quarterly rate adjustments added, 10% cap for the amount billed to customers added.

PART I: SCHEDULE OF RATES AND CHARGES

Section A – Wastewater Conveyance

1. Minimum Charge: Each customer will be assessed a service charge based upon the size of the customer's water meter as follows:

Meter Size	~~Per Month~~	Minimum Gallons	Minimum Charge Per Month (Effective January 1, 2021)	Minimum Charge Per Month (Effective January 1, 2022)	
5/8"	~~$8.28~~	1,000	$9.86	$10.72	(I)/(I)
3/4"	~~$16.77~~	2,000	$17.64	$19.17	(I)/(I)
1"	~~$39.82~~	5,000	$40.71	$44.25	(I)/(I)
1 1/2"	~~$82.24~~	10,000	$79.62	$86.55	(D)/(I)
2"	~~$139.23~~	17,000	$133.81	$145.45	(D)/(I)
3"	~~$317.57~~	40,000	$310.89	$337.94	(D)/(I)
4"	~~$543.31~~	70,000	$541.10	$588.18	(D)/(I)
6"	~~$1,302.21~~	175,000	$1,343.35	$1,460.22	(I)/(I)
8"	~~$2,358.93~~	325,000	$2,486.36	$2,702.67	(I)/(I)
10" or Larger	~~$3,883.88~~	548,000	$4,180.49	$4,544.19	(I)/(I)

2. Conveyance Charge: In addition to the Minimum 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:

Customer Class	~~Consumption~~ Conveyance Charge Rate ~~p~~Per 1000 Gals. (Effective January 1, 2021)	Conveyance Charge Rate Per 1000 Gals. (Effective January 1, 2022)	
Residential	$7.87~~43~~	$8.55	(I/I)
Commercial*	$7.95~~6.56~~	$8.64	(I/I)
Industrial	$7.98~~5.98~~	$8.67	(I/I)
Health or Education	$8.2~~61~~	$8.98	(I/I)

(C)

* Rate applies to City of Pittsburgh Municipal Accounts but, subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, bills will be calculated based on a phase-in factor increasing by 20% from 2020-2024 (C)

(I)= Increase, (D)= Decrease, (C)= Change

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:

	Customer Charge		
	Per Month		
Customer Class	**Effective January 1, 2021**	**Effective January 1, 2022**	
Residential (per unit)	$33.47~~$25.99~~	$36.37	**(I)/(I)**
Commercial	$41.66~~$52.47~~	$45.28	**(D)/(I)**

~~The continuation of unmetered service is subject to change. The Authority will develop and implement a metering plan which will identify all unmetered customers/accounts and provide for plans and timeframes for metering of all unmetered customers/accounts.~~

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.

(I)= Increase, (D)= Decrease

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 150% based on the Federal Poverty Level.

   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 on a~~n~~ bi-annual basis. (C)

3. Rate: The rates for residential service under this tariff will be ~~250~~% 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. (D)

(D)= Decrease; (C)= Change

facilities in good order and repair. The pump and equipment shall meet specifications as provided by the Authority.

7. Ownership and Maintenance of Sewer Laterals:

a. Ownership of Sewer Laterals serving Residential and Non-Residential Properties, up to and including the connection of the Sewer Lateral to the Sewer Main, lies with the property Owner. The property Owner is responsible for the operation, inspection, maintenance, repair, replacement, abandonment, and removal of the Sewer Lateral as so described.*

**Subject to further Commission action regarding the Cooperation Agreement with the City of Pittsburgh pending at Docket No. U-2020-301528, ownership and maintenance responsibility for Sewer Laterals of the City of Pittsburgh shall be phased in from 2020-2025.* (C)

b. Should the condition of a Sewer Lateral be such that there is a risk to public health or safety or of damage to public property, and the property Owner fails to take prompt action to cure the problem following notice to do so, the Authority shall have the right, but not the duty, to make the necessary repair or replacement and to charge the property Owner with the reasonable cost of the repair or replacement. Should the property Owner fail to reimburse the Authority within 30 days of the Authority's invoice therefor, the Authority shall have the right to file a lien against the property or properties served by the Sewer Lateral.

c. The use of trenchless or no-dig techniques for the maintenance or repair of a Sewer Lateral must be pre-approved by the Authority.

(C)= Change

electronic notice is returned as undeliverable, by personal contact or posting a notice of termination on the Premises 3 days prior to the termination of service.

k. The Authority will not terminate service to a premises when a customer has submitted a valid medical certificate signed by a licensed physician, nurse practitioner or physician's assistant certifying that a customer or member of the customer's household is seriously ill or has been diagnosed with a medical condition which requires the continuation of service to treat the medical condition consistent with 66 Pa.C.S. §§1403 and 1406(f).

The Authority reserves the right to deny wastewater service for violation of any provision of these Rules and Regulations, subject to PUC rules and regulations.

4. Turn-on Charge: Whenever service is discontinued or terminated pursuant to Paragraph C.2 or C.3 ~~Rule 2 or Rule 3~~ of this Section, service shall be turned on by the Authority only upon the payment by the customer of a turn-on charge pursuant to Part I, Section E and the resolution of the problem that gave rise to the termination if under Paragraph C.3~~Rule 3~~. (C)

Section D - Reserved

(C)= Change

Section E - Billing and Collection

1. Issuance of Bills: The Authority will bill each customer within fifteen (15) days of the last day of each billing period.

2. Billing Due Date: The due date for payment of a bill for nonresidential service shall be no less than fifteen (15) days from the date of transmittal. The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Authority are not open to the general public, the due date shall be extended to the next business day. The Authority may not impose a late-payment charge unless payment is received more than five (5) days after the stated due date.

3. Late Payment Charge: All amounts not paid when due shall accrue a late payment charge at the rate of 0.~~00~~83 percent per billing period, not to exceed ten percent (10%) per year when not paid as prescribed in Rule 2 of this Section. (C)

4. Change in Billing Address: Where a customer fails to notify the Authority of a change in billing address, the customer shall remain responsible to remit payment by the billing due date.

5. Application of Payment: Utility bills rendered by the Authority shall include only the amount due for water service. Where a customer remittance to the Authority includes payment for any non-utility services, proceeds will be applied first to pay all outstanding regulated utility charges. For combined water/wastewater customers, any partial remittance will be applied to the water bill first and any remaining remittance will be applied to the wastewater bill.

6. Return Check Charges: The customer will be responsible for the payment of a charge for each time a check presented to the Authority for payment on that customer's utility bill is returned by the payor bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date,

(C)= Change

PART V: SURCHARGES

DISTRIBUTION SYSTEM IMPROVEMENT CHARGE (DSIC)

In addition to the net charges provided for in this Tariff, a charge of 10.0% will apply consistent with the Commission Order dated _____ at Docket No. _____, 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

- Collection main extensions installed to implement solutions to wastewater problems that present a significant health and safety concern for customers currently receiving service from the wastewater utility; Accounts (360, 361 and 363)
- Collection main rehabilitation including inflow and infiltration projects; Accounts (360, 361 and 363)
- Unreimbursed costs related to highway relocation projects where a wastewater utility must relocate its facilities; and
- Other related capitalized costs.

c. Effective Date: The DSIC will become effective upon one (1) day notice after submission of a compliance tariff in compliance with a Commission order.

2. Computation of the DSIC

a. Calculation: The DSIC shall be calculated to recover the fixed costs of eligible plant additions that have not previously been reflected in the Utility's rates and have been or are projected to be placed in service in the calendar year in which the DSIC is charged. The DSIC charge shall be levelized so that, on an annual basis, it will collect the recoverable costs for eligible plant additions that have been or are anticipated to be placed in service during the calendar year. DSIC charges shall be reconciled and may be adjusted on a calendar quarter basis for: 1) actual experienced sales volumes; and 2) revisions to projected DSIC eligible capital expenditures.

The dates and types of changes in the DSIC rate will occur as follows:

Effective Date of Change	**Date to which DSIC-Eligible Plant Additions Reflected**	
April 1	Annual levelized C-factor rate adjustments	
July 1	Optional rate ~~A~~adjustment ~~prior year~~for ~~+/- 2%~~ over/under collection	(C)
October 1	Optional rate adjustment for +/- 2% over/under collection	(C)
January 1	Optional rate ~~A~~adjustment for +/- 2% over-/ under collection	(C)

(C)= Change

4. Customer Safeguards

a. Cap: The DSIC is capped at ~~5~~10.0% of the amount billed to customers for distribution service (including all applicable clauses and riders), ~~inc~~exclusive of amounts billed for annual reconciliation pursuant to the "e" factor set forth above, as determined on an annualized basis (C)

b. Audit/Reconciliation: The DSIC is subject to audit at intervals determined by the Commission. Any cost determined by the Commission not to comply with any provision of 66 Pa C.S. §§ 1350, et seq., shall be credited to customer accounts. The DSIC is subject to annual reconciliation based on a reconciliation period consisting of the twelve months ending December 31 of each year. The revenue received under the DSIC for the reconciliation period will be compared to the Authority's eligible costs for that period. The difference between revenue and costs will be recouped or refunded, as appropriate, in accordance with Section 1307(e), over a one-year period commencing on April 1 of each year. If DSIC revenues exceed DSIC-eligible costs, such over-collections will be refunded with interest. Interest on over-collections and credits will be calculated at the residential mortgage lending specified by the Secretary of Banking in accordance with the Loan Interest and Protection Law (41 P.S. §§ 101, et seq.) and will be refunded in the same manner as an over-collection.

c. Customer Notice: Customers shall be notified of changes in the DSIC by including appropriate information on the first bill they receive following any change. An explanatory bill insert shall also be included with the first billing.

d. All customer classes: The DSIC shall be applied equally to all customer classes.

(C)= Change

Exhibit JAQ-5

Pittsburgh Water and Sewer Authority

Household Affordability Analysis

Final Report / December 2019

RAFTELIS

RAFTELIS

December 15, 2019

Ms. Julie Quigley
Director of Administration/Information Technology
Pittsburgh Water and Sewer Authority
1200 Penn Ave
Pittsburgh, PA 15222

Subject: Household Affordability Analysis

Dear Ms. Quigley:

Raftelis is pleased to provide this final report documenting our analysis of household affordability of water and sewer service in Pittsburgh Water and Sewer Authority's service area. If you have any questions or need any additional information, please do not hesitate to contact me at (704) 771-3998 or rcraley@raftelis.com. It has been a pleasure working with you, and we thank you for the support provided during the course of this project.

Sincerely,

Rocky Craley,
Senior Manager

606 Liberty Avenue, Suite 415
Pittsburgh, PA 15222

www.raftelis.com

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1. Introduction

Today, water and wastewater utility systems, and the communities they serve, are faced with difficult decisions as they work to balance the increasing cost of providing service and regulatory compliance with providing water and wastewater service at rates that are not beyond the reach of the households they serve. Water, wastewater and stormwater costs are rising, and yet, in most communities, incomes are either stagnant or not on pace with costs. Also, the general cost of living in many other areas of life is also rising, making it difficult for customers, especially low-income customers, to pay their water and wastewater bills.

1.1. Measuring Affordability in the Water and Sewer Industry

Affordability of water and sewer service for households can be measured or assessed in many ways. The current Environmental Protection Agency (EPA) guidance on the measurement of affordability and financial capability for federal regulatory purposes is documented in *Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development* (EPA, 1997, referred to from here on as the "*1997 Guidance*"). While the *1997 Guidance* is still employed today for formal wastewater and stormwater consent decree negotiation, it is also used in practice in the drinking water context. Critiques of the methodologies it details have led to newly developed alternative approaches that have advanced the sophistication of water and wastewater affordability and financial capability measurement.

In 2019, new customer affordability and financial capability guidance has been developed by a team of industry experts who recently authored a report detailing proposed changes to the *1997 Guidance* as recommendations for the EPA on behalf of the American Water Works Association (AWWA), National Association of Clean Water Agencies (NACWA), and Water Environment Federation (WEF).[1,2] This approach is similar to the *1997 Guidance* in that it compares an annual customer bill to a defined service area income level as collected by the United States Census Bureau. However, rather than considering the median household income (MHI), the newly proposed method considers the lowest quintile income to better represent an economically disadvantaged customer and their relative financial burden of water and wastewater bills. Additionally, the new method considers the service area as a whole and the number of

[1] Pending to-be-determined federal legal flexibility surrounding the *1997 Guidance*, if approved by EPA and ultimately adopted as guidance, the proposed changes may be incorporated as wholesale replacements or recommended supplements.

[2] "Developing a New Framework for Household Affordability and Financial Capability Assessment in the Water Sector". AWWA, NACWA, WEF. 2019.

customers at or below 200% of the federal poverty line to provide context to the level of burden, as shown in the graph below.

HBI - Water Costs as a Percent of Income at LQI	PPI - Percent of Households Below 200% of FPL		
	>=35%	20% to 35%	<20%
>=10%	Very High Burden	High Burden	Moderate-High Burden
7% to 10%	High Burden	Moderate-High Burden	Moderate-Low Burden
< 7%	Moderate-High Burden	Moderate-Low Burden	Low Burden

In considering changes to its Customer Assistance Program (CAP), the Pittsburgh Water and Sewer Authority (PWSA) should take into account the new approaches to affordability and financial capability measurement.

1.2. Customer Assistance Programs – An Overview

Not all utilities provide assistance for low-income customers. Utilities that are legally allowed to provide assistance may choose to assist customers that need assistance paying their bills for altruistic reasons or to address public health concerns. Other reasons to provide assistance are to address rising utility shut-offs, lower collection rates, and higher account arrearages. Utility customer assistance programs can be designed several different ways and provide assistance through several different mechanisms. The following are examples of potential utility programs or types of assistance:

- **Financial and Bill Assistance** – Utilities can provide discounts on the total monthly bill or on individual components, such as the fixed charge and volumetric rates. Other financial assistance can include one-time or annual hardship grants or arrearage forgiveness.
- **Rate Structure Design** – Utilities can implement rate structures that are designed to be favorable to assist customers paying their monthly bills. One such rate structure assists low volume users through tiered rates in which the first tier is a "lifeline" or reduced rate for low volume consumption. After consuming the "lifeline" amount of water, subsequent water consumption is charged at a higher rate.
- **Water Efficiency Options** – Utilities can provide non-monetary assistance to customers by providing conservation assistance, leak detection and repair or water-wise education. These initiatives would be implemented to assist customers in lowering their monthly consumption and thus making their monthly bill more affordable.
- **Other Measures** – There are a few other measures utilities can implement to assist customers. Utilities can provide financial counseling to assist customers with their monthly budgeting and paying their bills, including their utility bill. Utilities can implement disconnection moratoria, or periods, such as during winter, when utilities will not shut off service.

PWSA has a customer assistance program (CAP) that was first implemented in the fall of 2017 to address customer affordability concerns in conjunction with approved rate adjustments. The CAP was then modified through negotiation and settlement with intervenors during the 2018 tariff filing process with the Public Utility Commission. The current CAP program includes the following components:

- **Winter Shut Off Moratorium** – December 1st through March 31st for customers who are at or below 250% of the Federal Poverty Level
- **Bill Discount Program** – 75% reduction of fixed monthly water and wastewater conveyance charges for customers at or below 150% of the Federal Poverty Level
- **Hardship Cash Assistance Program** – Cash grants up to $300 per year for customers who are at or below 150% of the Federal Poverty Level
- **Private Lead Line Replacement Community Environmental Project** – Private side lead line replacements for customers who are at or below 250% of the Federal Poverty Level

In addition to PWSA's CAP, PWSA's sewer customers that qualify for the bill discount program can also qualify for a wastewater treatment bill discount from the Allegheny County Sanitation Authority (ALCOSAN). PWSA provides wastewater conveyance only. ALCOSAN provides wastewater treatment for PWSA customers and the customers of 82 other communities. ALCOSAN provides a credit of $32 per quarter to qualifying customers.

1.3. Raftelis' Household Affordability Study

Pittsburgh Water and Sewer Authority (PWSA) engaged Raftelis to conduct an affordability study. This study was the first time in recent history that the service area and customer affordability were being analyzed. The scope of the study was not to define what is "affordable" but to better understand the water and wastewater utility bill burden on households in the community. To do this, Raftelis conducted a comprehensive look at affordability by analyzing the affordability percentage defined as the typical annual customer bill divided by household income. Both the MHI and Upper Limit of the Lowest Quintile Income (LQI) were used in the analysis. Raftelis not only looked at the service area from the macro level, but also from the census tract level, which is the smallest geographical census unit. By looking at the various census tracts in PWSA's service area, Raftelis was able to assist PWSA in identifying its more economically vulnerable areas. This analysis also identified areas with the most potential to enroll residents into the bill discount program, which will enable PWSA to most effectively employ customer education and engagement. Finally, the findings from the analysis will be used to assist PWSA in considering changes to its current affordability programs and its rate structure.

It is important to note that this report is meant to provide a baseline statistical understanding of household affordability of water and sewer service in the Pittsburgh area, not recommend what PWSA should do to improve its affordability efforts. PWSA is considering the results of this study and feedback from the Low Income Assistance Advisory Committee when considering and developing its own changes to its current program.

2. Methodology

2.1. Analysis Approach

This analysis takes a wide view of the issues surrounding affordability of water and sewer service and does not limit itself only to recreating the EPA method, which focuses on calculating affordability for a customer with the median household income in the service area. Instead, this analysis includes diverse socioeconomic statistics such as incomes at various levels, poverty levels, PWSA water and sewer bills at various consumption levels, the effect of sewer treatment charges from the Allegheny County Sanitary Authority (ALCOSAN) on customers, and more.

The data needs for this analysis were varied and are described in detail in the next section.

2.2. Data Sources

To fully characterize the affordability challenges of PWSA's customer base, access to detailed data on representative customer water and sewer bills as well as representative customer household incomes was needed. Customer bills were determined from PWSA's billing database, which provided consumption for each residential customer during the calendar year 2018. Using that consumption and PWSA's 2019 rate schedule, every residential customer bill was recalculated to be representative of a 2019 bill.

Ideally, a water and sewer affordability analysis would have access to actual household incomes of every customer. PWSA does not collect this data on all customers. Because household-level income data was not available, the next best alternative is data from the American Community Survey (ACS). Using census data is an accepted approach within the water and wastewater industry. The ACS is an ongoing survey by the U.S. Census Bureau that collects socioeconomic data from several million Americans each year. The last year of published data available for this analysis was 2017. The ACS does not publish individual data for anonymity reasons but does publish data down to the census tract level, which is the level of detail used in this analysis.

2.2.1. A Note on Census Tracts

Many of the findings in this report refer to census tracts, a term that may not be familiar to all. A census tract is a small geographic area designated by the Census Bureau with boundaries drawn such that each tract is relatively homogenous in terms of demographics. Census tracts tend to have populations of 100 to 4,000 people, thus giving reasonable insight into the local conditions of the populace in each tract.

Census tracts have numbered names (e.g., Census Tract 301.1). To make census tract data more relatable to a general audience, neighborhood names have been attached to each tract. This was done by manually comparing a map of census tracts in Pittsburgh on the American Community Survey website with neighborhood names as shown for the same area on Google Maps. This exercise of "naming" census tracts was done only for the purpose of having a common understanding of which areas of Pittsburgh are being referenced. It is important to note that whenever a neighborhood name is used, the statistics stated in this report may not be fully applicable to that neighborhood. This is because the borders of a neighborhood may not coincide exactly with the borders of a census tract.

There are several census tracts in Pittsburgh that are almost completely comprised of industrial properties or nature parks. Those census tracts with less than five residential PWSA accounts, as identified by PWSA's billing database, were excluded from the analysis.

2.3. Assumptions of the Analysis

The following assumptions were made to facilitate this affordability analysis:

1. A "typical customer" is defined as a residential customer that receives both water and wastewater conveyance service from PWSA as well as wastewater treatment service from ALCOSAN. There is a minority of customers in Pittsburgh that receive only water or only wastewater conveyance service from PWSA, and others that receive water service from the Pennsylvania American Water Company. These customers (and the census tracts in which they live) were excluded from the analysis to properly compare water and sewer bills across areas of the city.
2. The "typical customer" is defined as having a 5/8" meter size. There is a small minority of residential customers that have a meter size larger than 5/8" and thus pay a higher fixed monthly charge. They are excluded from this analysis so that all findings here are reported for the most common residential customer type.
3. Both PWSA and ALCOSAN offer bill discounts. Because a typical PWSA customer could qualify for both of these programs, when calculating the effect of these discounts, they are both included as if the customer benefitted from them for a complete calendar year.
4. Because of the lack of access to individual income data, incomes reported by the ACS are taken to be representative.
5. To recreate a typical water and sewer bill in each census tract, PWSA's 2018 water consumption data was analyzed. A median residential water consumption per month was calculated for each census tract. That consumption was then used to recreate a typical water and sewer bill in that census tract.
6. PWSA and ALCOSAN's 2019 rates were used for the purposes of calculating customer bills.

2.4. Limitations

It is important to note the limitations of this report. First, this is an analysis of current affordability and uses 2019 rates to calculate customer bills. Rates may change in the future and these changes will certainly impact customer bills. Second, this analysis is not meant to be a true representation of all of the financial challenges faced by PWSA customers. Rather, it sought to give an overview of the affordability challenges experienced, especially by those with median household incomes and those living at the lowest quintile income.

3. Findings

3.1. Socioeconomic Characteristics of the PWSA Customer Base

There are approximately 70,000 residential account holders served by PWSA, and the total population served is approximately 300,000. Over 100 census tracts were included in this analysis. Below is a map of included tracts with approximate neighborhood names overlaid on top of the tract boundaries. Certain sections are shown in grey because they did not meet criteria for inclusion as outlined in the assumptions section above (do not receive both water and sewer service, have too few residential accounts, etc.).

Figure 1 – Census Tracts (with Approximate Neighborhood Names) Included in the Affordability Analysis

The PWSA service area has a median household income (MHI) of $45,778. Rather than looking at the ACS MHI for the City of Pittsburgh, this MHI statistic was calculated by taking the average of all of the

census tract MHIs included in the analysis to more accurately represent the MHI for the service area. This was done to better represent the income level of residential water and sewer PWSA customers. The ACS did not report an MHI for Census Tract 2615 (Perry South), which is why it appears in grey.

The upper limit of the lowest quintile household income of the service area, or the 20th percentile income, is $18,240. MHIs and LQIs across the service area are shown in Figure 2 and Figure 3, respectively. It is important to note that each of these maps represent what a typical household income in each census tract is (MHI) and what an economically disadvantaged household income is (LQI). It is clear from the MHI map that there is a wide range of typical incomes across areas of the city, such as areas where a typical income is less than $20,000 per year, (shown in dark red), while a typical income in other census tracts is more than $80,000 per year (shown in dark green). Likewise, the LQI map shows that in nearly every census tract, the LQI (or 20th percentile income) could be categorized as "low income." This demonstrates that even wealthy sections of PWSA's service area are likely to have customers living at low income levels.

Figure 2 - Median Household Incomes of Census Tracts in the PWSA Service Area.

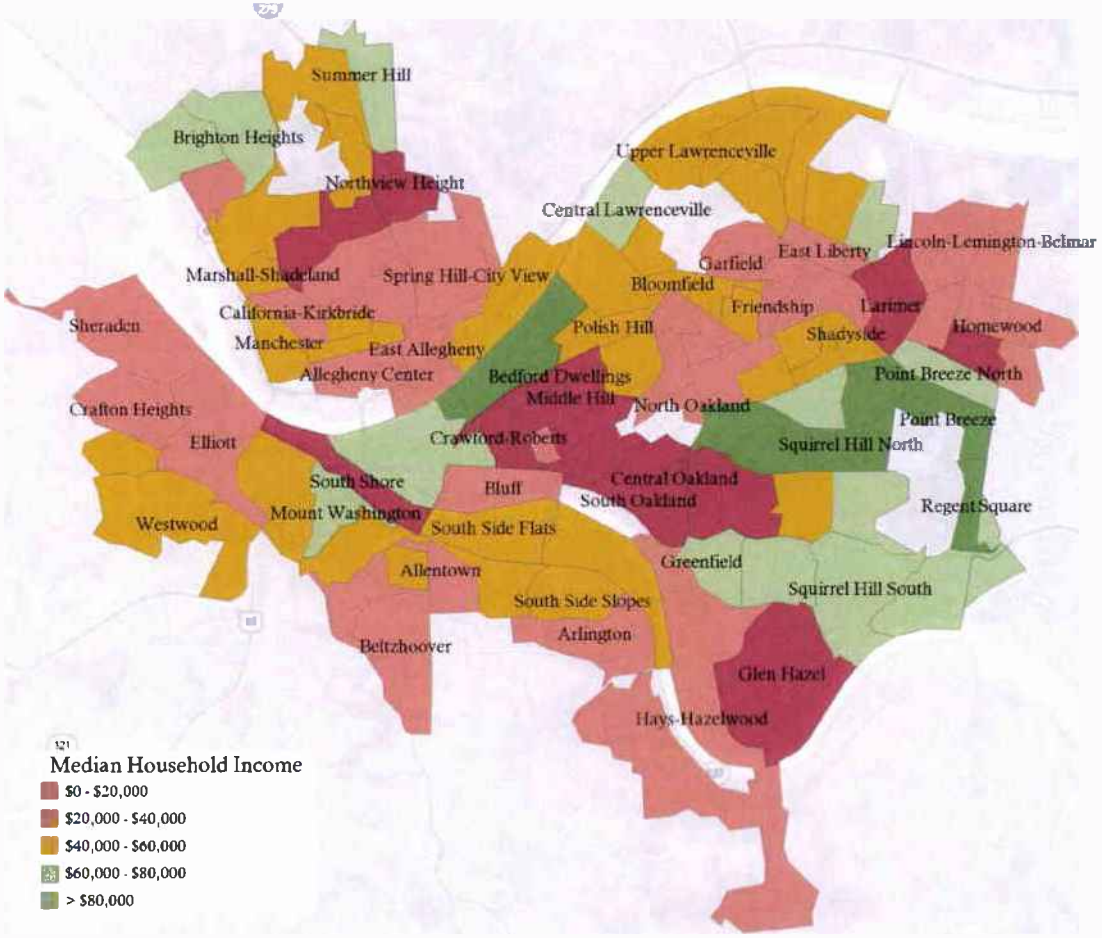
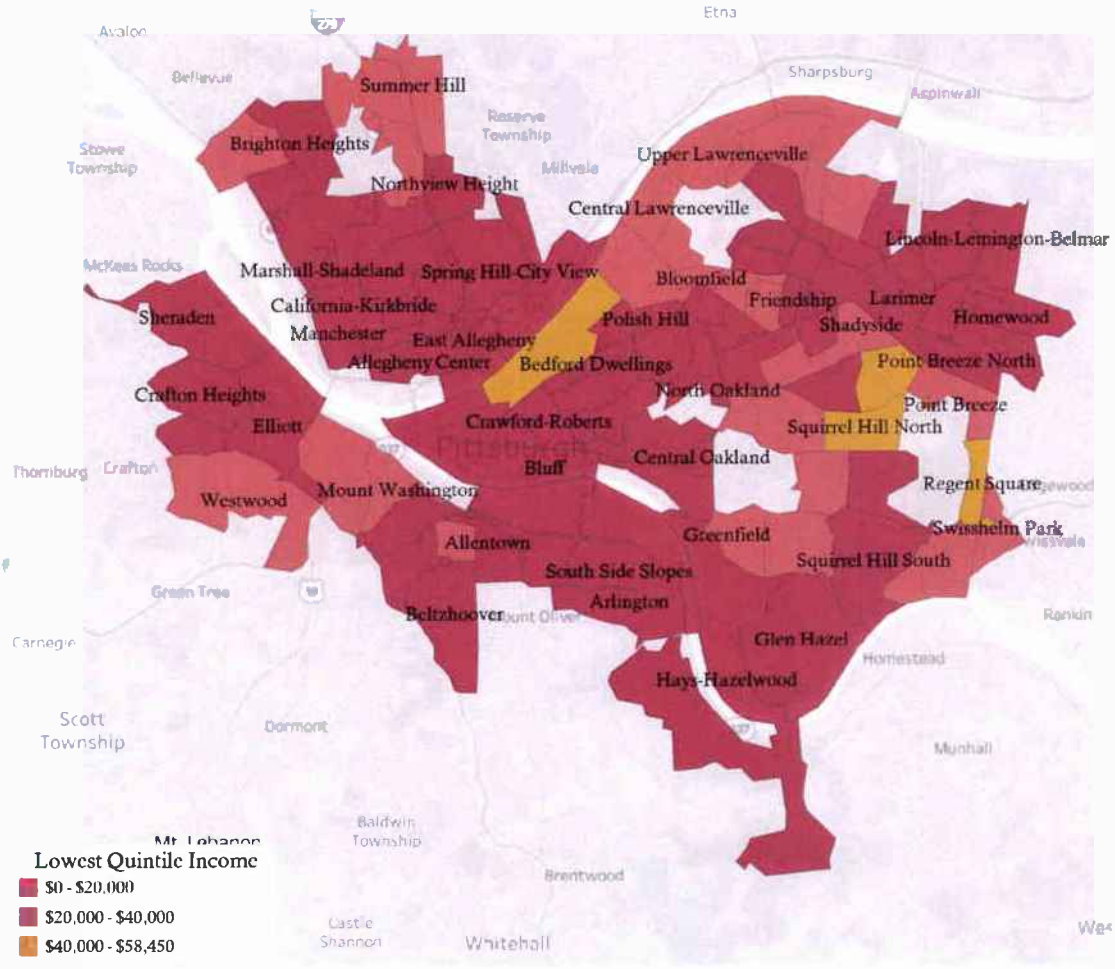
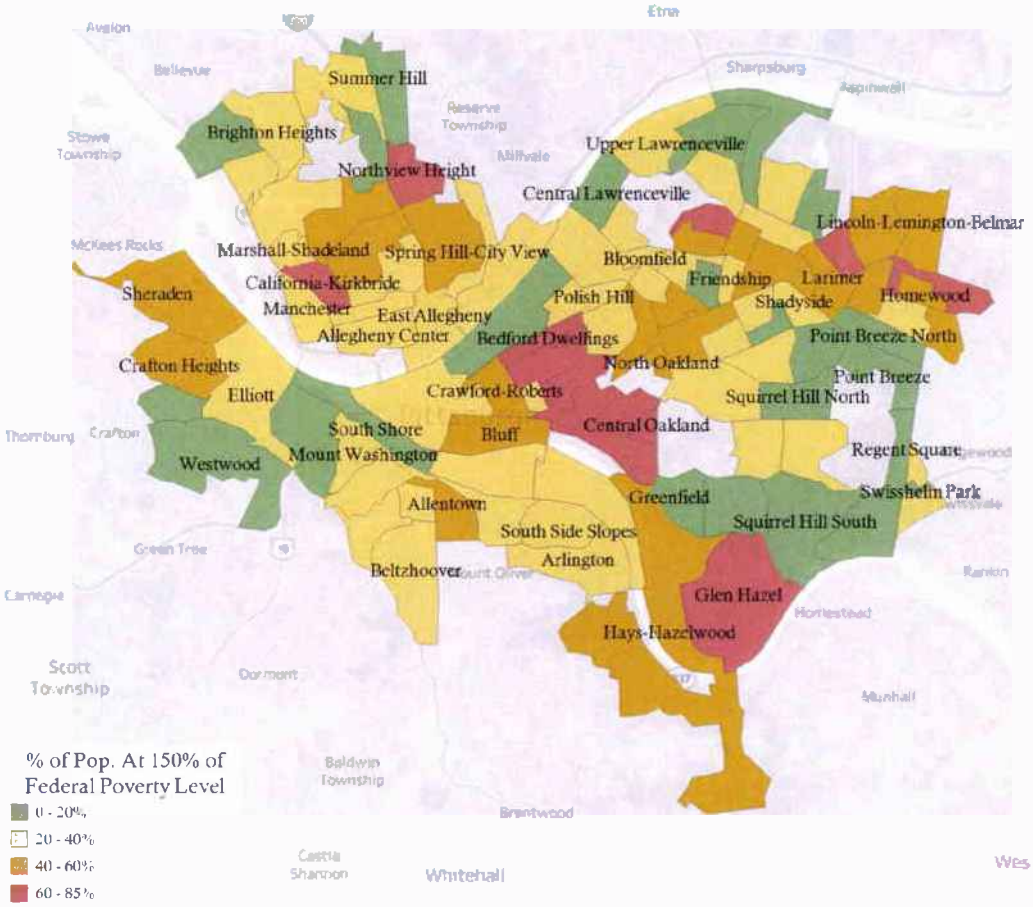


Figure 3 – Lowest Quintile Incomes of Census Tracts in the PWSA Service Area.



As with incomes, poverty levels differ across the city as shown in Figure 4. Federal Poverty Level (FPL) incomes are set by the U.S. government each year and depend on household size and state of residence. For reference, in 2019, 150% of FPL for a 4-person household in Pennsylvania was $38,625 per year. Figure 4 displays the percentage of the population in each census tract living at or below 150% of the FPL. 150% of FPL was chosen because it is the income requirement to qualify for PWSA's bill discount program. As shown by the number of census tracts in orange, yellow, and red, large swaths of PWSA's service area likely contain significant numbers of customers that would qualify for PWSA's bill discount program. The service area average percentage of population living at 150% of FPL or below is 34.0%.

Figure 4 – Percentage of Population at or Below 150% of the Federal Poverty Level.



These income and poverty statistics show that Pittsburgh contains a large number of customers with low incomes, many of which are at or below the Federal Poverty Level or at the level in which they could qualify to participate in PWSA's affordability initiatives.

3.2. Typical Water, Sewer, and ALCOSAN Bills

A starting point for an analysis of utility affordability is to examine how much customers are paying for service. A typical residential PWSA customer pays the rates shown in Table 10. Customers are assessed a fixed monthly charge for water service, another for wastewater conveyance service, and a fixed charge from ALCOSAN for wastewater treatment service. Thus, a residential customer with a 5/8" meter size (the most typical residential size) pays $41.14 per month in cumulative fixed charges. These are charges that the customer cannot control or waive (unless they participate in the bill discount program).

In addition to the fixed charges, PWSA and ALCOSAN charge per 1,000 gallons of water used. Both water and sewer volumetric charges are based on metered water consumption. It is important to note that PWSA has a minimum allowance of 1,000 gallons per month for a customer with a 5/8" meter. That is, the fixed charge "includes" 1,000 gallons of unbilled consumption. After a customer surpasses 1,000

gallons of water consumed during a month, subsequent consumption is billed at the rates shown in Table 1. Summing the volumetric charges for water and sewer equals $26.41 per 1,000 gallons consumed.

Table 1 – 2019 PWSA and ALCOSAN Rates for a Residential Customer with a 5/8" Water Meter

Service	Fixed Charge	Volumetric Charge	Minimum Allowance
PWSA Water	$27.27 per month	$11.04 per 1,000 gallons	1,000 gallons per Month
PWSA Sewer	$8.28 per month	$7.43 per 1,000 gallons	1,000 gallons per Month
ALCOSAN Sewer	$5.564 per month	$7.94 per 1,000 gallons	None

As shown in Table 2, customer bills increase significantly with every 1,000 gallons consumed. The median residential water consumption per month in 2018 was 3,000 gallons. A low-consuming household (20th percentile) used 2,000 gallons per month of water while a high-consuming household (80th percentile) used 5,000 gallons per month. Table 2 shows the annual water and sewer bills at these three consumption levels. A "low consumption" bill is $906 per year, a median-consumption bill is $1,222, and a "high consumption" bill is $1,856. PWSA water and sewer charges equal approximately 70% of each of these customers' total annual bills, while ALCOSAN makes up approximately 30%.

Table 2 – Annual Water and Sewer Bills for Low, Median, and High-Consumption Customers

Water Consumption (Kgal/Month)		PWSA Water	PWSA Sewer	ALCOSAN	Total
Low	2	$460	$189	$257	$906
Median	3	$592	$278	$353	$1,222
High	5	$857	$456	$543	$1,856

To give broader context to the range of bills that customers may pay, Table 3 shows annual water and sewer bills for monthly water consumption between 0 and 10,000 gallons. The second column shows what percentage of all single-family residential bills are at or below that usage level. For example, 64% of single-family residential bills are below 3,000 gallons per month and less than 10% are above 6,000 gallons per month.

Table 3 – Annual Water and Sewer Bills for Customers Consuming Between 0 and 10,000 Gallons of Water per Month

Water Consumption (Kgal/Month)	% of Single-Family Bills at or Below Usage	PWSA Water	PWSA Sewer	ALCOSAN	Total
0	11%	$327	$99	$67	$493
1	25%	$327	$99	$162	$589
2	45%	$460	$189	$257	$906
3	64%	$592	$278	$353	$1,222
4	77%	$725	$367	$448	$1,539
5	86%	$857	$456	$543	$1,856
6	91%	$990	$545	$638	$2,173
7	94%	$1,122	$634	$734	$2,490
8	96%	$1,255	$723	$829	$2,807
9	97%	$1,387	$813	$924	$3,124
10	98%	$1,520	$902	$1,020	$3,441

3.3. The Burden of Water and Sewer Bills on Households in Pittsburgh

As shown in Table 3, residential water and sewer bills in Pittsburgh can range from a minimum of $493 per year to several thousand dollars per year depending on customer water consumption (assuming no bill discount), with a typical bill around $1,222 per year. Is this affordable? This is a policy question that has not yet been answered by PWSA or the Low Income Assistance Advisory Committee (LIAAC), a stakeholder group convened to provide feedback to PWSA on affordability initiatives. Given that, this section simply seeks to provide informative statistics and industry reference points that demonstrate the scope of the burden that water and sewer bills are putting on households in PWSA's service area.

3.3.1. Affordability in the Service Area

First, an examination of overall service area affordability is due. The affordability percentages that are reported in this section simply represent an annual water and sewer bill divided by an annual household income.

The latest literature on the subject from the American Water Works Association for a service area takes two principal factors into account into its measure of affordability. The first is the Household Burden Indicator (HBI), which is equal to water costs as a percent of LQI income. The second is the Poverty Prevalence Indicator (PPI), which is the percent of the service area living below 200% of the Federal Poverty Level. Both of these indicators were calculated for this analysis. The HBI is 6.7% and the PPI is 43.7%. That puts PWSA's burden on customers at "Moderate-High Burden" as shown in the matrix in Table 4.

Table 4 - PWSA's Burden on Customers as Measured by the Latest AWWA Method.

HBI - Water Costs as a Percent of Income at LQI	PPI - Percent of Household Below 200% of FPL		
	>=35%	20% to 35%	<20%
>=10%	Very High Burden	High Burden	Moderate-High Burden
7% to 10%	High Burden	Moderate-High Burden	Moderate-Low Burden
<7%	Moderate-High Burden	Moderate-Low Burden	Low Burden

Table 5 shows the affordability percentages of a customer with low (20th percentile), median, and high (80th percentile) water consumption compared to a low (LQI, or 20th percentile) or median annual household income. Of note is a customer with a typical (median) consumption of 3,000 gallons per month and typical (median) annual household income of $45,778. That customer pays 2.7% of their annual income to water and sewer service. By the EPA affordability standard, which looks specifically at this "typical" customer, service is affordable because the burden is less than 4.5%.

However, one can observe variations in affordability in Table 5. Clearly, having a median income makes service more affordable (customers paying 4.0% or less of their incomes toward water and sewer service), but a customer with both high consumption (5,000 gallons per month) and a low income ($18,240 per year) pays 10.2% of the household's income towards water and sewer service.

Table 5 – Current Affordability Percentages (Annual Bill Divided by Annual Household Income) at Low to High Consumption Levels and Low and Median Income Levels

Water Consumption (Kgal/Month)		Income per Year	
		Low	Median
		$18,240	$45,778
Low	2	5.0%	2.0%
Median	3	6.7%	2.7%
High	5	10.2%	4.1%

Because ALCOSAN wastewater treatment charges comprise a significant portion (approximately 30%) of a customer's water and sewer bill, it may be useful for PWSA to isolate its portion of a customer's bill to examine affordability of its services. This is done in Table 6, which, when contrasted with the above table including ALCOSAN charges, shows that PWSA's portion of the affordability burden is 4.8% of income for a low-income customer with median usage. By contrast, when ALCOSAN charges are included, that customer pays 6.7% of income for service. For a typical customer with both median consumption and median income, PWSA charges represent 1.9% of annual income, while including ALCOSAN charges increases the burden to 2.7% of income.

Table 6 - Current Affordability Percentages at Low to High Consumption Levels and Low and Median Income Levels, Not Counting ALCOSAN Charges

Water Consumption (Kgal/Month)		Income per Year Low $18,240	Median $45,778
Low	2	3.6%	1.4%
Median	3	4.8%	1.9%
High	5	7.2%	2.9%

Table 7 is an extended version of the previous affordability tables. It demonstrates a wider view of affordability (including ALCOSAN charges) ranging from very low annual household incomes ($5,000) to high incomes ($100,000) and no consumption (0 gallons per month) to very high (10,000 gallons per month). Once again, it is clear that both consumption levels and incomes have a large effect on customer affordability – a low-income household with a high water and sewer bill can experience a higher affordability burden (as shown in dark red, light red, and orange). Higher income households are less burdened by high water bills based on affordability percentages.

Table 7 – Current Affordability Percentages at Very Low to Very High Consumption Levels and Very Low to High Household Income Levels

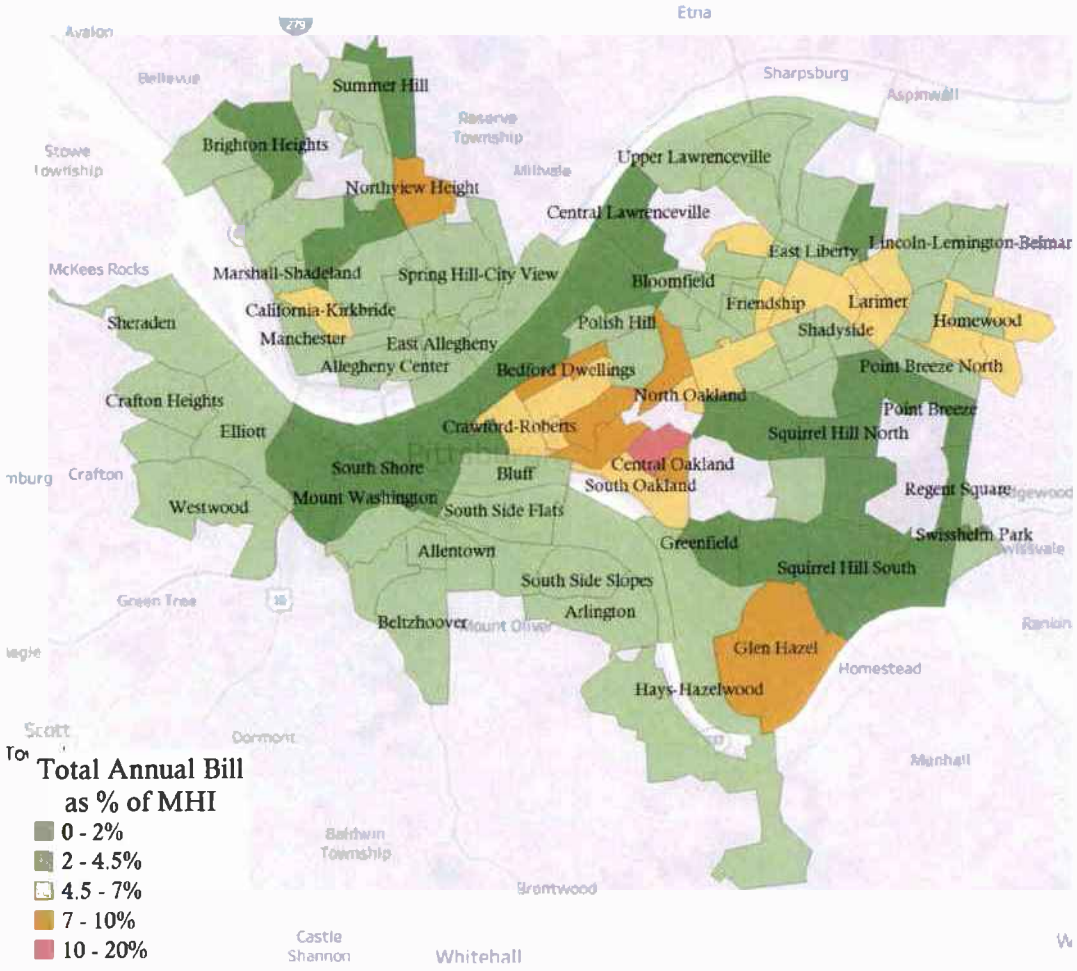
Water Cons. (Kgal/ Month)	Income per Year $5,000	$10,000	$15,000	$20,000	$25,000	$35,000	$40,000	$45,000	$50,000	$80,000	$100,000
0	5.4%	2.7%	1.8%	1.4%	1.1%	0.8%	0.7%	0.6%	0.5%	0.3%	0.3%
1	11.8%	5.9%	3.9%	2.9%	2.4%	1.7%	1.5%	1.3%	1.2%	0.7%	0.6%
2	18.1%	9.1%	6.0%	4.5%	3.6%	2.6%	2.3%	2.0%	1.8%	1.1%	0.9%
3	24.4%	12.2%	8.1%	6.1%	4.9%	3.5%	3.1%	2.7%	2.4%	1.5%	1.2%
4	30.8%	15.4%	10.3%	7.7%	6.2%	4.4%	3.8%	3.4%	3.1%	1.9%	1.5%
5	37.1%	18.6%	12.4%	9.3%	7.4%	5.3%	4.6%	4.1%	3.7%	2.3%	1.9%
6	43.5%	21.7%	14.5%	10.9%	8.7%	6.2%	5.4%	4.8%	4.3%	2.7%	2.2%
7	49.8%	24.9%	16.6%	12.5%	10.0%	7.1%	6.2%	5.5%	5.0%	3.1%	2.5%
8	56.1%	28.1%	18.7%	14.0%	11.2%	8.0%	7.0%	6.2%	5.6%	3.5%	2.8%
9	62.5%	31.2%	20.8%	15.6%	12.5%	8.9%	7.8%	6.9%	6.2%	3.9%	3.1%
10	68.8%	34.4%	22.9%	17.2%	13.8%	9.8%	8.6%	7.6%	6.9%	4.3%	3.4%

3.3.2. Affordability Across Pittsburgh – Census Tract Analysis

After evaluating affordability at a more general, service area level, this study examined affordability at the most detailed geographic level available – the census tract. To do this, median monthly customer water consumption was calculated for that census tract, then used to create a "typical" water and sewer bill in that tract. Then, that bill was compared to the median household income and lowest quintile income specific to that census tract. This gives a view into the diversity of both consumption and incomes that exist across Pittsburgh.

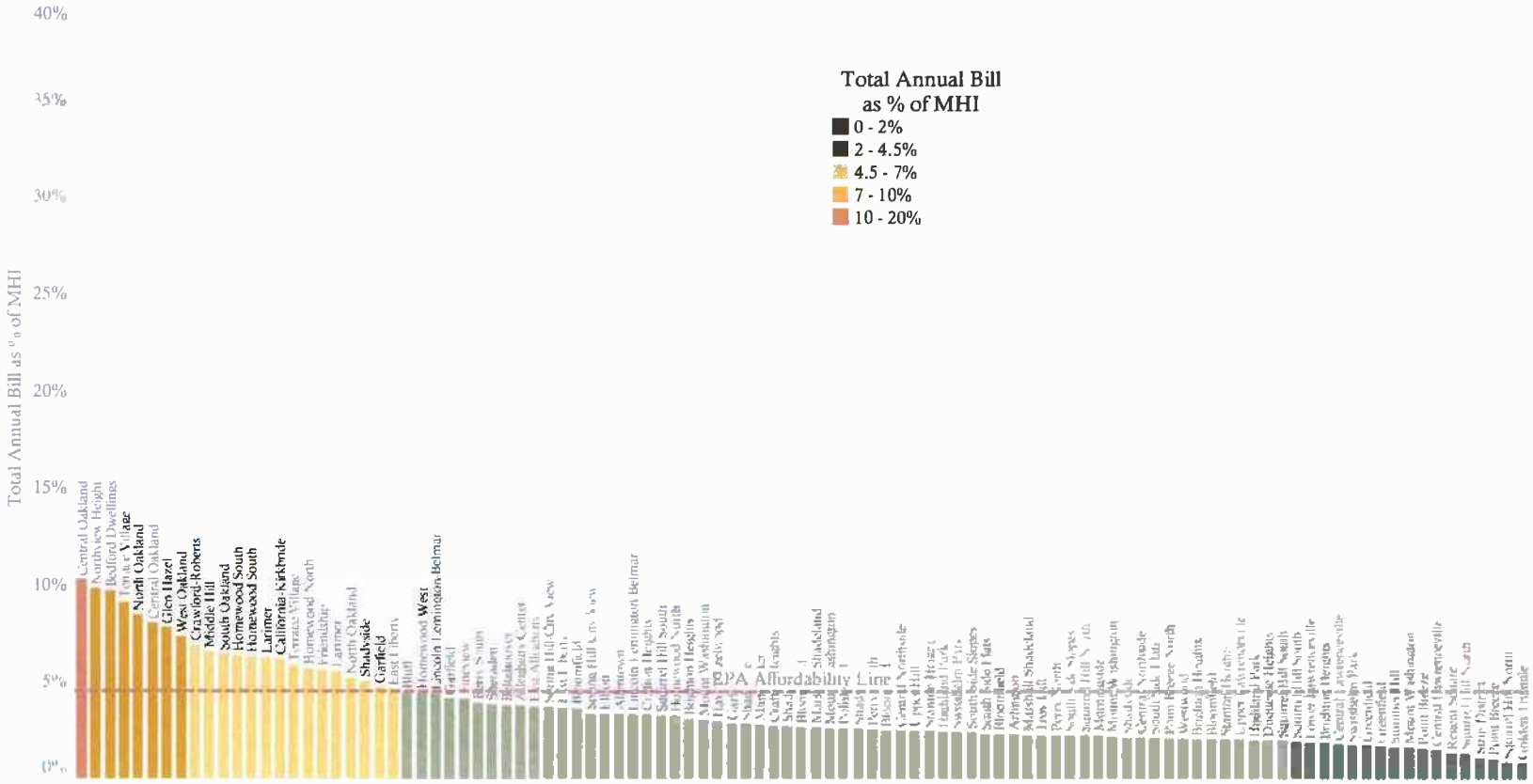
Figure 5 shows the affordability percentage (typical annual bill divided by income) for each census tract included in this analysis. As shown by the number of census tracts in green, most tracts in the PWSA service area have affordable service as defined by the EPA (below 4.5%). However, there are some tracts (shown in yellow, orange, and red) that, even considering a median household income, have affordability percentages above EPA's 4.5% standard.

Figure 5 – Color-Coded Affordability Percentages for Median Household Incomes in Census Tracts Across the PWSA Service Area



Another way to demonstrate this diversity of affordability across Pittsburgh at the MHI level is shown in Figure 6, which is a bar chart of household burden (expressed as annual water and sewer bill as percentage of Median Household Income) of census tracts included in this analysis. Census tracts are labeled with approximate neighborhood and ranked from census tracts with least affordable service (in red) to most affordable service (in dark green). The dotted red line is set at 4.5%, which is the current EPA affordability standard. By this measure, most census tracts have affordable service, but several are above this standard.

Figure 6 - Color-Coded Affordability Percentages for Median Household Incomes in Census Tracts Across the PWSA Service Area, Sorted From Least Affordable to Most Affordable



Of course, as mentioned in the Introduction, looking at households with a median household income does not give much insight into the burden placed on customers who have low incomes. To examine these customers, the above analysis was repeated, but the lowest quintile income (or a 20th percentile income in each census tract) was substituted for MHI. Figure 7, when compared to the MHI map in Figure 5, has many more census tracts colored yellow, orange, light red, and dark red, indicating tracts with potential affordability challenges. Of note are several tracts where a low-income customer with a typical bill is paying above 10% (light red) or in some cases above 20% (dark red) of their annual income for water and sewer service.

Figure 8 shows these same results but in bar chart form. The chart makes clear that approximately half of the census tracts show a typical bill as a percentage of LQI that are at or below 7%. Conversely, there are many other census tracts in Pittsburgh in which low income customers are likely paying over 10 or 20% of their incomes in water and sewer service.

Figure 7 - Color-Coded Affordability Percentages for Lowest Quintile Incomes in Census Tracts Across the PWSA Service Area

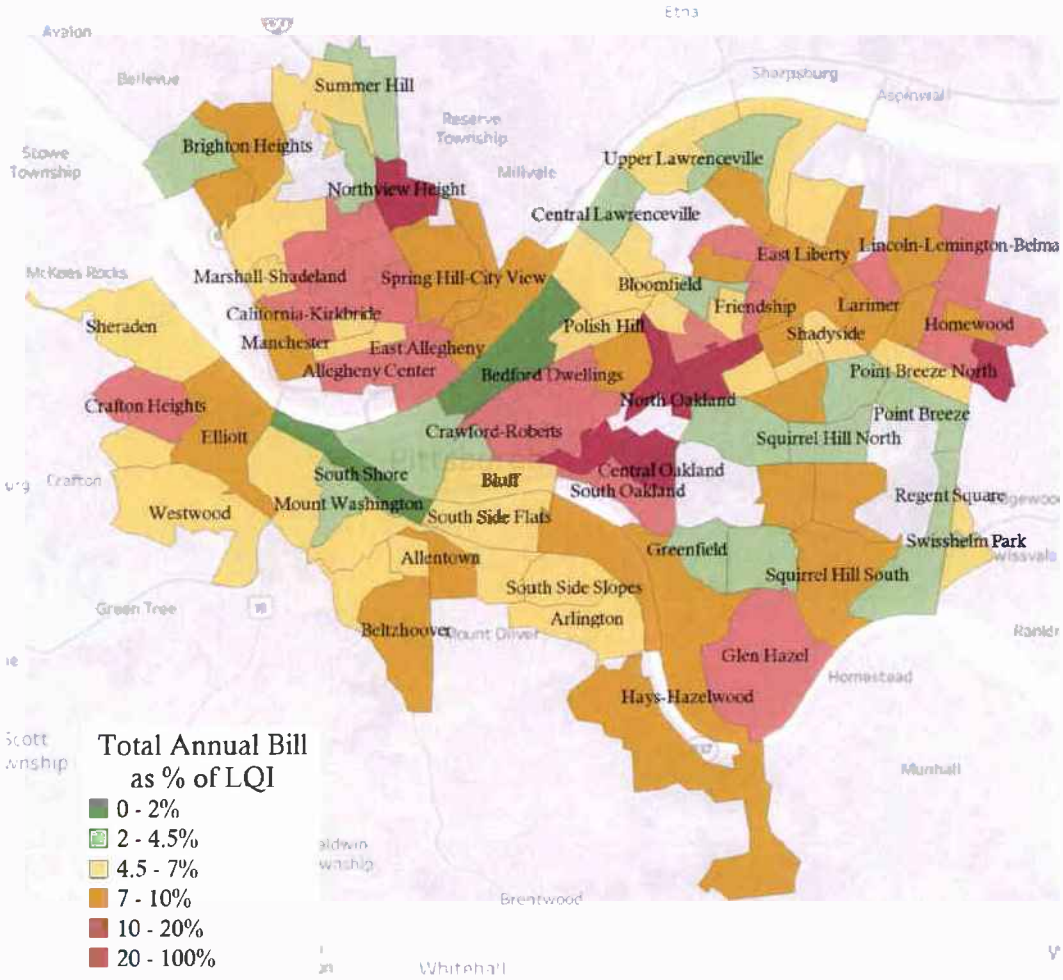
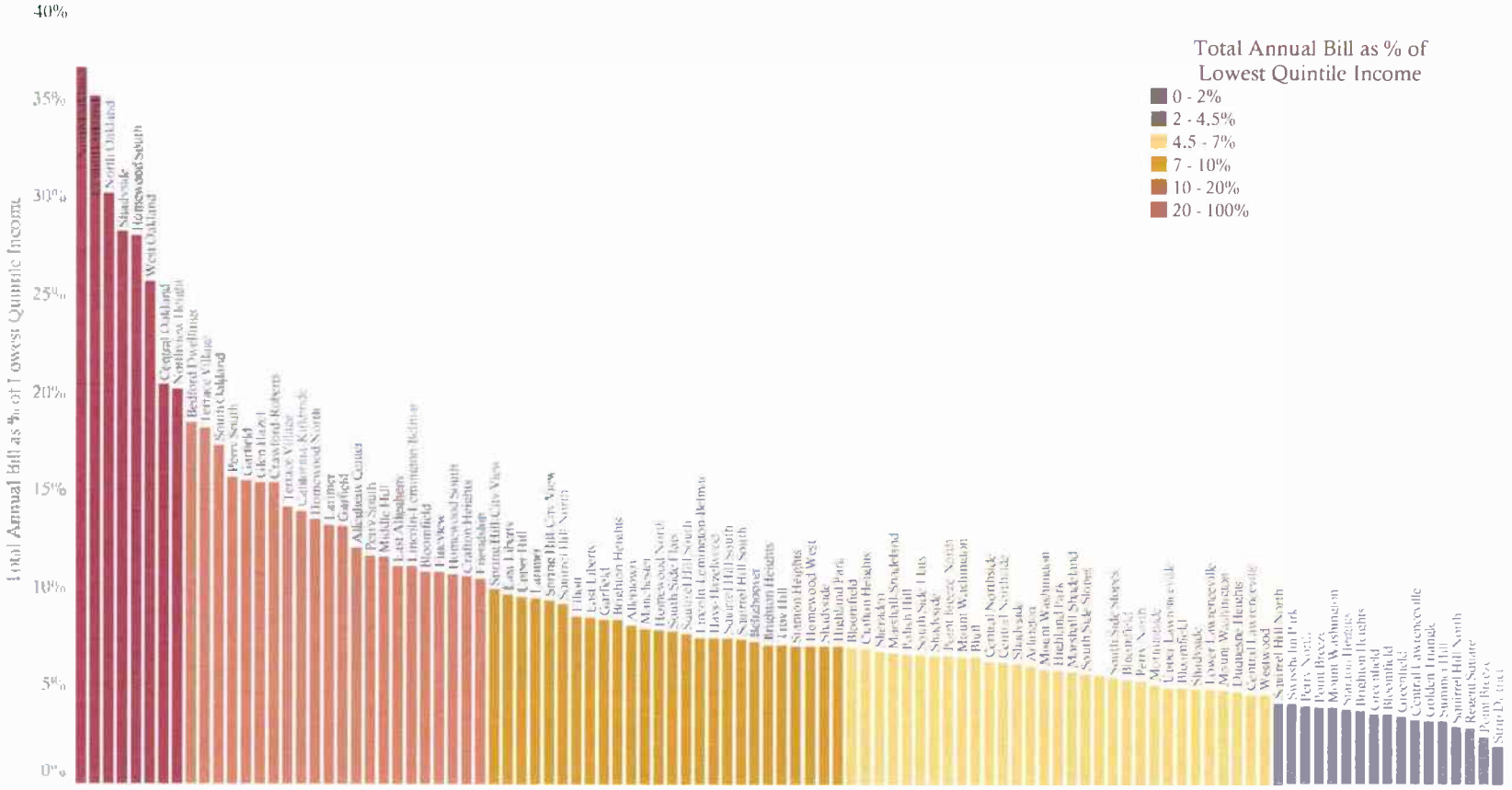


Figure 8 - Color-Coded Affordability Percentages for Lowest Quintile Incomes in Census Tracts Across the PWSA Service Area, Sorted From Least Affordable to Most Affordable



3.4. Priority Areas in Pittsburgh for Affordability Efforts

Given the diversity of socioeconomic conditions existent in Pittsburgh, it stands to reason that certain areas of the city show a higher population of customers that may benefit from PWSA's affordability efforts and engagement.

For example, the distribution of customers and poverty levels can give PWSA insight into where to focus engagement for its bill discount program, which is available to those customers whose incomes fall below 150% of the FPL. ACS data of the percentage of the population living at 150% of FPL in each census tract were crossed with PWSA data of the address of each residential customer to arrive at the number of potential bill discount customers in each census tract. Adding up potential customers eligible in each census tract results in an estimate of 20,454 potential water and sewer customers over the entire PWSA service area. This contrasts with the roughly 1,412 water and sewer customers currently enrolled in the bill discount program, putting the current enrollment percentage at 6.9%. Customers that only receive one service (only water or only wastewater conveyance) from PWSA are also eligible, but the estimates reported here focused on customers receiving both services.

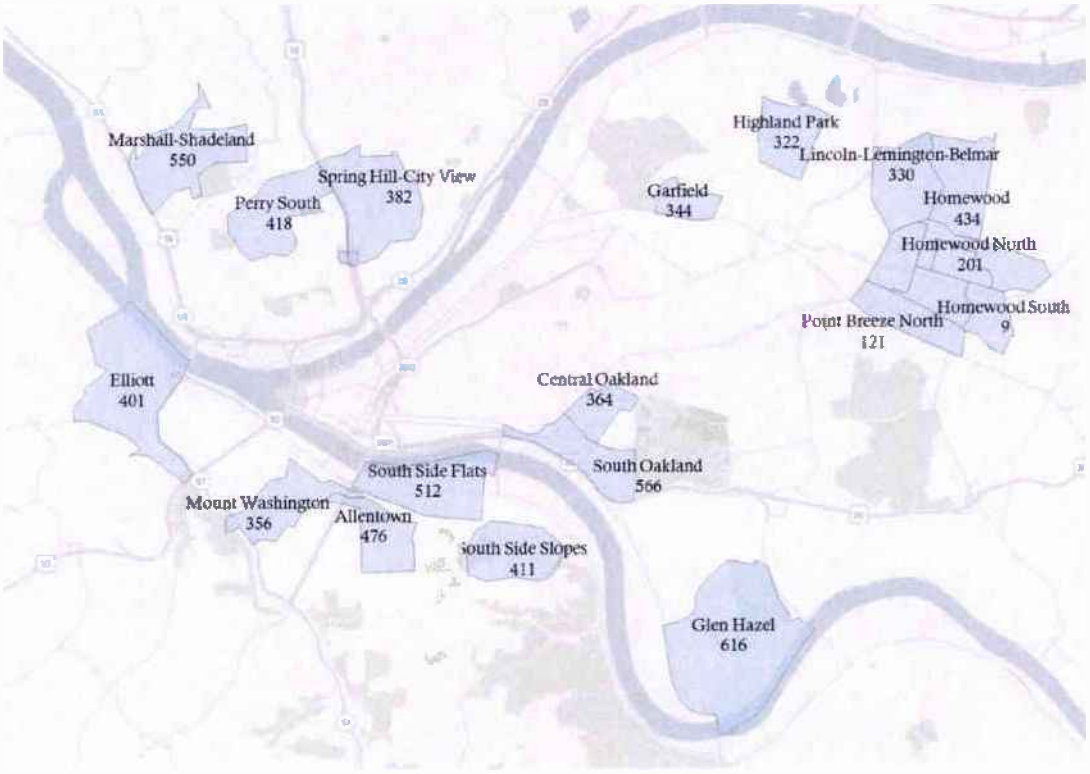
Table 8 ranks the top census tracts in PWSA's service by the estimated number of customers that would qualify for PWSA's bill discount. Members of the LIAAC convened by PWSA also suggested that any priority list should include the neighborhood of Homewood and all related census tracts. Those are added at the bottom of Table 8.

Table 8 – Ranking of Census Tracts in PWSA Service Area by Estimate of Potential Bill Discount Customers, with Six Additional Priority Areas as Defined by Committee

#	Census Tract	Approximate Area Name	Estimate of Potential Bill Discount Customers
1	5623	Glen Hazel	616
2	409	South Oakland	566
3	2715	Marshall-Shadeland	550
4	1702	South Side Flats	512
5	1803	Allentown	476
6	5619	Lincoln-Lemington-Belmar	434
7	2614	Perry South	418
8	1608	South Side Slopes	411
9	5626	Elliott	401
10	2620	Spring Hill-City View	382
11	405	Central Oakland	364
12	1914	Mount Washington	356
13	1017	Garfield	344
14	1203	Lincoln-Lemington-Belmar	330
15	1102	Highland Park	322
16	1301	Homewood North	201
17	1302	Homewood North	187
18	1303	Homewood South	186
19	1405	Homewood	121
20	1207	Homewood West	115
21	1304	Homewood South	9

The top areas with estimated potential bill discount customers are mapped in Figure 9.

Figure 9 – Top Areas with Potential Bill Discount Customers Labeled, as Estimated by Poverty Levels and Customer Locations



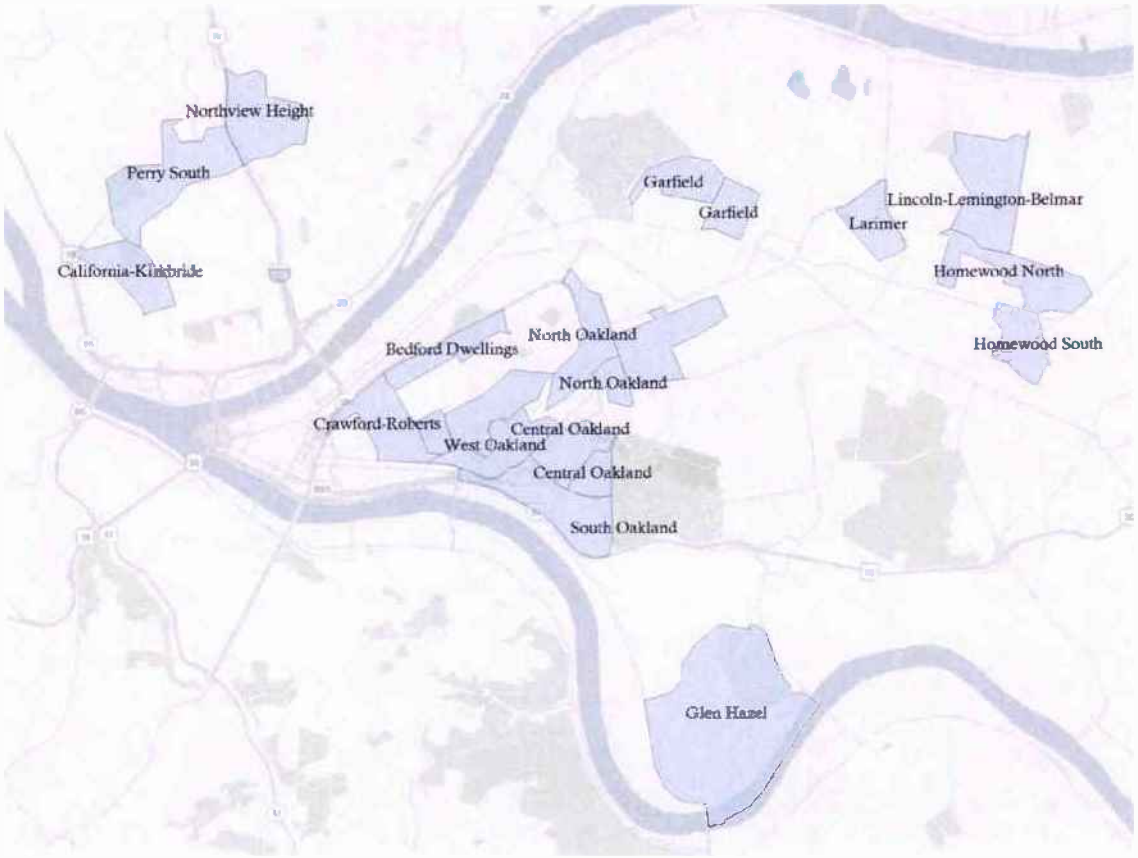
The above priority list and map matches high-poverty census tracts with the number of PWSA residential customers. Another way to identify areas in need of PWSA assistance is simply by examining which census tracts have the lowest income levels. This is done in Table 9, which shows the census tracts with the lowest LQIs. The previous table of areas with potential bill discount customers overlaps greatly with the table below of areas ranked strictly on LQI. In addition, two of the areas suggested by the LIAAC appear in this ranking (Tract 1301 – Homewood North and Tract 1304 – Homewood South). These two lists show different socioeconomic statistics relevant to affordability efforts and could be used together to prioritize areas for engagement.

Table 9 – Twenty-One Census Tracts with Lowest Incomes, as Measured by the Lowest Quintile Income.

#	Census Tract	Area Name	LQI
1	5620	North Oakland	$4,706
2	404	North Oakland	$4,726
3	1304	Homewood South	$4,828
4	402	West Oakland	$4,962
5	405	Central Oakland	$5,134
6	709	Shadyside	$5,353
7	2609	Northview Height	$6,439
8	409	South Oakland	$7,047
9	5623	Glen Hazel	$7,232
10	406	Central Oakland	$7,534
11	2615	Perry South	$7,614
12	1204	Larimer	$7,629
13	510	Terrace Village	$7,870
14	305	Crawford-Roberts	$8,278
15	1301	Homewood North	$8,435
16	509	Bedford Dwellings	$8,454
17	1016	Garfield	$8,713
18	2507	California-Kirkbride	$8,959
19	511	Terrace Village	$9,364
20	1114	Garfield	$9,481
21	5619	Lincoln-Lemington-Belmar	$9,530

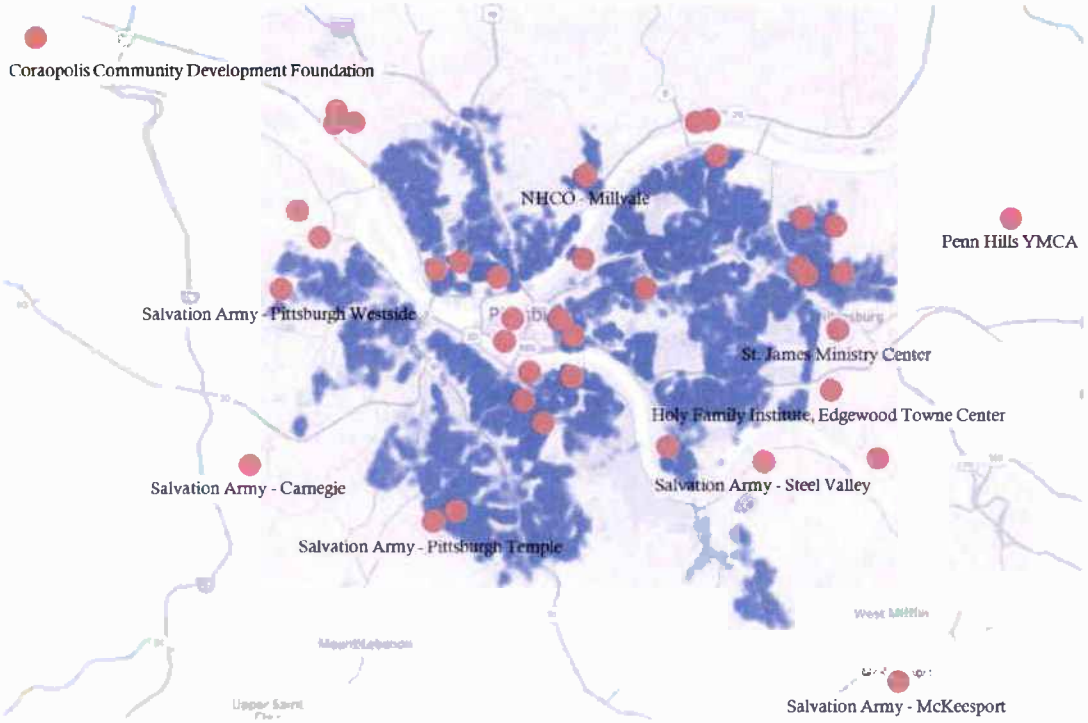
The areas with lowest incomes identified in Table 9 are mapped in Figure 10. In comparison to Figure 9, which is a map of areas with the greatest number of potential bill discount customers, one can observe that low incomes are concentrated in the central areas of Pittsburgh (Oakland) as well as pockets both west (California-Kirkbride, Perry South, and Northview Height) and east (Larimer, Lincoln-Lemington-Belmar, Homewood) of the city. Because both Carnegie Mellon and the University of Pittsburgh have student residences in Oakland, it is possible that students are responsible for the low incomes reported to the American Community Survey in Oakland neighborhoods. In these cases, PWSA must ascertain whether these low-income students are bill-paying customers of PWSA and if they meet requirements for assistance programs.

Figure 10 – Map of Twenty-One Census Tracts with Lowest Incomes, as Measured by the Lowest Quintile Income.



Because PWSA's various assistance programs require direct interaction in person or via telephone, accessibility of enrollment was analyzed. All enrollment can be done over the phone, but in-person customer service centers continue to be an important point of access for many low-income customers. PWSA and Dollar Energy Fund (which administers the assistance programs) provided a list of 52 customer service centers where PWSA customers can enroll in PWSA programs. These locations are mapped in Figure 11.

Figure 11 – Location of Enrollment Centers (Red Dots) versus Location of Residential Customers (Faded Blue Dots)



The 52 locations provide good coverage of the PWSA service area, though there are some areas of Pittsburgh, such as the southwest and north sections, that may be underserved.

3.5. The Effectiveness of PWSA's Bill Discount Program

PWSA's bill discount program provides a 75% reduction of PWSA's water and sewer fixed charges. In 2019, the water fixed charge for a residential charge was $27.27 per month, while the sewer fixed charged was $8.28. The 75% discount yields a water charge of $6.81 per month and a sewer charge of $2.07 per month. Over the course of a year, an enrollee thus saves $320.05 solely by participating in PWSA's program.

Those who participate in PWSA's program are also eligible for ALCOSAN's Clean Water Assistance Fund. The Fund gives the customer a credit of $32 every three months. Thus, over the course of a year, an enrollee in ALCOSAN's program can save $128.

In total, a customer who is enrolled in both PWSA and ALCOSAN's assistance programs can save $448.05 per year.

Taking a step back from the savings guaranteed by these programs, it is helpful to reexamine the affordability percentages for water and sewer service before and after counting the savings. The $448 in savings makes a significant impact on a household's finances. For example, a customer with median consumption (3,000 gallons per month) and $10,000 in income would pay 12.2% of the household's

income without the bill discount and 7.7% with the bill discount towards water service. Likewise, a customer with $15,000 in income would pay 8.1% of their income without the bill discount and 5.2% with it.

Table 5 showed that for a typical (median) income household water and wastewater utility bills were below EPA's 4.5% at 2.7%. Table 10 shows that after the bill discount water and sewer service drops to 1.7% for a household at the service area MHI at median consumption. However, a customer with an income of $18,240 and consumption of 3,000 gallons per month sees a more significant reduction in the affordability percentage from 6.7% (Table 4) to 4.2% of the household's income to water and sewer service.

Table 10 – Current Affordability of Water and Sewer Service (Bill as % of Income) for Low to High Consumption Levels and Low to High Incomes, After the Bill Discount

Water Consumption (Kgal/Month)		Income per Year Low $18,240	Median $45,778
Low	2	2.5%	1.0%
Median	3	4.2%	1.7%
High	5	7.7%	3.1%

The PWSA and ALCOSAN bill discounts significantly decrease the burden on households. Table 11 shows the effect of PWSA's bill discount in isolation. That is, it shows the burden of PWSA water and wastewater conveyance charges on household incomes, excluding the ALCOSAN charges a customer would pay. As expected, the burden that PWSA charges put on low- and median-income customers is more affordable after subtracting ALCOSAN charges. Even at low income, a customer with median consumption pays 3.0% of annual income for PWSA service.

Table 11 - Current Affordability of Water and Sewer Service After the PWSA Bill Discount, Not Counting ALCOSAN Charges

Water Consumption (Kgal/Month)		Income per Year Low $18,240	Median $45,778
Low	2	1.8%	0.7%
Median	3	3.0%	1.2%
High	5	5.4%	2.2%

4. Summary

The purpose of this study was to assess the current state of affordability of water and sewer bills in Pittsburgh Water and Sewer Authority's service area. The need for this study was borne out of a mandate by the Pennsylvania Public Utilities Commission for PWSA to assess affordability when proposing new rates for approval by the PUC in future years. This study was above all a technical and statistical analysis and was not meant to provide recommendations to PWSA on changes to its affordability efforts.

Given that, this study compiled the highest quality data available from PWSA and from external sources such as the ACS to calculate customer bills for water and sewer service and compare them to household incomes. Industry best practices were followed, such as the EPA's 1997 method and the AWWA 2019 method for calculating household affordability. This analysis went further than either of these methods by evaluating affordability down to the census tract level across Pittsburgh.

Pittsburgh is a diverse city with a wide range of incomes and poverty levels. The service area median household income is $45,778 and the 20th percentile income (Lowest Quintile Income) is $18,240. Approximately 34% of the population is estimated to live at or below 150% of the Federal Poverty Level.

The median annual water and sewer bill (including wastewater treatment charges from ALCOSAN) is $1,222. This is the bill of a residential customer with a 5/8" water meter and the median service area consumption of 3,000 gallons per month. Annual bills can range from $493 (assuming no consumption) to $3,441 (assuming 10,000 gallons per month) or more depending on a customer's consumption.

Neither the PWSA, the PA PUC, nor the LIAAC has specifically defined what constitutes affordable or unaffordable service. Given this, this study provides a range of affordability statistics for decision makers. The EPA affordability metric (typical bill divided by service area median household income) for PWSA is 2.7%, meaning that this customer pays 2.7% of the household's annual income for water and sewer service. The EPA's affordability cutoff is 4.5%, though utilities and customer advocates have criticized the metric as unrepresentative of the affordability challenges of lower income customers. By the newer AWWA affordability metric, water and sewer service in PWSA represents a "Moderate-High Burden" on customers, because the percentage of the population living at or below 200% of the Federal Poverty Line is 43.7% and the typical bill as a percentage of a 20th percentile household income is 6.7%. In addition, it is important to note that ALCOSAN's contribution to customer burden is significant and PWSA has no control over ALCOSAN's portion of a customer's bill.

Affordability depends on customer consumption and perhaps more heavily on household income. The diversity of incomes across PWSA's service means that there are economically disadvantaged areas of the city where the customer burden is likely to be higher. Mapping affordability by census tract shows several areas of Pittsburgh where the burden of water and sewer service on customers with Lowest Quintile Incomes may be above 20% of their annual incomes. PWSA has enrolled approximately 1,412 water and sewer customers in its bill discount program, while this study estimates there could be approximately 20,454 residential water and sewer customers in the service area who could be eligible based on poverty and customer location statistics. The census tracts with the largest number of potential bill discount customers are identified in this report.

PWSA's current bill discount program reduces monthly water and sewer fixed charges by 75%. This results in savings of $320 per year for enrolled customers. In addition, ALCOSAN's Clean Water

Assistance Fund provides a credit of $128 per year. Together, the programs total $448 in annual savings for enrollees. PWSA and ALCOSAN both require customers certify they live at or below 150% of the Federal Poverty Level to participate in the programs. To demonstrate the effect of these programs, a customer with the service area 20th percentile income ($18,240) and median consumption (3,000 gallons per month) would pay 6.7% of income towards water and sewer service, while after participating in the program the customer would pay 4.2% of the household's income for service.

Exhibit JAQ-6

PGH2O CARES

Background

The PGH2o Cares program was born of deliberations held during the Low Income Assistance Advisory Committee's inaugural year. Both Pittsburgh Water and Sewer Authority (PWSA) staff and consumer advocates shared ideas, concerns, areas of interest, and suggested plans of action to further protect the most vulnerable of PWSA customers from increasing water and wastewater rates; the non-payment of which would threaten their access to clean water.

The deliverables of the PGH2o Cares program are trifold:

1. Consolidate PWSA's low income assistance programs under one umbrella of care.[1]
2. Build a team of PWSA employees focused on increasing enrollment and promoting conservation.
3. Bring the PWSA assistance programs to the customer in their environment.

Planned Outreach Activities

Customer education and outreach is an on-going process that involves many different facets. PWSA is committed to communicating with all of its customers on a regular basis through many different channels and part of that communication will include information about PGH2o CARES. PWSA will continue to regularly attend community engagement events, where information about PGH2o CARES will be provided. PWSA's planned outreach activities will also be informed through suggestions and feedback received from the Low Income Advisory Committee ("LIAAC").

PGH2o CARES Team

The PGH2o Cares team shall be comprised of:

- PGH2o Cares Coordinator – Responsible as leader of the team to set achievable goals, provide field and in-home safety training to team members, assign work, ensure that team members are meeting prescribed deadlines, mentor team, perform quality assurance checks, and report on team progress and accomplishments.
- PGH2o Cares Team Member (no less than three) – Primary duty is to gain authorization to engage eligible customers in their home, firstly within focus areas identified in the Household Affordability Analysis, and to educate them on the PGH2o Cares program. Responsible for enrolling eligible customers, providing conservation tips and instruction, following up on any customer service related concerns, and making certain that the customer is satisfied at the completion of the visit.
- The necessary tools of the PGH2o Cares team are a dedicated vehicle, wireless access to the PWSA network, field uniforms and badges, printed enrollment and conservation materials, and door hangers.

[1] PGH2o Cares is limited to financial assistance programs related to PWSA's bills and does not include any programs involving lead service line replacements.

PGH2O CARES

PGH2o CARES Program

Once vetted through PWSA's program administrator, the Dollar Energy Fund, income eligible Residential customers can qualify to be protected from shut off of their water service, receive monthly discounted base facility charges including their first thousand gallons of usage, and receive grants towards reduction of their delinquent water charges.

Winter Moratorium

Program Benefits

- Provides protection from shut off December 1st through March 31st

Eligibility

- ✓ Residential customers only
- ✓ Owners/tenants who receive a PWSA bill in their name
- ✓ Must be at or below 300% of the Federal Poverty Level
- ✓ Recertification annually

Procedure for Enrollment

- ✓ Call the Dollar Energy Fund at 1-866-762-2348.
- ✓ Visit one of the Community Based Organizations who have an affiliation with Dollar Energy Fund. A listing of these can be found on Attachment A, "Dollar Energy Fund's Partnering Allegheny County Agencies 2-2020".

Projected Budget/Cost of Customer Benefits

- Unpaid water and wastewater charges run through PWSA's established Collections Life Cycle *outside of* months when the moratorium is applicable. This delay in Collections negatively affects PWSA's ability to collect aged charges.

Projected Budget/Cost of Administration and Engagement

- 1 FTE at $21.26 per hour for 120 hours over six months, or **$2,551.20**
- 1 Senior Public Affairs Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- 1 Senior PUC Compliance Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- **$300.00** to print customer assistance flyers
- **$75,000.00** in Dollar Energy Fund annual administrative costs
- Total spend: **$89,851.20**

PGH2O CARES

Needs Assessment

- Estimated Number of Residential Water and Wastewater Accounts

0 - 50%	6,992
51 - 100%	7,160
101 - 150%	6,302
151 - 200%	6,355
201 - 300%	9,836

Projected Enrollment

- 4,500

Bill Discount

Program Benefits

- 100% discount of fixed base water/wastewater charges
- Inclusive of first 1,000 gallons on a 5/8" water meter

Eligibility

- ✓ Residential customers only
- ✓ Owners/tenants who receive a PWSA bill in their name
- ✓ Must be at or below 150% of the Federal Poverty Level
- ✓ Recertification required bi-annually, or every two years

Procedure for Enrollment

- ✓ Call the Dollar Energy Fund at 1-866-762-2348.
- ✓ Visit one of the Community Based Organizations who have an affiliation with Dollar Energy Fund. A listing of these can be found on Attachment A, "Dollar Energy Fund's Partnering Allegheny County Agencies 2-2020".

Projected Budget/Cost of Customer Benefits

- $1.5M in lost revenue; to be recovered from customers other than those vetted as qualifying for the Bill Discount

Projected Budget/Cost of Administration and Engagement

- 1 FTE at $22.65 per hour for 120 hours over twelve months, or **$2,718.00**
- 1 Senior Public Affairs Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- 1 Senior PUC Compliance Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- **$300.00** to print customer assistance flyers
- **$75,000.00** in Dollar Energy Fund annual administrative costs
- Total spend: **$90,018.00**

PGH2O CARES

Needs Assessment

- Estimated Number of Residential Water and Wastewater Accounts

0 - 50%	6,992
51 - 100%	7,160
101 - 150%	6,302

Projected Enrollment

- 4,500

Hardship Cash Assistance

Program Benefits

- Up to a $300.00 grant towards reduction of a water delinquency
- Renewable each year

Eligibility

- ✓ Residential **water** customers only
- ✓ Owners/tenants who receive a PWSA bill in their name
- ✓ Must be at or below 150% of the Federal Poverty Level
- ✓ Must make payments of at least $75.00 in most recent three months
- ✓ Senior citizens must make payments of at least $37.50 in most recent three months
- ✓ Recertification annually

Procedure for Enrollment

- ✓ Call the Dollar Energy Fund at 1-866-762-2348.
- ✓ Visit one of the Community Based Organizations who have an affiliation with Dollar Energy Fund. A listing of these can be found on Attachment A, "Dollar Energy Fund's Partnering Allegheny County Agencies 2-2020".

Projected Budget/Cost of Customer Benefits

- $0.00 – Grant monies are released from a legal settlement.

Projected Budget/Cost of Administration and Engagement

- 1 FTE at $22.66 per hour for 3 hours over twelve months, or **$67.98**
- 1 Senior Public Affairs Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- 1 Senior PUC Compliance Coordinator at $30.00 per hour for 100 community meetings each lasting two hours, or **$6,000.00**
- **$300.00** to print customer assistance flyers
- **$75,000.00** in Dollar Energy Fund annual administrative costs
- Total spend: **$87,367.98**

PGH2O CARES

Needs Assessment

- Estimated Number of Residential Water and Wastewater Accounts

0 - 50%	6,992
51 - 100%	7,160
101 - 150%	6,302

Projected Enrollment

- 500

Conservation in the Home

Reduce customer consumption and water/sewer service costs

- ✓ PWSA water customers at 200% of their average monthly consumption are identified during the PWSA pre-bill editing process.
- ✓ The PGH2o Cares Team will determine, of these customers, who are at 150% of the federal poverty level or lower. Said determination will include a review of the customer's rate to determine if enrolled in the customer assistance program, a review of the customer's income based payment arrangement if available, or direct contact with the customer regarding eligibility.
- ✓ The PGH2o Cares Team will:
  1. Provide toilet leak detection tablets with instructions.
  2. Read the water meter to identify any low flow indicator movement and suggest that the customer contact a plumber to make repairs where identified.
  3. Review water-wise educational materials with the customer.
  4. Explain to the customer how to calculate water and wastewater charges to demonstrate how their use of these services affects their monthly bill amounts.

Reach customers in their homes

- ✓ The PGH2o Cares Team will make appointments to visit customers who were identified in the above referenced process in their homes.
- ✓ When an appointment cannot be scheduled, the PGH2o Cares Team will make a cold call, leaving a door hanger with their contact information if no one provides them access.

Increase enrollment in programs

- ✓ The PGH2o Cares Team will attempt at every interaction to assist identified low income customers with enrollment in PWSA's customer assistance programs.
- ✓ The PGH2o Cares Team will assist the customer with enrollment in PWSA's free Customer Usage Portal.

PGH2O CARES

Projected Budget/Cost of Administration and Engagement

- PGH2o Cares Coordinator and three Team Members, **$171,000**
- Training for all PGH2o Cares Team, **$10,000**
- Marketing and educational materials, **$30,000**
- Total spend: **$211,000**

Needs Assessment

- Estimated Number of Residential Water and Wastewater Accounts

0 - 50%	6,992
51 - 100%	7,160
101 - 150%	6,302

Projected Enrollment

- 4,500 income eligible
- The number of customers with higher than average monthly consumption will be difficult to quantify until this program is executed.

PGH2o CARES Attachment A

Community Based Organizations Affiliated With Dollar Energy Fund

Agency Name	Address	Phone
NHCO - Allison Park	1975 Ferguson Road Allison Park, PA 15101	412-487-6316
Housing Opportunities of Beaver County Inc.	282 East End Ave. Beaver, PA 15009	724-728-7511
Salvation Army - Pittsburgh North Borough	658 Lincoln Ave. Bellvue, PA 15202	412-415-1726
South Hills Interfaith Ministries	5301 Park Ave Bethel Park, PA 15102	412-854-9120
Salvation Army - Brakenridge	917 Brackenridge Avenue Brackenridge, PA 15014	724-224-6310
Salvation Army - Carnegie	225 West Main Street Carnegie, PA 15106	412-276-4757
Clairton Cares, Inc.	307 Shaw Ave Clairton, PA 15025	412-233-3135
Clairton Public Library	616 Miller Avenue Clairton, PA 15025	412-233-3135
Salvation Army - Clairton	734 Miller Ave. Clairton, PA 15025	412-956-1320
State Representative Austin Davis Office	551 Ravensburg Blvd Clairton, PA 15025	412-233-2505
Coraopolis Community Development Foundation	P.O.Box 40 1000 5th Avenue Coraopolis, PA 15108	412-329-8247
Salvation Army - Steel Valley	104 East Ninth Street PO Box 395 Homestead, PA 15120	412-461-2460
Holy Family Institute, McKees Rocks	19 May Avenue McKees Rocks, PA 15136	412-331-8665
Holy Family Institute, McKeesport	Olympia Shopping Center 4313 Walnut Street Unit 172 McKeesport, PA 15132	412-896-4314
Salvation Army - McKeesport	821 Walnut Street Mckeesport , PA 15134	412-673-6627

Agency Name	Address	Phone
Salvation Army - Pittsburgh Temple	1060 McNeilly Road Mount Lebanon, PA 15226	412-207-2127
Allegheny Valley Association of Churches	1913 Freeport Rd Natrona Heights, PA 15065	724-226-0606
Primary Care Health Services,Inc. Hill District	1835 Centre Ave Ste190 Pgh, PA 15219	412-697-4697
Primary Care Health Services,Inc. Homewood	7227 Hamilton Avenue Pgh, PA 15208	412-244-4700
Allegheny Center Alliance Church	801 Union Place, 1st floor Pittsburgh, PA 15212	412-321-4333
Brashear Association at the Hilltop Y	212 Brownsville Rd, Pittsburgh, PA 15210	412-620-8234
Brashear Association's Neighborhood Employment Center	730 E. Warrington Ave, Pittsburgh, PA 15210	412-390-3588
Brashear Center	2005 Sarah Street Pittsburgh, PA 15203	412-431-2236
Eastside Neighborhood Employment Center	5321 Penn Avenue 5321 Penn Pittsburgh, PA 15224	412-441-9833
Hazelwood YMCA	5006 Second Ave Lower Level (Greater Hazelwood Family Center)	412-773-7318
Holy Family Institute, Edgewood Towne Center	1789 South Braddock Avenue Suite 585 Pittsburgh, PA 15218	412-244-8010
Holy Family Institute, Northside	1601 Brighton Road Pittsburgh, PA 15212	412-322-6588
Homewood-Brushton YMCA	7140 Bennett Street Pittsburgh, PA 15208	412-436-0524
Jubilee Association, Inc.	Jubilee Kitchen 2005 Wyandotte St, Pittsburgh, PA 15219	412-261-5417
Lincoln Park Family Center	7300 Ridgeview Avenue Pittsburgh, PA 15235	412-661-1057

Agency Name	Address	Phone
Nabhi Christian Ministries	7060 Lemington Ave. Pittsburgh, PA 15206	412-661-1919
NHCO - Bellevue	939 California Ave Pittsburgh, PA 15202	412-307-0069
NHCO - Millvale	416 Lincoln Ave. Pittsburgh, PA 15209	412-408-3830
Northern Area Multi - Service Center	209 13th Street Pittsburgh, PA 15215	412-781-1175
PCSI SouthWest	249 N. Craig Street Pittsburgh, PA 15213	412-904-4700
Penn Hills Senior Service Center (60+ Only)	147 Jefferson Road Pittsburgh, PA 15235	412-244-3409
Pittsburgh Community Services Inc.	249 North Craig Street Pittsburgh, PA 15213	412-904-4713
Salvation Army - Homewood-Brushton	8020 Frankstown Avenue Pittsburgh, PA 15221	412-242-1434
Salvation Army - Pittsburgh Westside	1821 Broadhead Fording Road Pittsburgh, PA 15205	412-921-9780
St. Mark's Lutheran Church	933 Brookline Blvd, Pittsburgh, PA 15226	412-344-4222
State Representative Sara Innamorato	5154 Butler St Pittsburgh, PA 15201	412-781-2750
Thelma Lovette YMCA	2114 Centre Avenue Pittsburgh, PA 15219	412-773-7318
Veterans Leadership Program	2934 Smallman St. Pittsburgh, PA 15201	412-481-8200
Roots of Faith	800 Main Street Sharpsburg, PA 15215	412-799-0111
Northern Area Multi - Service Center - Highland Senior Center	704 East Second Avenue Tarentum, PA 15084	724-224-1552

TAB
9

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

BETH DUTTON

ON BEHALF OF
THE PITTSBURGH WATER
AND SEWER AUTHORITY

Docket Nos.
R-2020-3017951 (Water)
R-2020-3017970 (Wastewater)

TOPICS:

STORMWATER

March 6, 2020

Table of Contents

Page

TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Beth Dutton. I am the Senior Group Manager, Stormwater for The Pittsburgh Water and Sewer Authority ("PWSA"), a position that I assumed in July 2019.

Q. WHAT ARE YOUR JOB RESPONSIBILITIES IN THAT POSITION?

A. My responsibilities include planning, design, implementation, and maintenance of stormwater-related projects that reduce localized flooding and combined sewer overflows while improving the water quality and health of streams and waterways.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND RELEVANT EXPERIENCE.

A. I have a Master of Science in Environmental & Occupational Health from the University of Pittsburgh. I also have a Bachelor of Science in Biology from the University of Vermont.

Prior to joining PWSA, I worked for 3 Rivers Wet Weather, Inc. ("3 Rivers") for over 9 years. 3 Rivers is a nonprofit environmental organization that supports 82 Allegheny County municipalities and the City of Pittsburgh ("City" or "Pittsburgh") in addressing the region's wet weather overflow problem, and improving the quality of our rivers and streams. I was the Deputy Director from January 2017 to July 2019. Prior to that position, I was Program Manager for 3 Rivers (from July 2010 to December 2016) where I worked on wet weather regulatory compliance for municipalities and helped coordinate with representatives of local governments and their engineers and solicitors, as well as with the Allegheny County Sanitary Authority ("ALCOSAN"), the Pennsylvania Department of Environmental Protection ("PA DEP"), and the Allegheny County Health Department ("ACHD").

Before starting with the 3 Rivers, I have more than 11 years of experience working as Environmental Scientist. A complete description of my background and experience is set forth in Appendix A to this testimony.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE PENNSYLVANIA PUBLIC UTILITY COMMISSION ("PUC" OR "COMMISSION")?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESIMONY?

A. The purpose of my testimony is to describe PWSA's stormwater conveyance facilities, the related regulatory requirements and PWSA's stormwater management program. I am also sponsoring PWSA's proposed tariff on this topic.

Q. OTHER THAN THE PROPOSED TARIFF, ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- **Exh. BD-1:** Exhibit BD-1 is a map providing an overview of the PWSA and City of Pittsburgh municipal separate storm sewer system ("MS4") storm sewershed drainage areas as of January 29, 2020.
- **Exh. BD-2:** Exhibit BD-2 describes the findings of PWSA's Stormwater Advisory Group.
- **Exh. BD-3:** Exhibit BD-3 is PWSA's proposed Stormwater Tariff. The tariff does not include rates for a stormwater fee at this time. PWSA anticipates proposing a stormwater fee in a separate proceeding in late 2020.
- **Exh. BD-4:** Exhibit BD-4 is the Pennsylvania Public Utility Commission's Draft Model Stormwater Tariff. The Commission provided this document to PWSA for guidance in the fall of 2019.

Q. WHY IS PWSA ADDRESSING STORMWATER AS PART OF THIS PROCEEDING?

A. PWSA currently uses the fees generated from customer charges for sewer conveyance to fund stormwater management. A sewer conveyance fee (based on a PWSA customer's water usage) is not an equitable way to charge customers for stormwater management. This is because the volume of stormwater that a property generates is a function of hard surface (impervious area) on that property, not water usage. The universal measure used by governments across the United States to charge for costs related to stormwater services is impervious surface area. Therefore, PWSA is developing a stormwater fee to more equitably charge for stormwater management services in order to meet water quality and regulatory requirements.

Additionally, the Commission's Final Implementation Order (FIO) directed PWSA to file a stormwater tariff and a compliance plan no later than the next wastewater base rate filing after its July 2018 base rate filing.[1] PWSA is submitting a stormwater tariff in this proceeding to satisfy the FIO's requirement. As I will discuss below, PWSA is filing a tariff but is not seeking to implement a stormwater fee as part of this proceeding. Rather, PWSA anticipates proposing a stormwater fee later this year.

[1] Implementation of Chapter 32 of the Public Utility Code Re Pittsburgh Water and Sewer Authority, Final Implementation Order (entered Mar. 15, 2018), Docket Nos. M-2018-2640802 (water) and M-2018-2640803 (wastewater), at 31.

II. OVERVIEW OF STORMWATER ISSUES

Q. WHAT IS STORMWATER?

A. Stormwater is rain or snowmelt that does not infiltrate into the ground. When precipitation falls on an impervious area, it runs off the property rather than being absorbed. Figure 1 below illustrates the stormwater cycle in a separate sanitary sewer system, where stormwater runoff is conveyed to a nearby water body, such as a stream or a river. Note that in a combined sewer system, stormwater is conveyed to a pipe that carries a combination of both sanitary sewer flow and stormwater.

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

Rain Falls: water collects on an impervious/paved surfaces 1

Run Off Collects: run off collects pollutants along its way 2

Run Off Flows: water moves over impervious/paved surfaces 3

Run Off Grows: water your yard can't absorb combines into run off 4

Stormwater Drains: pollutant-heavy water now flows into storm drains 5

Streams and Rivers Impacted: pollutants enter water 6

Source: https://www.conservationsolutioncenter.org/solution-center/stormwater/what-is-stormwater#

Q. IS STORMWATER A PROBLEM?

A. Yes. When precipitation falls on undeveloped areas, it is primarily absorbed into the ground or slowly runs off into streams, rivers or other water bodies. However, developed areas that are impervious, such as rooftops and paved areas, prevent water from being absorbed and create a faster rate of runoff. This development often causes localized flooding or other water quantity or quality issues. In addition, stormwater can carry

harmful pollutants (such as such as oil, dirt, chemicals, and lawn fertilizers) that adversely affect water quality. Stormwater can cause flooding, erode topsoil and stream banks, and destroy habitats. The City of Pittsburgh has densely-developed areas with a lot of impervious surfaces.

Q. WHO PRODUCES STORMWATER?

A. All properties receive precipitation in the form or rain or snow. Accordingly, all properties produce stormwater runoff that must be managed. Even if a property has never flooded and there is no nearby stormwater infrastructure, the stormwater that flows off of a property must be managed so that it does not contribute to pollution and flooding downstream. This also applies to cases in which the majority of stormwater is managed onsite; property owners should contribute for services provided that are beyond their property lines, such as permit compliance, municipal separate storm sewer system (MS4) maintenance, and stormwater infrastructure improvements throughout the City of Pittsburgh. Stormwater management is a community-wide service and the costs should be funded by all residents in a fair and equitable manner.

Q. ARE THERE DIFFERENT REGULATORY CATEGORIES OF STORMWATER?

A. Yes. Under the Clean Water Act, a permit is required for any discharge to waters such as rivers or streams. There are two types of permits that address stormwater discharges: (1) National Pollutant Discharge Elimination System (NPDES) permits that apply to discharges from a combined sewer system, including stormwater flow which is due to groundwater infiltration and stormwater inflow that mix with other wastewater in combined sewer pipes; and (2) NPDES permits for Municipal Separate Storm Sewer

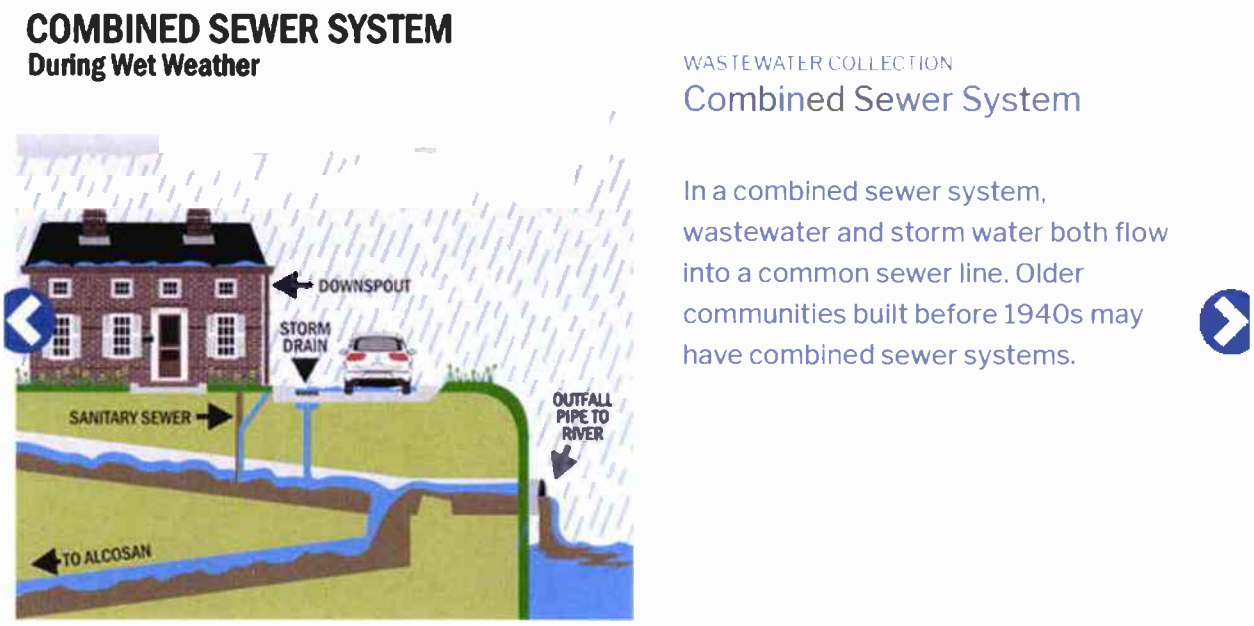
Systems (MS4), relating to stormwater that is collected, conveyed, and discharged to local waterbodies via stormwater-only pipes.

Q. PLEASE PROVIDE AN OVERVIEW OF THE AUTHORITY'S STORMWATER AND/OR WASTEWATER INFRASTRUCTURE.

A. PWSA's overall wastewater conveyance system is composed of over 1,200 miles of sewer lines, 4 pump stations, and approximately 25,000 catch basins. PWSA has two types of wastewater conveyance systems – a combined system, and a separated sanitary and storm sewer system. Stormwater is conveyed in different ways by each type of system.

First, approximately 75% of the PWSA system, or approximately 900 miles of sewer lines, is the combined sewer system. This is generally the older areas of the system where wastewater and stormwater are conveyed in the same pipe. During times of dry weather, all flow is conveyed to ALCOSAN for treatment. When it rains, the capacity of the system to convey flow can be limited, which causes localized flooding, basement sewer backups, and overflows to streams and the river. Figure 2 below illustrates the operation of a combined sewer system.

Figure 2:



Source: https://www.alcosan.org/what-we-do/wastewater-treatment

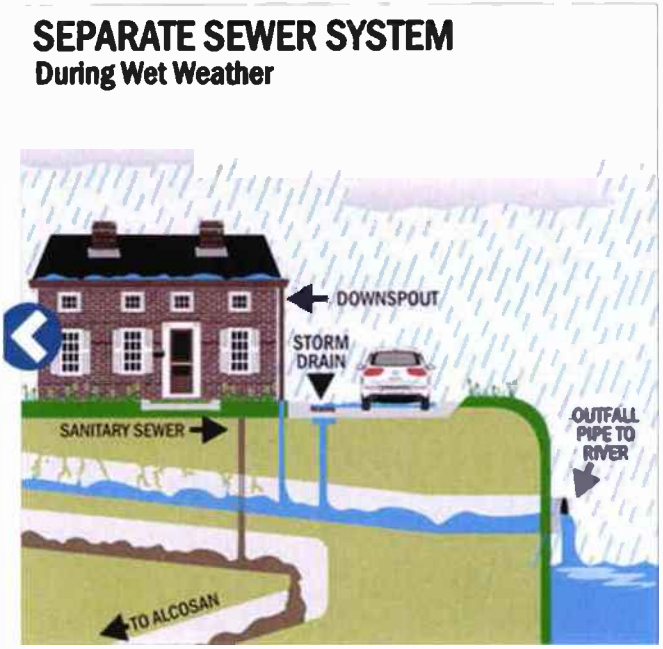
Second, newer or more recently redeveloped communities have separated sanitary and storm sewer systems.[2] In a separated system, wastewater is conveyed to ALCOSAN for treatment, and when it rains stormwater is discharged directly to a nearby stream or river. The separate stormwater conveyance system ("MS4")[3] is not connected to either the combined wastewater system or the sanitary sewer system, and only carries stormwater. A map illustrating areas in the City of Pittsburgh served by an MS4 is attached as Exhibit BD-1. Approximately 25% of the PWSA system is separated, and

[2] 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.

[3] "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).

has approximately 172 miles of sanitary sewer and 140 miles of stormwater pipes. Figure 3 below illustrates the operation of a separate sanitary sewer system.

Figure 3:



Source: https://www.alcosan.org/what-we-do/wastewater-treatment

The combined sewer system and MS4 will each be discussed in greater detail below.

A. Combined Sewer System

Q. PLEASE BRIEFLY DESCRIBE PWSA'S COMBINED WASTEWATER SYSTEM.

A. The PWSA system, as was common industry practice at the time of installation, was designed as a "combined system," meaning that there is one pipe underground that transports both wastewater and stormwater, all of which is then conveyed to the treatment facilities. Our first sewer lines were built as early as 1840 in present-day Shadyside and Oakland. By 1908, more than 390 miles of underground sewer lines were in place,

establishing the start of the combined sewer system that is still used today. About 75% (about 900 miles) of PWSA's wastewater conveyance system is the combined system.

Q. HOW DOES STORMWATER ENTER THE PWSA COMBINED WASTEWATER SYSTEM?

A. Principally, through storm grates or inlets located in the streets, then into the sump or well below, called a catch basin. There are, however, other sources of inflow, such as roof stormwater downspouts and area drains as required by existing Municipal Building Code, that were designed to feed this stormwater into the combined wastewater conveyance system. Finally, groundwater can enter the piping system via aging or defective infrastructure. This is termed "infiltration."

Q. HOW IS STORMWATER HANDLED BY THE COMBINED WASTEWATER SYSTEM?

A. PWSA sends the combined flow of wastewater and stormwater to ALCOSAN, the regional wastewater treatment plant along the Ohio River. ALCOSAN treats wastewater (together with any stormwater collected by combined systems) for 83 municipalities in Allegheny County, including the City of Pittsburgh.

Q. WHAT IS A COMBINED SEWER OVERFLOW (CSO)?

A. Normally, during dry periods or low intensity rainfalls, PWSA's combined system sends all wastewater and stormwater flow to the ALCOSAN treatment facility. However, if there is a large rainfall event, the system can become overloaded beyond its capacity. When this occurs, the system is designed to allow excess stormwater and untreated sewage to be discharged into rivers and streams. This means that combined sewers can cause water pollution problems when the volume of sewage and stormwater exceed the capacity of the conveyance system.

Q. HAVE COMBINED SEWER OVERFLOW EVENTS BEEN AN ISSUE IN THE CITY OF PITTSBURGH?

A. Yes, CSOs are a significant issue in City of Pittsburgh. Approximately 5.5 billion gallons of untreated sewage overflows each year from the PWSA combined sewer system into local streams and rivers.[4] The frequency of CSO events is driven by weather,[5] and in recent years Pittsburgh has experienced increased amounts of total annual rainfall as well as the frequency of large rainfall events. As an illustration, 2018 was the wettest year on record for Pittsburgh, with a total of 57.83 inches of rain. Similarly, 2019 was the third wettest year on record with a total of 52.46 inches of rain. By comparison, the 30-year mean rainfall for Pittsburgh is just over 38 inches of rain.[6] See Figures 4 and 5 below to note that the trend of precipitation amounts and event frequency appears to be increasing, which will result in more frequent CSO events and an even greater need to adequately manage stormwater.

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4 As per the PWSA SWMM Model, 2003 Typical Year.

5 See the ALCOSAN website for data on CSO Alerts issued by year since 1993: https://www.alcosan.org/our-plan/sewer-overflow-advisories.

6 https://www.weather.gov/pbz/pit_records.

Figure 4:

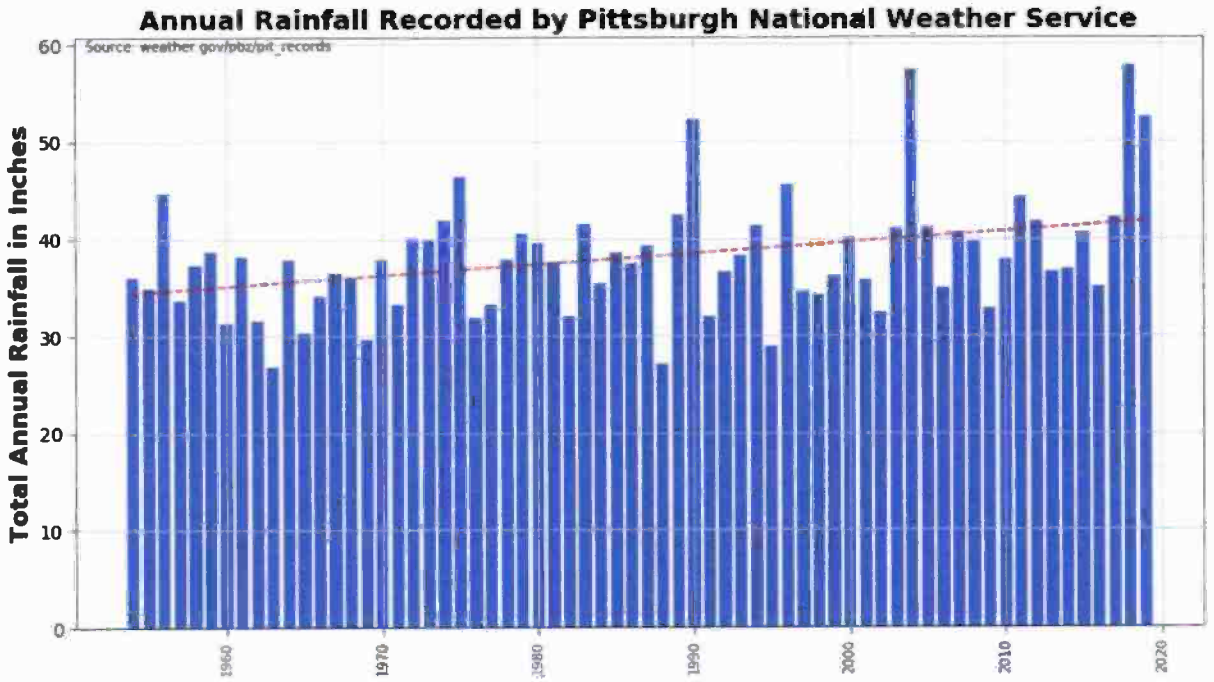
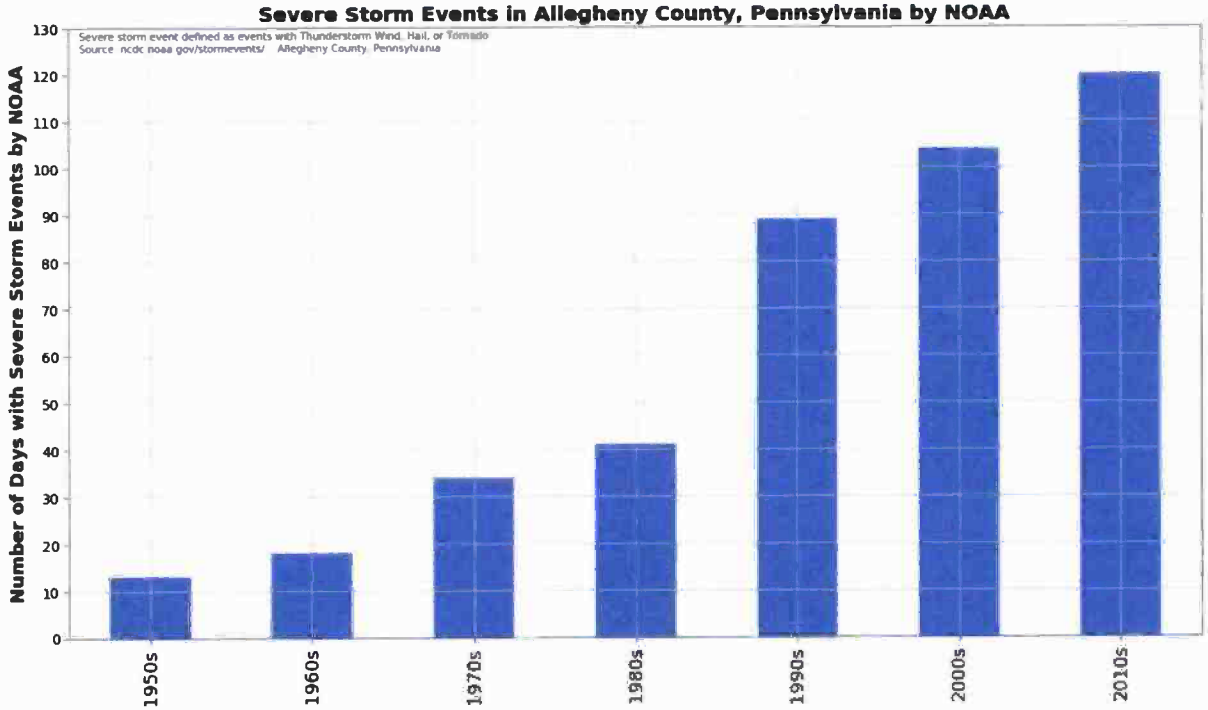


Figure 5:



Q. HOW ARE COMBINED SEWER OVERFLOWS BEING ADDRESSED?

A. In 2004, PA DEP issued a Consent Order to the City of Pittsburgh and other municipalities in Allegheny County.[7] The order directed the parties to reduce the volume of CSOs and basement backups.

In 2013, PWSA prepared a *Wet Weather Feasibility Study*[8] in accordance with the PA DEP Consent Order. Within this document, the use of green infrastructure and integrated watershed management were explained and PWSA indicated its intent to further analyze and evaluate how these methods could be utilized to address CSOs in Pittsburgh and the region. The study also described how green infrastructure can help to address chronic surface flooding and sewage basement backups experienced across Pittsburgh.

In November 2016, PWSA completed the *Green First Plan*,[9] which presented the results of these analyses and evaluations. PWSA's *Green First Plan* identified the use of green infrastructure, stormwater source control, and stream removal as an alternate plan to the current ALCOSAN *Clean Water Plan* (CWP).[10] It also indicated that using these alternate methods could lead to improved efficiencies for ALCOSAN's planned wastewater treatment plant (WWTP) upgrades, and operations of the existing collection system as well as greater reduction of sediment levels in the existing deep tunnel interceptor sewers. PWSA's *Green First Plan* identified it could reduce the region's

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7 Available at: https://www.3riverswetweather.org/sites/default/files/Consent%20Order%20and%20Agreement%20final%202004.pdf.

8 Available at: https://www.pgh2o.com/your-water/stormwater.

9 Available at: https://www.pgh2o.com/your-water/stormwater.

10 Available at: https://www.alcosan.org/our-plan/plan-documents/clean-water-plan.

overflow volume by a comparable amount (6 billion gallons or more) to ALCOSAN's WWTP, along with providing a higher level of protection against surface flooding and sewage basement backups.

PWSA also identified that the costs to provide this same level of protection against surface flooding and sewage basement backups was not included in ALCOSAN's CWP, as ALCOSAN is only charged with addressing CSOs. PWSA has identified that ALCOSAN's CWP does not address surface flooding, sewage basement backups, and PWSA's MS4 permit requirements. These issues need further negotiation by PWSA with the U.S. Environmental Protection Agency (EPA) Region 3.

In addition to the above work, PWSA is also developing an Integrated Watershed Management Plan (IWM plan) for the Saw Mill Run (SMR) watershed by working with the eleven other municipalities in the watershed, the Watersheds of South Pittsburgh organization, the US Army Corps of Engineers, and PA DEP. The implementation of this integrated planning approach is in accordance with the provisions in the Water Infrastructure and Improvement Act (WIIA) (HR 7279), which was signed into law on January 14, 2019.

The SMR watershed is plagued with a range of in-stream water quality pollution problems, sewer overflows, chronic surface flooding, and sewage basement backups. The plan identified that the single largest source of bacteria pollution are dry weather sources, which are most likely from failing sanitary and storm sewer infrastructure and illicit discharges, which are left uncontrolled in any of the current regional wet weather plans. Also, stormwater runoff was found to be the largest source of pollution in the watershed.

In addition, it was found if CSOs were eliminated,without addressing the other pollution sources, there would be no increased days of water quality standard compliance achieved.

PWSA is currently finalizing the draft IWM implementation plan report which has identified a combination of dry weather sources, stormwater runoff, and acid mine drainage control projects recommended to be implemented over the next five to ten years to maximize in-stream water quality improvement and reduce CSOs, surface flooding, and sewage basement backups to meet PWSA's and the other 11 municipalities' regulatory obligations.

B. Municipal Separate Storm Sewer System

Q. WHAT HAPPENS TO STORMWATER IN SEPARATED SANITARY SEWER AREAS?

A. Stormwater in separated sanitary sewer areas is subject to management under local ordinances and/or a National Pollutant Discharge Elimination System ("NPDES") permit for municipal separate storm sewer systems (otherwise known as an MS4 Permit).

There are approximately 200 known stormwater discharge points (or outfalls) that are part of PWSA's MS4 system. These are locations where stormwater exits a property, including pipes, ditches, swales, and other structures that transport stormwater. Each outfall location is given a unique identifier to differentiate them from other mapped outfall locations. Under the MS4 Permit, PWSA is required to monitor all known outfalls (subject to impaired waters monitoring requirements).

Q. WHAT IS AN NPDES ("MS4") PERMIT?

A. Municipalities and other entities (such as universities) that meet certain standards must obtain an NPDES permit for discharges of stormwater from their MS4s.

In Pennsylvania, the MS4 program is managed by PA DEP. The Clean Water Act requires cities serving a population of over 100,000 people to obtain an NPDES permit for their discharges. EPA has delegated oversight of the NPDES program in Pennsylvania to PA DEP. The Pennsylvania Clean Streams Law of 1937 also provides additional authority to PA DEP.

Q. DOES PWSA HAVE AN MS4 PERMIT?

A. Both the City of Pittsburgh and PWSA are currently operating under an MS4 NPDES Permit that was issued in 2004 and administratively extended. PWSA reapplied in September of 2017, and the application is currently under review by PA DEP.

Q. WHAT ARE SOME OF THE STORMWATER SERVICES AND ACTIVITIES THAT PWSA MUST PROVIDE UNDER THE MS4 PERMIT?

A. PWSA's obligations under the MS4 NPDES Permit include reducing the amount of sediment, nutrients, and other pollution from entering rivers, streams, creeks, waterways and water bodies that have significant direct and indirect impacts on water supply and water quality in the area. Some examples of "water quality" services include:

- GIS mapping;
- Public education and outreach; and
- Project design construction and management (e.g. projects in Pollutant Reduction Plans and Total Maximum Daily Load Plans)

Both PWSA and the City must implement Six Minimum Control Measures (MCMs) in order to comply with our MS4 NPDES Permit. These include:

- Public Education and Outreach
- Public Participation
- Illicit Discharge Detection and Elimination
- Pre Constuction Run Off Control
- Post Construction Run off Control
- Good Housekeeping

Q. ARE THERE ANY STORMWATER ORDINANCES WITHIN THE CITY?

A. Yes. Within the City of Pittsburgh, all new development is required to separate their sanitary and stormwater flows on-site in a way that would be compatible with a separated system.[11] However, those that are in a combined sewer area then convey those separated flows into 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). New development (or redevelopment) is required to use structural and non-structural practices to manage stormwater.[12] Such structures and practices are implemented and based on "design" storms (the first one inch of runoff for privately funded projects, and the 95th percentile storm event for publically funded projects).[13] The City of Pittsburgh has also devised a "credit" program by which property unable to perform on-site stormwater management will provide funding for offsite practices to address stormwater flood abatement.

The *Pennsylvania Stormwater Best Management Practices Manual* provides guidance, but otherwise no predetermined set of stormwater structures or practices is required, since the application of management structures or practices varies with each

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11 The City's subdivision and land development ordinance addresses storm water and drainage control. *See* Pittsburgh Code of Ordinances, Zoning Code, Title 13 (Storm water Management) and Pittsburgh Code of Ordinances, Title 4 (public places), Article III (Sewers) at Chapter 433 (Illegal Surface Storm water Connections).

12 *Id.* The City's Department of City Planning ("DCP") reviews storm water 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 storm water management structures provided by private development and to enforce any violations. *Id.*

13 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.

location.[14] BMPs may be designed and implemented based on the design storm method, the simplified method, or criteria as allowed by regulation.[15]

C. Stormwater Management and Mitigation

Q. ON A SYSTEM-WIDE SCALE, WHAT CAN BE DONE TO REDUCE THE AMOUNT OF STORMWATER ENTERING THE WASTEWATER SYSTEM?

A. Broadly, there are a wide variety of steps that a community can take to reduce the amount of stormwater runoff entering the wastewater system. Many of these are aimed at reducing the amount of impervious area and improving the ability of precipitation to be absorbed or held where it falls. Examples can include replacing impervious pavement with pervious materials, stream removal projects, and large scale green infrastructure projects.

Q. PLEASE HIGHLIGHT SOME OF THE AUTHORITY'S RECENT STORMWATER MANAGEMENT AND MITIGATION PROJECTS.

A. As of January 2020, PWSA has constructed (or partnered with) seven green infrastructure projects in the City of Pittsburgh. In addition, twenty-four projects are currently in various stages of planning and design, and five are in construction. Projects are strategically sited to collect stormwater in high priority sheds where projects would have a significant impact on reducing combined sewer overflows, as mandated by the U.S. EPA and PA DEP. These projects featured bioretention (rain gardens and "bump outs" along roadways), underground retention tanks to hold back the peak flows of stormwater during rainfall events, and many were partially funded by ALCOSAN's GROW (Green

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[14] See PWSA PROCEDURE MANUAL FOR DEVELOPERS (2018) at Section 9 (storm water); Pennsylvania Department of Environmental Protection, STORM WATER BMP MANUAL (December 30, 2006), DEP Document No. 363-0300-002, at Forward — which is available at: https://pecpa.org/wp-content/uploads/Stormwater-BMP-Manual.pdf.

[15] See 25 Pa. Code Chapter 102; City Code 1303.03 Volume Controls.

Revitalization of our Waterways) grant program. ALCOSAN's GROW program funds municipal green infrastructure projects in their service area that they determine will provide cost-effective management of stormwater to reduce sewer overflows. The total value of the grants awarded to PWSA to date is over $9 million.

Q. WHAT CAN INDIVIDUAL PROPERTY OWNERS DO TO REDUCE STORMWATER RUNOFF FROM THEIR PROPERTIES OR OTHERWISE IMPROVE WATER QUALITY?

A. Individual homeowners and other property owners also play an important role in reducing stormwater runoff or improve water quality in other ways. Homeowners can do this by reducing impervious areas (hard surfaces like roofs and paved areas) so that rain soaks into the ground; disconnecting downspouts so that the stormwater from their roof can infiltrate into the ground in areas away from structures; maintaining the lawn and landscaped areas to prevent erosion, planting native trees and plants which help infiltrate stormwater and increase evaporation and transpiration; or managing stormwater on-site with rain gardens, rain barrels, and similar practices. Other stormwater-mitigation practices at home include:

- Keeping drains, gutters, and downspouts clean and free of debris.
- Disposing of trash properly.
- Don't hand wash your car. Bring it to a carwash.
- Properly dispose of pet waste.
- Use fertilizer sparingly, and do not fertilize when rain is forecasted within 24 hours.
- Stop oil or chemical leaks immediately.[16]

[16] Refer to the *Southwestern Pennsylvania's Homeowner's Guide to Stormwater*. - http://www.accdpa.org/wp-content/uploads/2015/04/Homeowners-Stormwater-Guide.pdf.

As I will discuss below, PWSA's proposed stormwater tariff includes incentives for property owners to install various stormwater mitigation measures and earn credits to reduce their stormwater fee.

Q. PLEASE DISCUSS STREET SWEEPING PRACTICES IN THE CITY OF PITTSBURGH AND HOW STREET SWEEPING RELATES TO STORMWATER MANAGEMENT.

A. Street sweeping is done by the City of Pittsburgh using their equipment. Street sweeping, as a method of pollution prevention and general good housekeeping, is important because it helps to reduce the amount of pollution, sediment, and litter collected on municipally-owned and maintained facilities (e.g. streets, parking lots, and vehicle maintenance areas) from discharging into local waterways. The City of Pittsburgh will be responsible for street sweeping in accordance with the Cooperation Agreement.[17] The City of Pittsburgh will comply with the current MS4 NPDES permit requirements and submit records monthly to PWSA (such as weight of debris collected, miles swept in the MS4 area, or any other information as required by the current permit cycle). PWSA will include this information in the MS4 annual report and submit it to PA DEP in accordance with the MS4 NPDES permit requirements.

Q. WHO MAINTAINS THE STORMWATER CATCH BASINS IN THE CITY OF PITTSBURGH?

A. Stormwater runoff from roadways flows into storm grates or inlets, then into the sump or well below called a catch basin. PWSA has taken responsibility for maintaining approximately 25,000 stormwater catch basins and inlets.[18] The catch basins and inlets

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17 The Cooperation Agreement between the City of Pittsburgh and PWSA is currently under review by the Commission at Docket No. U-2020-3015258.

18 On State roads, however, the Pennsylvania Department of Transportation (PENNDOT) is responsible for inlet maintenance.

need to remove stormwater runoff from the streets as quickly as possible. In order for them to function properly, they require regular maintenance to remove sediment, litter and other debris as well as contaminants that get picked up along the way.

Catch basins are designed to handle flows from specific rainfall events (i.e., a design storm). It is neither feasible nor cost effective to build catch basins (and combined sewer systems) to handle the largest or heaviest rains. In doing so, they would never be used to their full capacity if designed to manage storms with a frequency of 25, 100, or 200 years.. Even with proper design and installation, catch basins may not be able to handle all heavy drainage, runoff, or high intensity precipitation, but can manage our most common sized storms.

The below-ground (or internal) cleaning of a catch basin requires the use of a vacuum truck to suck up leaves, sediment and debris from the catch basin. After the basin is vacuumed, other work needs to be done inside the basin to ensure that the subsurface connections to the combined sewer lines or separate storm water lines are clear before the job is complete. This other work often includes spraying, flushing and/or "jetting" the catch basin. "Jetting" means that high pressure water runs through the lines to remove any accumulated material such as sediment, leaves, or trash. Right now, PWSA acts as an agent of the City of Pittsburgh to perform maintenance of all publicly owned catch basins.

III. PWSA'S STORMWATER PLAN

Q. PLEASE DESCRIBE PWSA'S APPROACH TO THE STORMWATER ISSUE.

A. PWSA's *Green First Plan*[19] outlines projects which will reduce pollution and minimize flooding caused by stormwater. On a macro level, PWSA has sought to create a comprehensive plan that provides a unified, long-term approach toward regulatory compliance. As a matter of cost effectiveness, PWSA is seeking to address multiple issues; poor water quality, CSOs and SSOs, illict discharges, surface flooding, basement flooding, older sewer systems, and regulatory requirements.

System integration and resiliency are an important part of system design. We are working on a citywide solution that improves all stormwater and sewersheds. The final objective is a set of solutions that maximize a triple bottom line of environmental, economic, and societal benefits. There have been many layers of public participation to this design phase, including a Stormwater Advisory Group composed of a diverse group of twenty stakeholders from the public and private sectors. The Stormwater Advisory Group's Findings are attached as Exhibit BD-2.

Q. WHAT ARE THE SPECIFIC GOALS OF THE PROGRAM?

A. There are several goals of PWSA's stormwater program, including:

1. Demonstrate that stormwater source management and stream removal projects can reduce CSO volume;
2. Develop and implement a stormwater asset management program;
3. Evaluate the system capacity and define a publicly accepted level of stormwater management capacity to mitigate surface and basement sewage flooding;[20]

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19 Available at: https://www.pgh2o.com/your-water/stormwater.

20 Note that sewerage backups into building basements is not permissible under the federal Clean Water Act, and must be abated.

4. Achieve regulatory compliance and implement pollution reduction projects as required by the state and federal agencies;

5. Develop partnerships with government and philanthropic agencies to access eligible funds for flood protection and water quality projects; and

6. Establish an affordable stormwater utility fee structure.

Q. PLEASE DESCRIBE THE GREEN ASPECTS OF PWSA'S APPROACH TO STORMWATER CONTROL.

A. Rain gardens, green roofs, tree plantings, and permeable pavements are examples of some of the practices used to soak up the rain. Often called green infrastructure, these practices rely on soil, plants and natural processes such as infiltration, evaporation, and transpiration to mimic the natural water cycle and manage rain water, rather than sending it directly into a series of pipes to convey it for treatment at ALCOSAN's Woods Run Wastewater Treatment Plant. Green infrastructure is a cost-effective and resilient approach to managing stormwater that can bring many additional social, economic, public health, and environmental benefits to communities.

PWSA's process has focused on analyzing the City of Pittsburgh's top 30 surface watersheds by several criteria; risk, opportunity, activity, and benefits. We then identified the priority projects. Consulting firms with international expertise are contracted by PWSA to identify the most cost-effective locations for green infrastructure that will manage the first 1.5 inches of rainfall using the metric of $250,000 per impervious acre managed.[21]

In 2016 the City of Pittsburgh and PWSA finalized the Citywide Green First Plan,[22] which outlines how Pittsburgh intends to use green infrastructure solutions to

[21] This metric is based upon comparisons to the cost of piped solutions.

[22] Available at https://www.pgh2o.com/your-water/stormwater.

manage stormwater. Implementing the plan will reduce local street flooding and sewer backups caused by large rainstorms, as well as reduce regional CSOs. These innovative practices will also help the City of Pittsburgh and the region comply with the EPA sewer overflow mandates and improve the quality of local waterways.

Q. PLEASE IDENTIFY PWSA'S CURRENT PRIORITY CAPITAL PROJECTS IN THE AREA OF STORMWATER MANAGEMENT.

A. With a plan now in place, work has begun and is ongoing. Much of the current work is designed to confirm the application of various project approaches to abate stormwater overflows or flooding. For example, in early December 2019, PWSA started construction on two new green infrastructure projects to help manage stormwater within Four Mile Run, which consists of building two engineered drainage channels in Schenley Park along Overlook Drive and next to the Bridle Trail. Without these improvements, stormwater is mostly unmanaged, flowing off the steep hillside from Overlook Drive to the Bridle Trail below and further downhill, where it causes the combined sewer system to overflow into, and flood, downstream neighborhoods and properties. The channels will create a path where water can flow. The Four Mile Run Stormwater Project encompasses Schenley Park and several City of Pittsburgh neighborhoods, including Greenfield, Hazelwood, Oakland, Squirrel Hill, and the Run.

As of January 2020, PWSA has constructed (or partnered with) seven green infrastructure projects in the City of Pittsburgh. In addition, twenty-four projects are currently in various stages of planning and design, and five are in construction.

Q. WHAT ARE THE CAPITAL COSTS ASSOCIATED WITH THESE PROJECTS?

A. PWSA has made a significant investment in green infrastructure over the past several years in order to manage stormwater, reduce sewer overflows, and comply with regulatory requirements, as shown in Table 1:

Table 1 - PWSA Green Infrastructure Capital Expenditures from 2017-2019	
Year	Capital Expenditure
2017	$953,033
2018	$3,156,175
2019	$6,691,152

Going forward, PWSA's 2020 – 2024 Capital Improvement Plan includes the capital requirements shown in Table 2:

Table 2 – PWSA 2020-2024 CIP Stormwater Capital Expenditures		
Year	Green Infrastructure + Other Stormwater Projects[23]	Green Infrastructure Only
2020	$26,927,774	$21,794,901
2021	$46,008,174	$29,246,454
2022	$30,591,717	$21,638,118
2023	$14,881,563	$4,427,969
2024	$13,453,392	To Be Determined[24]
Total	**$131,862,619**	**$77,107,442**

[23] Other stormwater projects include catch basin replacements and stormwater asset renewal.

[24] As of March 2020, PWSA's 2024 expenditures are still pending approval.

PWSA's 2020-2024 Capital Improvement Plan Budget allocates a significant amount of green infrastructure monies as shown above. However, these allocated funds are only to meet the minimum requirements for regulatory compliance based on how much PWSA can currently afford within its sewer budget. These budgeted amounts are anticipated to change once the stormwater fee is established, which is anticipated to be implemented in 2022. Beginning in 2023, PWSA is anticipating the phase-in of stormwater fee revenues, which will help fund green infrastructure projects and partially offset the sewer fee revenues. The stormwater fee will allow PWSA to follow the Green First Plan of addressing 1,800 impervious acres over 20 years to reduce combined sewer overflows and mitigate basement backups and localized flooding. The plan estimates the construction of these impervious acres at approximately $250,000 per impervious acre (2016 dollars) not accounting for inflation, which is approximately $450 million. Currently, PWSA's most pressing stormwater funding shortfalls include:

- Construction of solutions to stormwater flooding problem areas;
- Construction of CSO abatement projects to comply with EPA and PA DEP requirements;
- Projects to comply with MS4 requirements; and
- Expanded green infrastructure maintenance.

Q. ARE ALL COSTS RELATED TO PWSA'S STORMWATER OBLIGATIONS KNOWN AT THIS TIME?

A. No, the total costs are currently unknown. PWSA and the City of Pittsburgh are currently developing a stormwater agreement to outline the roles and responsibilities related to managing stormwater within the City. This includes the responsibilities for MS4 permit compliance and the planning, design, construction, operation and maintenance of stormwater-related capital projects intended to reduce localized flooding and CSOs while improving the water quality of streams and waterways. In addition, the proposed plan

must be based upon a level of "stormwater service" to appropriately mitigate flooding within the City of Pittsburgh.

As will be discussed below, PWSA has been working to develop the revenue requirement and rate model associated with the stormwater tariff. Once developed, the stormwater tariff and associated fee will allow PWSA to more accurately charge customers for stormwater service based on the cost to serve their property, and will improve PWSA's ability to adequately fund important stormwater management activities.

IV. PROPOSED STORMWATER TARIFF

Q. DOES PWSA'S CURRENT WASTEWATER TARIFF ADDRESS STORMWATER RUNOFF COSTS?

A. No. As part of this case, PWSA is proposing our first ever stormwater tariff, which is attached as Exhibit BD-3. Historically, the costs of stormwater have been included in the wastewater rates assessed based upon water consumption, and funds have been expended to primarily address CSO abatement. There are several problems with this approach:

1. Basing stormwater rates on consumption does not account for runoff.
2. Lessens responsiveness to manage stormwater runoff and wet weather incidents.
3. Limits ability to address CSO and stormwater overflow water quality impairment.
4. Exposure to regulatory violations.
5. Lost opportunity to realize significant city-wide economic, social, and environmental benefits.

Q. WHAT PROCESS DID YOU GO THROUGH TO DRAFT A STORMWATER TARIFF?

A. PWSA reviewed the PUC Staff's model stormwater tariff, which is attached as Exhibit BD-4, as well as the effective tariffs/ordinances of other municipal entities. We considered the challenges of creating a new tariff, both in terms of customer acceptance

and understanding, as well as our own administration of it. Additionally, we needed to separate out the costs of stormwater from wastewater.

PWSA further considered generally how stormwater costs are incurred and imposed. Finally, we are seeking ways to incentivize the public to reduce the amout of stormwater runoff into the sewer system.

Q. PLEASE DESCRIBE THE OVERALL RATE DESIGN OF THE PROPOSED TARIFF.

A. Our cost-based approach takes the position that customers for stormwater service should pay in relation to the demands they impose on PWSA's facilities and the costs incurred to serve them. The stormwater fee for residential customers will be comprised of three flat rates, or "tiers," that will be based on the parcel's impervious area. For all nonresidential customers, the stormwater fee will be calculated based on the impervious area on the parcel.

As this is a new tariff, we have also taken into consideration the consumers' likely reaction to these new charges. Finally, we propose a system of credits to incentivize customers to reduce stormwater runoff from their properties by reducing impervious area or by improving the capture or absorption of precipitation, which would lessen their monthly stormwater fees. The tariff also addresses the typical billing and collection issues associated with tariffed service.

Q. ARE RATES INCLUDED IN THE PROPOSED TARIFF?

A. Not at this time. Additional work must be completed in refining Equivalent Residential Units (ERUs), residential billing rate tiers, and the billing system. PWSA is working to finalize its primary impervious area calculations for all properties in the City of Pittsburgh and is in the process of designing a preliminary rate model. Our next steps

include: refining the budget,[25] designing allocation factors, deciding rate design, and finalizing costs.

Moreover, there is a very important customer input and education aspect to this process. Customers need to first understand stormwater runoff and the benefits of a separate fee. PWSA ia also seeking to engage public support by devising strategies that can be used by customers to reduce their costs as a system of credits. We also need time to socialize the actual fees with the public, once designed.

Our work schedule anticipates that PWSA will be in a position to propose specific rates during the third quarter of 2020 leading to a tariff decision by the Commission about nine months later. This tariff filing approval would then be followed-up with further customer education, as well as training of our customer service representatives before final tariff implementation.

Q. HOW DID PWSA DEVELOP ITS PROPOSED STORMWATER TARIFF?

A. In order to ensure symmetry among all of PWSA's tariffs, PWSA used its wastewater tariff format as the working outline. By doing this, PWSA is ensuring that all of its Rates, Definitions and other common tariff sections are located in the same place across all three tariffs. PWSA also considered the existing definitions and structure contained in its wastewater tariff to determine whether or not the same language could be utilized in the stormwater tariff. Again, to the extent the terms reasonably carried over from the wastewater tariff to the stormwater tariff, we elected to do so. Where terms need to be altered or were not appropriate for the stormwater tariff, they were not utilized. Having outlined the stormwater tariff consistent with PWSA's existing tariffs, we then looked to

[25] See the Direct Testimony of Harold Smith, PWSA St. No. 7.

the Commission's model tariff which was shared with PWSA on November 7, 2019 to help inform the stormwater specific terms that we would propose to include in our tariff. We also looked to stormwater tariffs and/or ordinances utilized by other entities assessing a stormwater fee to further inform us about what terms and conditions to consider including in our proposed tariff. Some of the other stormwater tariffs or ordinances we reviewed include: Philadelphia Water Department;[26] Northeast Ohio Regional Sewer District;[27] the Metropolitan Sewer District of Greater Cincinnati;[28] Charlotte, North Carolina;[29] Carlisle Borough, Pennsylvania;[30] and Dallas, Texas,[31] among others.

Through our outreach and engagement efforts, our Stormwater Advisory Group developed a series of recommended findings to help guide the develoment of the stormwater fee (see Exhibit BD-2). We continue to meet with various stakeholders and have considered and incorporated their feedback throughout the process. The knowledge and experience of our stormwater group has helped to share the development of the tariff as it evolved and we have bolstered our internal capabilities with the experience of consultants and legal experts that have expertise in establishing stormwater utilities and tariff experience with the PUC.

Q. ARE YOU INTENDING TO EXPLAIN ALL THE DECISIONS MADE REGARDING PWSA'S PROPOSED STORMWATER TARIFF IN THIS TESTIMONY?

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26 See https://www.phila.gov/water/wu/stormwater/Pages/default.aspx.

27 See https://www.neorsd.org/.

28 See http://www.msdgc.org/.

29 See https://charlottenc.gov/StormWater/Pages/default.aspx.

30 See https://www.carlislepa.org/residents/stormwater_management/index.php.

31 See https://dallascityhall.com/departments/trinitywatershedmanagement/wheredoesitgo/Pages/default.aspx.

A. No, many of the choices made by PWSA should be self-explanatory. I do, however, intend to address here some of the more significant decisions that we made so to provide some context about why we chose the language that we did for the proposed tariff. Recognizing that no other Commission-regulated utility has an approved stormwater tariff and that – as a municipal authority – PWSA's stormwater responsibilities differ from those that may exist for other investor-owned public utilities under the Commission's jurisdiction, I believe it is important to provide additional PWSA-specific information to support some of the terms and conditions included in the proposed tariff.

Q. PLEASE DESCRIBE HOW PWSA PROPOSES TO STRUCTURE THE STORMWATER SERVICE CHARGE FOR RESIDENTIAL CUSTOMERS.

A. Residential customers will be charged one of three flat rates (commonly referred to as tiers). The tier will be based on the impervious surface area found on the residential lot and the rates will vary.

Q. WHY IS PWSA PROPOSING A THREE TIERED SERVICE CHARGE AS OPPOSED TO A SINGLE STORMWATER SERVICE CHARGE FOR ALL RESIDENTIAL CUSTOMERS?

A. PWSA has measured the impervious surface area found on each residential lot and found substantial variability in impervious area – from properties with less than 1,000 square feet of impervious area to properties with more than 4,000 square feet of impervious area. This large variability and the availability of the data on impervious area made us feel the tiered approach was more equitable to the individual ratepayer. This approach also is more supportive of a credits program that could grant fee credits to residential ratepayers who undertake measures on their lots to reduce their stormwater demand.

Q. PLEASE DESCRIBE HOW PWSA PROPOSES TO STRUCTURE THE STORMWATER SERVICE CHARGE FOR NON-RESIDENTIAL CUSTOMERS.

A. The impervious area found on a typical residential property in the service area is called the Equivalent Residential Unit of impervious area, or ERU. We intend to bill non-residential customers a fee based on the rate per ERU times the number of ERUs found on the property.

Q. WHY IS PWSA PROPOSING TO CALCULATE THE NON-RESIDENTIAL STORMWATER SERVICE CHARGE IN THIS WAY?

A. ERU-based rate structures that charge for impervious surfaces are by far the most common across the United States and balance fairness with simplicity. Impervious surface relates to runoff volume, peak runoff rate, and pollution. These factors most closely relate to demand in the service area.

Q. THE COMMISSION'S MODEL TARIFF INCLUDED A RATE FOR CONTRIBUTING MUNICIPALITY SERVICE. IS PWSA PROPOSING SUCH A RATE?

A. No. PWSA considered such a rate and does not believe it would serve our ratepayers well.

Q. IS PWSA PROPOSING TO ALLOW CUSTOMERS TO EARN CREDITS TO REDUCE THEIR STORMWATER FEES?

A. Yes. PWSA is proposing a credit program consisting of credits for non-residential customers who capture and detain runoff on-site, meeting or exceeding the current development standards in place in Pittsburgh. For residential customers, we are proposing a similar credit as well as one for downspout disconnection. The non-residential credit will be a percentage whereas we plan for the residential credit to be a "tier reduction" for ratepayers not already in the lowest tier, and a percentage for low tier ratepayers.

Q. WHY IS PWSA PROPOSING THIS TYPE OF CREDIT PROGRAM?

A. PWSA carefully considered many credits approaches and sought to take the simplest approach that met the Stormwater Advisory Group's interests and staff's desire to be fair and keep administrative burdens low. We propose this type of credits approach because almost all BMPs in Pittsburgh currently or expected to be built relatively soon are designed to reduce peak runoff rate through detention. This type of BMP can help stop basement backups and reduce flooding and CSOs, which are core program goals for PWSA. Rather than creating a new program of technical submittals and reviews, we wanted to participate in the processes for BMP design construction and maintenance that already exists through existing regulation. This keeps administrative burdens at a minimum and should encourage more participation.

V. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes; however, I do reserve the right to supplement this testimony as may be appropriate, including based on the Commission's Order regarding PWSA's Compliance Plan, Stage 1 and LTIIP proceeding at Docket Numbers M-2018-2640802 (water), M-2018-2640803 (wastewater), P-2018-3005037 (water), and, P-2018-3005039 (wastewater).

Beth Dutton

1200 Penn Ave., Pittsburgh PA 15222

PROFESSIONAL EXPERIENCE

Senior Group Manager, Stormwater, PITTSBURGH WATER AND SEWER AUTHORITY
Pittsburgh, PA 2019 to present

- Oversee the planning, design, implementation, and maintenance of stormwater management projects that reduce localized flooding and combined sewer overflows, while improving the water quality and health of local waterways. Ensure compliance with Municipal Separate Storm Sewer Systems (MS4) regulatory requirements. Investigate and help resolve stormwater problem areas in the City. Update and expand stormwater management policies and requirements. Implement a stormwater fee. Facilitate strong partnerships with PWSA and the PWSA Stormwater Advisory Group, the City of Pittsburgh, Allegheny County Sanitary Authority (ALCOSAN), local municipalities, and other community stakeholder groups for effective coordination of stormwater management initiatives. Promote Integrated Watershed Planning wherever feasible.

Deputy Director, 3 RIVERS WET WEATHER 2017 to 2019
Pittsburgh, PA

- Provide leadership and oversight for the organization's programs and long-term goals to help municipalities address sewage overflows, stormwater, and flooding issues, particularly through providing technical tools and resources. Promote active, broad, and consensus-based participation by stakeholders by establishing and maintaining sound working relationships and cooperative arrangements with municipalities, community groups, regulatory agencies, ALCOSAN, and PWSA. Liaison between 3RWW and partner organizations engaged in green infrastructure activities to integrate green infrastructure into the regional wet weather planning to the greatest extent that is cost-effective and sustainable.

Program Manager, 3 RIVERS WET WEATHER 2010 to 2017
Pittsburgh, PA

- Coordinated with representatives of local governments and their engineers and solicitors, ALCOSAN, the Pennsylvania Department of Environmental Protection, and the Allegheny County Health Department to facilitate compliance with administrative consent orders which will lead to improved water quality in Allegheny County. This included planning educational workshops and tours on MS4, green infrastructure maintenance, stormwater fees, etc. Managed 3RWW's geospatial data and web-based tools related to sewer infrastructure and green infrastructure. Promoted Integrated Watershed Planning approach in all initiatives. Member of ALCOSAN's Source Reduction Program Team. Coordinated the Source Flow Reduction and Flow Target Subcommittee comprised of municipal and ALCOSAN representatives to develop regional source flow reduction goals through a consensus-based process.

Senior Environmental Scientist, COLLECTIVE EFFORTS, LLC 2003 to 2010
Pittsburgh, PA

- Served as consulting Interim Project Manager at 3 Rivers Wet Weather, Inc. to manage over $5M in Federal and foundation-funded demonstration projects, including municipal sewer infrastructure improvements and green roof projects. Provided budgetary oversight, prepared documentation to comply with Federal funding requirements, and coordinated the closeout process for 18 subgrants with municipal grantees and Federal, State, and local regulatory agencies.
- Participated in many phases of PWSA's and ALCOSAN's regional projects to control the overflow of untreated sewage to the region's rivers and streams. Utilized Geographic Information Systems (GIS) to determine the placement of flow meters and the volumes of sewer flow. Coordinated field efforts for closed circuit televising (CCTV) and Global Positioning System (GPS) data collection of sewer structures. Developed and managed the database of field inspection data. Assisted municipal managers, engineers, elected officials, and ALCOSAN representatives in exchanging data and information, and coordinating project goals and timelines. Coordinated public outreach efforts. Drafted technical reports, including Hydrologic and Hydraulic Model Validation and Characterization Report and the Alternatives Feasibility Study.
- Assisted with wetland delineation field investigations and Phase I environmental site assessments.

Environmental Scientist, MICHAEL BAKER CORPORATION 2000 to 2003
Pittsburgh, PA

- Evaluated laboratory results of environmental samples to determine potential health effects. Prepared human health risk assessment studies for remediation goals at former military bases.

Environmental Scientist, MCLAREN-HART ENVIRONMENTAL ENGINEERING 1998 -2000
Pittsburgh, PA

- Prepared health and safety plans and human health risk assessment reports for hazardous waste sites.
- Inspected and sampled air, soil, and monitoring wells at active and former industrial sites. Compiled laboratory data and compared with Pennsylvania health standards for participation in Pennsylvania's Land Recycling Program.

Hazard Communication Administrator, CHEMADVISOR, INC. 1996 - 1998
Pittsburgh, PA

- Condensed scientific literature and regulatory guidelines into layperson terms for the preparation of over 400 Material Safety Data Sheets (MSDSs).

Assistant to the Provost, UNIVERSITY OF PITTSBURGH 1989 – 1995
Pittsburgh, PA

- Coordinated research administration programs for the Associate Provost for Research,

including the Small Grants Program for faculty. Served as the Provost's representative on University research committees.

- Drafted University policies on Research Integrity and Conflict of Interest, press releases, and communications from the University's Provost and Chancellor to the University community.

Administration Officer, Captain, UNITED STATES AIR FORCE 1985 – 1989

- Served as Chief of Military Postal Operations for the United Kingdom at High Wycombe Air Force Base, England. Executive Officer for Base Commander, and Squadron Section Commander at Clovis Air Force Base, New Mexico.

PROFESSIONAL ORGANIZATIONS

Pennsylvania Water Environment Association (PWEA), 2012 to Present
Stormwater Committee
Vice Chair, Stormwater Committee 2016 to Present

- Coordinate communications and host technical workshops and conferences to share information on state-wide and national standards and guidelines related to stormwater management.
- Organized the first simulcast for a PWEA educational event (Private Property Infiltration and Inflow, October 17, 2017) to allow water professionals in Western Pennsylvania to virtually participate in this day-long workshop in the eastern part of the state. The protocol was shared with PWEA to simulcast future workshops and conferences.

Green Infrastructure Network 2010 to 2019

- Provide coordination for this collaborative of over 300 environmental professionals who recognize the benefits of using green infrastructure to sustainably manage stormwater in Allegheny County. Lead member meetings, plan special events such as tours of installed green infrastructure projects and poster sessions, and editor for bi-monthly newsletter – "GINfo" which provides information on grants, projects, and informational resources for members.

COMMUNITY

Allegheny Land Trust, Board of Directors June 2016 to Present

- Member of the Land Protection and Education Committees, this nonprofit land trust protects more than 2,200 acres of green space in the Pittsburgh region.

STREAM Girls 2019 – to Present

Provide stream ecology instruction for this watershed experience, STEM-education program for girls (science, technology engineering, math) plus recreation and art. This local program is a joint venture between Allegheny Land Trust and Penn'sWoods West Trout Unlimited Chapter.

Guest Lecturer, Duquesne University 2004 to 2018

- Guest Lecturer for Environmental Toxicology course in the Environmental Science and Management Graduate Program at Duquesne University, Pittsburgh, Pennsylvania. Ecotoxicology lectures presented the fate of toxic substances in soil in water and their effects on ecosystems.

North Area Environmental Council, Board of Directors 2002 to 2017

- Developed public outreach/information material for the Pine Creek Watershed Coalition, including press releases, presentations to municipal elected officials, community educational programs, displays, and watershed activities.
- Coordinated with municipal managers in Allegheny County to install stream signage at 23 locations in 10 municipalities in the Pine Creek Watershed. Project was funded through a Pennsylvania Department of Environmental Protection Growing Greener Grant.

AWARDS

Pennsylvania Water Environment Association, Golden Raindrop Award June 2016

- For extraordinary personal service to PWEA to promote stormwater management understanding, operation and maintenance, training and continuing education and general contributions to the advancement of the state of the art of stormwater management.

EDUCATION

National Green Infrastructure Certification Program August 2019

Master of Science
Environmental and Occupational Health
UNIVERSITY OF PITTSBURGH 1996
GRADUATE SCHOOL OF PUBLIC HEALTH
Pittsburgh, PA

Bachelor of Science
Biology
UNIVERSITY OF VERMONT 1985
Burlington, VT

UNITED STATES AIR FORCE 1985
RESERVE OFFICER TRAINING CORPS
St. Michael's College, Colchester, VT

VERIFICATION

I, Beth Dutton, 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).

Date: 3/6/20

Beth Dutton

Beth Dutton
Senior Group Manager, Stormwater
The Pittsburgh Water and Sewer Authority

Exhibit BD-1

PGH2O
Pittsburgh
Water & Sewer
Authority

Drawn by: MRH Date: 1/28/2020

PWSA and City of Pittsburgh
MS4 Storm Sewershed Drainage Areas Overview

Exhibit BD-2

FINDINGS FROM THE **STORMWATER ADVISORY GROUP** *TO PITTSBURGH WATER AND SEWER AUTHORITY*

On Wednesday, May 1, 2019, the Stormwater Advisory Group, convened by the Pittsburgh Water and Sewer Authority (PWSA), recommends consideration of the following in helping to achieve the purpose of creating strong, healthy, flood-prepared neighborhoods throughout Pittsburgh

STORMWATER ADVISORY GROUP

David Miller, Chair

Scott Bernotas

Andrea Boykowycz

Karina Chavez

Stephanie Chiappini

Angelica Ciranni

Jenna Cramer

Jane Downing

Andy Dunmire

Justin Evans

Tom Hoffman

Kevin Jenkins

Darryl Jones

Darrin Kelly

Vincent Kolb

Antoinette Lichty

Marcia Martin

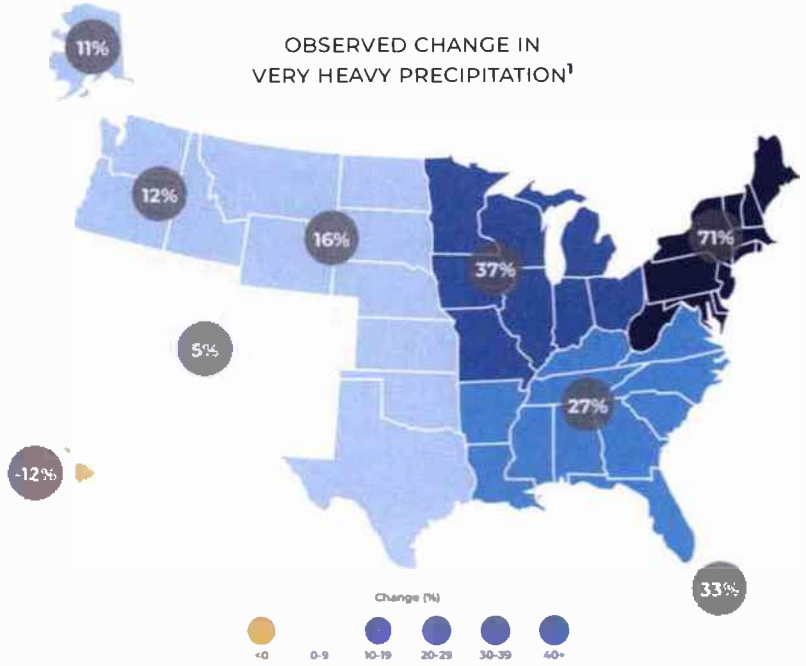
Brenda Smith

Merrill Stabile

Michael Takacs

Catherine Udekwu

Tony Young



FINDING 1: The annual number of heavy rain events occurring in our region has increased dramatically over the last decade. *This is apparent in Pittsburgh.*

The National Climate Assessment found that from 1958 through 2012, **the Northeast saw more than a 70% increase in the amount of precipitation falling in very heavy events** (defined as the heaviest 1% of all daily events).[2]

Our region's wettest year on record was 2018, with 57.83 inches of rain recorded.[3] This is an increase of 37% from 2017 and nearly 20 inches above the annual average of 38.19 inches.

In 2003, the base year used by ALCOSAN to begin planning increased capacity at the regional wastewater treatment plant, 41 06 inches of rain fell, which is 40% less rain than 2018.[4]

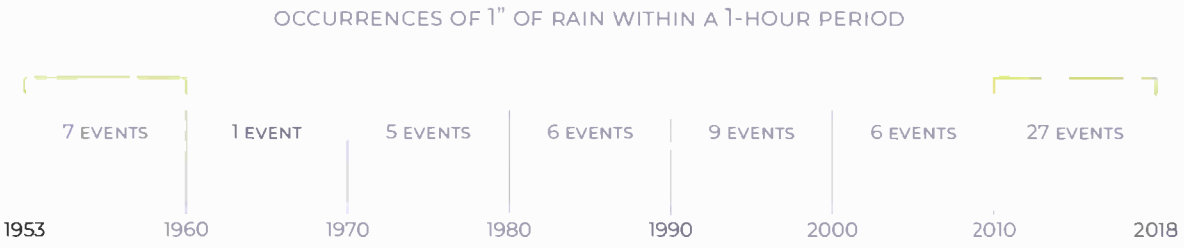
[1] Map: Observed Change in Very Heavy Precipitation 1958-2012
https://nca2014.globalchange.gov/report/our-changing-climate/heavy-downpours-increasing#graphic-16693

[2] Northeast Key Message Planning and Adaptation. https://nca2014.globalchange.gov/highlights/regions/northeast

[3] https://www.weather.gov/images/pbz/features/plots/KPIT2018plot.png

[4] https://www.weather.gov/images/pbz/features/plots/2003plotKPIT.png

From 2010 to 2018, we experienced 27 rain events that resulted in one-inch of rain within a one-hour period. In comparison, fewer than 10 of these rain events occurred for each decade from the 1950s to early 2000s.[5]



Our wastewater and stormwater infrastructure are overwhelmed by these increasing rain events resulting in environmental and physical damage. Excess stormwater runoff has emerged as a serious issue within our region, and it needs to be addressed with appropriate public policies and resources.

There are two primary causes for the increase in stormwater:

1. *As our **climate changes** and the air becomes warmer, it holds more water.* The continual warming of the planet is causing an increase in the frequency and intensity of rain events. This pattern is furthering the burden on our current wastewater and stormwater systems rendering them inadequate to handle increasing amounts of intense and heavy rain.

2. *As **hard surfaces** (pavement, sidewalks, rooftops) have increased across the city, there is less available green space to absorb rainwater forcing it into our sewer system and creating major flooding and run-off problems.* Residents are experiencing increasing amounts of basement backups, raw sewage is discharging into our rivers, and neighborhoods are flooding because this water has nowhere to go.

FINDING 2: Pittsburgh's first public sewer lines were built as early as 1840 in present-day Shadyside and Oakland.[6] These lines discharged stormwater and wastewater into the Monongahela River. By 1908, more than 390 miles of underground sewer lines were in place, establishing the start of our 1200-mile combined sewer system still utilized today. This was the technology available at the time and it was an acceptable practice to discharge sewage into local waterways.

Now with advances in sanitation and public health and greater importance on water quality, the methods used to manage stormwater a century ago are no longer acceptable. **The combined sewer system does not have the capacity to handle increasing amounts of rain and we are required to reduce the amount of sewage overflowing into our rivers and streams.** The entire region is now under a consent order with the Environmental Protection Agency (EPA) to meet stricter state and federal regulations for managing stormwater.

[5] 1953 - 2013 National Oceanic and Atmospheric Administration Historical Hourly Precipitation Data at Pittsburgh International Airport and 2014 - 2018 Pittsburgh Regional Three Rivers Wet Weather Rain Gage Network

[6] A Study in Local Decision Making Pittsburgh and Sewage Treatment by George Peter Gregory https://journals.psu.edu/cyph/article_pdf/File/3252/3083

FINDING 3: The Pittsburgh Water and Sewer Authority's original mission was to provide drinking water to Pittsburgh homes and businesses and then to carry wastewater through sewers to treatment facilities. Addressing the impact of stormwater has been slowly added to the Pittsburgh Water and Sewer Authority's mission as the problem of stormwater itself has grown in scale.

The Pittsburgh Water and Sewer Authority has partially addressed the problem of excess stormwater. One of the charges customers see on their bill is a *sewer conveyance fee*, which finances the services associated with moving wastewater from homes through the sewer system and provides funding for stormwater projects. **At current funding levels this charge is inadequate to address the growing problems of excess stormwater. *Additional funding is necessary.***

FINDING 4: There is a second problem associated with using the sewer conveyance fee to address stormwater The fee is based on a customer's water usage **The volume of water a customer uses is not an equitable way to charge customers for stormwater management.** The amount of stormwater a property generates is a function of hard surface (impervious area) on that property The universal measure used by governments across the United States to charge for costs related to stormwater services is impervious surface area

A recent national survey indicates that 92%[7] of agencies charging a stormwater fee use impervious area as the basis for their fee structure. This survey was conducted in 2018 and includes 75 respondents from 21 states Consistent with national standards, we believe the Pittsburgh Water and Sewer Authority should adopt such a stormwater management fee based on impervious area

FINDING 5: The Pittsburgh Water and Sewer Authority has developed a strategic plan and budget and is currently conducting the analysis for project and program expenditures, which will serve as the basis for the new stormwater fee structure The plan identifies the most appropriate, cost effective, and environmentally equitable approaches to implementing capital projects as well as the ongoing operations and maintenance needed to sustain the stormwater program As an example the plan includes projects identified in the Green First Plan, which have an estimated annual cost of $40 million per year to implement.

We recognize that the funding currently available under the existing sewer conveyance fee is insufficient.

Any additional funding that may be generated from the stormwater fee should be related to the legitimate project needs and not the mere presence of a new fee structure It is our understanding that the rate will be determined by the cost of implementing the strategic plan and what regulatory agencies will approve taking into consideration affordability for the region and the effectiveness of the plan.

We expect the Pittsburgh Water and Sewer Authority to maintain an ongoing and transparent dialogue with stakeholders as details about the fee structure and the funding needs of the stormwater program become available.

[7] https [illegible] sites/default/files/18 20Stormwater%20Utility 20Survey 20Report [illegible]

FINDING 6: Addressing Pittsburgh's current and projected problem of excess stormwater is a community undertaking that requires the active participation of private property owners to reduce the quantity of stormwater or improve its quality as it enters Pittsburgh's sewer system or waterways. To accomplish this goal, local governments frequently use a combination of incentives (grants, credits, and rebates) to encourage residential and non-residential customers to manage stormwater on-site.

The Pittsburgh Water and Sewer Authority should establish an incentives program that strongly encourages participation and private investment. The program should be mindful of the long-term positive implications of private investment and crafted to minimize the administrative burden placed on ratepayers who want to participate. The credits and incentives offered should be commensurate with the reduced stormwater service demand associated with participation. The incentives program should recognize that there are things everyone can do to manage stormwater.

FINDING 7: Education and outreach are essential to Pittsburgh's acceptance of the stormwater management fee and understanding of the stormwater management program.

Additionally, people have a right to know how the fee will be used to address our stormwater challenges. The Pittsburgh Water and Sewer Authority has developed a communication and outreach strategy that will be rolled out to ratepayers, stakeholder groups, and the broad community to build awareness and create a dialogue about the fee as well as the overall stormwater program.

FINDING 8: The Stormwater Advisory Group encourages Pittsburgh's property owners and residents to recognize that it will take time to see the improvements of a holistic stormwater management program.

Pittsburgh's sewer and stormwater systems were built at a different time when our city had more green space, less pavement, and before environmental considerations were given much thought. The problems of too much stormwater entering our system did not happen overnight. ***It will take time to implement needed solutions.***

The Pittsburgh Water and Sewer Authority would like to thank the members of the Stormwater Advisory Group for their participation and express our sincere appreciation for the contribution they provided over a six-month period from November 2018 to May 2019. In this short amount of time, we presented information about the magnitude and cause of Pittsburgh's stormwater problem, shared information about our stormwater management program, and developed a solid set of principles that will help guide the next phase of the process to establish the stormwater fee.

This collaboration was essential for advancing the stormwater program with ratepayers, stakeholder groups, and our regulatory agencies. It provided an opportunity to introduce the need to establish the fee, discuss the challenges we face with managing stormwater and hear concerns from individual stakeholder groups. We appreciate the contribution made by each member of the Stormwater Advisory Group and thank them for participating in this important effort.

Exhibit BD-3

Tariff Storm Water - Pa. P.U.C. No. 1
Original Page No. 1

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

By: Robert A. Weimar, P.E., BCEE, Executive Director
1200 Penn Avenue, Pittsburgh, PA 15222
Tel: 412-255-8800

Issued: TBD

Effective: TBD

LIST OF CHANGES

The Filing of the Initial Tariff.

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PART III:

PART IV:

List of Territories Served

The City of Pittsburgh.

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

Tier 1 (Impervious area of XX square feet to YY square feet inclusively, XX ERUs): $XX.XX

Tier 2 (Impervious area of YY square feet to ZZ square feet, XX ERUs): $XX.XX

Tier 3 (Impervious area greater than ZZ square feet, XX ERUs): $XX.XX

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. Rate:

Rates 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 XX square feet to determine the number of ERUs represented on the property. The service charge applicable to each property shall be calculated as follows:

Service Charge

Service Charge = (Total IA / XX square feet per ERU) * 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.

The minimum fee for any developed property is equal to that charged for Tier 1 residential properties.

Section B - Storm Water Management Service Charge Credits

B.1 - Residential and Non-Residential Credit

1. Applicability:

The credits 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:

This credit is available to 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.

3. Determination of Credit:

For non-residential customers the amount of credit shall be XX%. For residential tier 2 or tier 3 Customers the amount of the credit will be that associated with reducing the property's storm water fee to that of the next lower residential tier rate. For tier 1 Customers the credit amount will be XX%.

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 YY%.

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.

Credit Expiration

Credits based on runoff control shall expire after 3 years. Customers may reapply to the Authority to receive a credit under this schedule.

Credit Transfer

Credits for runoff control approved under this section are not transferrable upon any sale or transfer of the property. A new

credit application will be required for any Customer seeking this credit.

Section C - Returned Check Charge

A charge of $30.45 will be assessed any time where a check which has been presented to the Authority for payment on account has been returned by the payor bank for any reason if the customer has not paid a returned check charge under PWSA's water or wastewater tariff.

Section D - Reserved

Section E - Reserved

Section F - Reserved

Section G - Collection Expenses and Fees described in the Authority's Supplemental Service Conditions

Reserved for Future Use.

Section H - Miscellaneous Charges and Fees

1. The following charges and fees will be adjusted annually for increases in the annual Consumer Price Index for the Pittsburgh area most recently published by the Bureau of Labor Statistics or any successor organization prior to such anniversary. If the change in the Consumer Price Index is 0% or is a decrease, there will be no automatic adjustment.

Item	Charge or Fee*
Certified mailing	$11.28
History retrieval	$15.23
Final bill	$20.30

*Assessed per account.

Dye Test Application Processing Fees

Evidence of Compliance Statement	$25.38
Temporary Evidence of Compliance Statement	$25.38
Visual Inspection	$75.00
Duplicate Evidence of Compliance Statement	$25.38

2. Failure to Cleanup and Remedy Prohibited Discharges Charge:

Failure of the owner of any property and/or Customer to satisfactorily cleanup and remedy any prohibited discharge by act or omission, willfully, recklessly or negligently within twenty-four (24) hours, will result in a penalty of X dollars ($X), plus an additional X dollars ($X) for each day thereafter of non-compliance. The owner and/or Customer shall additionally be responsible for payment of the remedial cleanup costs, as well as any costs to or damages or losses

suffered by the Authority as a result of any interference in operation of the Authority's systems.

The Authority reserves the right to compel the discontinuance of the use of any system in order to prevent the discharge of any wastes to the storm water or combined sewer system which may be deemed harmful to the storm water or combined sewer system, or to have an adverse effect on effluent or discharge requirements by the applicable regulatory agencies.

Rider BDP - Bill Discount Program (Residential)

Reserved for future use.

PART II: Definitions

The following words and phrases, when used in this tariff, shall have the meanings assigned below unless the context clearly indicates otherwise:

1. ALCOSAN: The Allegheny County Sanitary Sewer Authority, Allegheny County, Pennsylvania.

2. Applicant: A person or entity who applies to become a customer of the Authority in accordance with Part III, Section A of this tariff.

3. Authority or PWSA: The Pittsburgh Water and Sewer Authority, a municipal authority organized and existing under the laws of the Commonwealth of Pennsylvania.

4. Authority Collection Main: The Authority has a duty to operate, maintain, inspect, repair, replace or abandon only those Wastewater Collection Mains that are a part of or connected to the public Wastewater collection, transmission and conveyance and that fall into one of the following classifications: (1) Wastewater Collection Mains leased to the Authority by the City under the Capital Lease Agreement effective July 27, 1995, as amended; (2) Wastewater Collection Mains constructed by the City or the Authority for public use since July 27, 1995; and (3) Wastewater Collection Mains dedicated to public use and accepted by the Authority on or after July 27, 1995.

5. Authority Storm Water Sewers or Public Storm Sewers: The Authority has a duty to operate, maintain, inspect, repair, replace or abandon only those Storm Sewers that are a part of or connected to the public Sewer System and that fall into one of the following classifications: (a) Storm Sewers leased to the Authority by the City under the Capital Lease Agreement effective July 27, 1995, as amended; (b) Storm Sewers constructed by the City or the Authority for public use since July 27, 1995; and (c) Storm Sewers dedicated to public use and accepted by the Authority on or after July 27, 1995.

6. Best Management Practices or BMPs: Activities, facilities, designs, measures, practices, procedures, or combination

thereof determined to be the most effective and practicable used to manage storm water runoff, control sediment, stabilize soil, reduce nonpoint source pollution and/or meet state water quality requirements. Refer to Pennsylvania Department of Environmental Protection's suggested guidelines for storm water quality as defined in the current edition of the Pennsylvania Stormwater Best Management Practices Manual.

7. Capital Lease Agreement: The agreement bearing that title between the City and the Authority on July 15, 1995, effective July 27, 1995, and includes any amendments thereto.

8. City: The City of Pittsburgh, Pennsylvania.

9. City Lien Verification Letter: A written letter from the City to a Person regarding any liens, claims, or taxes due the City from that Person.

10. Combination Sewer or Combined Sewer: Sewers designed and built to carry sanitary sewage and/or industrial waste combined with storm water.

11. Commercial or Commercial Property: Any property used, acquired or leased for purposes of carrying on a trade, business, profession, vocation, or any commercial, service, financial, or utility business or activity including, but not limited to, hotels, office buildings, gas service stations, laundries, commercial establishments, stores, malls, car washes, and parking lots.

12. Commission or PUC: The Pennsylvania Public Utility Commission.

13. 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 non-residential property, a Guaranteed Lessee are the Customer.

14. Customer Facilities: The portion of any collection and/or conveyance asset connected to the Authority's facilities from a property which is owned and maintained by one or more Customers or property owners.

15. Design Storm: The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence and duration, used in the design and evaluation of storm water facilities, best management practices, conveyance systems, and controls.

16. Developed Property: A parcel altered from a 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 X square feet.

17. Developer: Any person(s) requesting an extension to provide service to an existing property or group of properties where service is to be provided to a property or structure other than a preexisting residential property or structure. This term also includes any person converting undeveloped property into developed property.

18. Direct Connection: Customer facilities that discharge storm water into Authority facilities through any method other than sheet flow. Direct Connections include, but are not limited to, physical connections between Customer facilities and Authority facilities.

19. Dye Test: A commonly accepted plumbing test whereby a nontoxic, non-staining dye is introduced into the surface Storm Water collection system of real property to determine if any surface Storm Water is entering the Sanitary Sewer system. The term "Dye Test" shall include any other reasonable and appropriate testing methodologies (excluding the use of smoke testing to detect roof leaders) acceptable to the Authority to determine if surface Storm Water is entering the Sanitary Sewer system.

20. Dye Testing Ordinance: City Ordinance No. 3 of 2006, adopted March 28, 2006, effective July 5, 2006, as codified in Title Four, Public Places and Property, Article III Sewers, Chapter 433, Illegal Storm Water Connections, of the Pittsburgh Code, and includes any amendments thereto.

21. Dye Testing Results Form: The form provided by the Authority to any person who has applied for evidence of compliance for a property served by a Sanitary Sewer, completed by a Registered Plumber.

22. Dwelling Unit: An individual housing unit on or in a Residential Property such as a single-family home or a single apartment within a multi-unit apartment building or mixed use building.

23. Equivalent Residential Unit (ERU): Unit of measurement that standardizes the amount of impervious area on a property to the average amount of impervious area created by one residential parcel. The Authority equates 1 ERU to XX square feet of impervious area.

24. Evidence of Compliance Statement: A written letter or statement from the Authority confirming that it has on file a completed Dye Testing Results Form or other statement by a Registered Plumber certifying that there are no Illegal Surface Storm Water Connections to the Sanitary Sewer system on the property that is the subject of the application or statement.

25. Extension: An addition to the Authority's facilities to extend service within the Authority's service territory to accommodate more than one Customer.

26. Facilities or Authority Facilities: All plant and equipment of the Authority, including all tangible and intangible, real and personal property without limitation, and any and all means and instrumentalities in any manner owned, operated, leased, licensed, used, controlled, furnished, or supplied for, by, or in connection with, the business of the Authority. This term does not include Customer Facilities.

27. Facility Owner: The person(s) responsible for operation and maintenance of a facility.

28. Garbage: Discarded solid waste generated by human activity including, among other things, paper, plastics, metals and food matter.

29. Ground Water: Water located beneath the ground surface that emanates from sources other than the Authority's water or wastewater systems.

30. Guaranteed Lessee: A non-residential Tenant to whom a Property Owner has made an assignment of possessory rights by

agreement, which renders the Tenant responsible for the payment of storm water charges.

31. Guarantor: A Property Owner who guarantees payment of storm water by a Guaranteed Lessee.

32. Health Department: The Allegheny County Health Department, Allegheny County, Pennsylvania.

33. Illegal Surface Storm Water Connection: Any connection to the Authority's Sanitary Sewers that allows surface storm water to be discharged into the separate Sanitary Sewer system from sources including, but not limited to, downspout drainage, roof drainage, and areaway drainage.

34. 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.

35. Infiltration: Process by which rainfall and runoff enters the subsurface soil and recharges water sources such as rivers, streams, lakes, and aquifers.

36. Inspection(s): Examination of storm water facilities, best management practices, conveyance systems, or control measures, including but not limited to, during application, installation/construction, and post-construction to ensure compliance with applicable Authority regulations and standards.

37. Interference: A discharge which, alone or in conjunction with a discharge from other sources, does the following:

    a. Inhibits or disrupts the storm water treatment facilities, its treatment processes or operations or its biosolids processes, use or disposal; or

b. Is a cause of a violation of a requirement of the Authority's NPDES permit(s) - including an increase in the magnitude or duration of a violation - or of the prevention of biosolids use or disposal in compliance with the following statutory provisions and regulations or permits issued there under - or more stringent State or local regulations:

i. Section 405 of the Clean Water Act (33 U.S.C.A. § 1345).

ii. The Solid Waste Disposal Act (SWDA) (42 U.S.C.A. § § 6901 - 6987), including Title II, more commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA).

iii. Regulations contained in the State's biosolids management plan prepared under Subtitle D of the SWDA, the Clean Air Act (42 U.S.C.A. § § 7401 - 7642), the Toxic Substances Control Act (15 U.S.C.A. § § 2601 - 2629) and the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C.A. § § 1431 - 1434; 33 U.S.C.A. § § 1401, 1402, 1411 - 1421 and 1441 - 1445).

30. Land Survey: A land survey completed by a Pennsylvania-registered land surveyor that shows a property's gross area, impervious area and types of surface materials, as appropriate, and any other information required by the Authority.

31. Lateral, Customer Lateral or Sewer Lateral: Wastewater or storm water lines that connect a property to the Authority's Collection Mains and carry sewage and/or storm water from one or more buildings or Premises to the Authority's Collection Mains.

32. Main or Sewer Main or Wastewater Collection Main: Collection and transmission pipelines and related equipment and facilities, generally located in streets, public ways, or easements, that are used to collect and convey Sewage and/or Storm Water. Mains may be either Authority Collection Mains or Private Collection Mains.

33. Main extension: (For Line/Main Extension Purposes) An addition to the Authority's Wastewater Collection Main(s) which is necessary to serve the Premises of a new Customer.

34. Meter: Any device for the purpose of recording water consumption or the volume of wastewater discharged into a Wastewater Collection Main. This term includes, but it is not limited to any certified device used by the Authority, or by the Commission or for the purpose of measuring water, sewer or wastewater usage.

35. Municipal Separate Storm Sewer System or MS4: Municipally owned and maintained real property, infrastructure or natural features used and/or constructed for purposes of transporting, conveying, retaining, detaining, or discharging storm water runoff, fully separate of any wastewater collection system, subject to NPDES permitting requirements. See also Title 40 of the Code of Federal Regulations (CFR) 122.26 and CFR 122.30-122.37.

36. Non-residential Property: Any property which is not considered residential property.

37. Non-residential Service: Storm Water service supplied to any property that is not considered residential property.

38. National Pollutant Discharge Elimination System or NPDES Permit: National Pollutant Discharge Elimination System permit or equivalent document or requirement issued by the Environment Protection Agency, or if appropriate, by the Pennsylvania Department of Environmental Protection, to regulate the discharge of pollutants under Section 402 of the Clean Water Act (33 U.S.C.A. § 1342).

39. Nuisance: A public nuisance as known in common law or in equity jurisprudence; whatever is dangerous to human life or detrimental to health or the environment.

40. Occupant: A person to whom an Owner has allowed occupancy of a Property through a lease or other contractual arrangement and who has a reasonable expectation of occupying the property for six months or more.

41. 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 storm water service by the Authority.

42. Person: Individual natural persons, firms, partnerships, joint ventures, societies, associations, clubs, trusts, corporations, governments, political subdivisions, or organizations of any kind, including officers, agents, employees, or representatives of any of the foregoing, in any capacity, acting either for him- or herself or for any other person, under either personal appointment or pursuant to law.

43. Plumbing Code: The Allegheny County Health Department's Rules and Regulations for Plumbing and Building Drainage, Article XV, as amended, together with the International Building Codes for residential and commercial plumbing that Article XV amends or revises.

44. Pollutants: Contaminants typically found in storm water runoff collected from overland flow or by contamination including, but not limited to, sediments, hydrocarbons, trash, nutrients, and metals.

45. Point of Service: The point at which storm water runoff originating from one or more properties enters the Authority's facilities. Such entry may be at an approved direct connection or other Authority storm water collection inlets or retention structures.

46. Private Collection Main: Any Main that is not an Authority Collection Main.

47. Private Storm Water Sewers or Private Storm Sewers: Any Storm Water Sewer that is not an Authority Storm Water Sewer.

48. Premises: Unless otherwise indicated, the Customer's property.

49. Property: Any parcel of land owned in fee simple absolute, including any home(s), condominium(s), homeowner's association or building(s) affixed thereto, which is delineated by the description contained on the recorded deed,

and which may be further delineated by any public roads. Each property is either a developed property or an undeveloped property.

50. 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 property that is provided Storm Water service by the Authority.

51. Registered Plumber: A plumber registered and certified by the Commonwealth of Pennsylvania and the Allegheny County Health Department.

52. Remote Reading Device: The device that is generally affixed to the outside of a Premises or a meter installation and remotely collects and transmits Meter data. It is considered part of the Meter and meter reading equipment.

53. Residential Customer: See definition of *Residential Property*.

54. 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 condominium property. Each residential property is considered to be a residential customer.

55. Residential Service: Storm water service supplied to a residential property.

56. Residential Tenant: A Person who leases a Dwelling Unit in a Residential Property pursuant to a current lease agreement.

57. Regulatory Agency: Agencies, including but not limited to the Pennsylvania Public Utility Commission (PUC), the Pennsylvania Department of Environmental Protection (DEP), U.S. Environmental Protection Agency (EPA), and the river basin commissions, which have authority over the operations and/or discharges into and/or from the Authority's Storm Water system. This term also includes any local, state or federal government agency with jurisdiction over a property.

58. Runoff: Any water flow, resulting from either naturally occurring precipitation, snowmelt or human activity, that

does not immediately infiltrate into the ground and travels along the ground surface potentially picking up pollutants until it has infiltrated, collected or reaches a receiving water body.

59. Sanitary Sewers: Those portions of the Sewer System in the City of Pittsburgh that were designed and built to carry sanitary sewage and/or industrial waste separately from Storm Water discharge, and portions of the Sewer System designated as Sanitary Sewers by the Authority.

60. Service, Storm Water Service, or Storm Water Management Service: Operation, maintenance, monitoring, regulation, or improvement of overland or underground infrastructure that conveys, supports, or provides relief to associated infrastructure that provides conveyance of storm water, whether that infrastructure also conveys wastewater or not.

61. Service Territory: The land area where the Authority has the exclusive right to provide storm water service.

62. Sewage: Wastewater that contains the waste products or other discharges from the bodies of human beings or animals and any noxious or deleterious substances harmful or inimical to public health or to animal or aquatic life, or to the use of waters for domestic water supply or for recreation, or which constitutes pollution under the Pennsylvania Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended.

63. Sewer System: The entire system consisting of the Authority Collection Mains and the Authority Storm Water Sewers.

64. Special Utility Service: Residential or business service which exceeds that required for ordinary residential purposes.

65. Sheet Flow: Runoff which flows over the ground surface as a thin layer, not concentrated in a channel.

66. Storm Water: Drainage or runoff resulting from precipitation or snow or ice melt.

67. Storm Water Collection System or Storm Water Sewers: A separate network of gutters, ditches, swales, pipes and

inlets which receives discharges of storm water and/or conveys surface water, subsurface drainage or storm water from buildings, grounds, parking lots, streets, etc. but excludes sewage. Storm Water Collection System may be Authority Storm Water Sewers or Private Storm Water Sewers.

68. Storm Water Credit: A conditional reduction to the storm water management service charge available to a Customer for implementing certain eligible property conditions or controls that reduce the property's demand for service.

69. Storm Water Management Facility or SWM Facility: Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, infiltrates, evaporates, transpires, cleans, or otherwise affects storm water runoff.

70. Street: Any cart way, road, highway, lane, avenue, court, cul-de-sac, alley public way or public square, including but not limited to streets that are dedicated to public use.

71. Surface Discharge: The discharge of Storm Water runoff from a property to an adjacent surface water body without the use of Authority infrastructure.

72. Storm Water Management Service Charge or SMSC: The service charge imposed by the Authority hereunder, as amended from time to time, against each Customer for the use of the storm water system and other storm water services provided by the Authority.

73. Tariff: All service rates, charges, rules and regulations issued by the Authority, together with any supplements or revisions thereto, officially approved by the Commission and contained in this document.

74. Temporary Evidence of Compliance Statement: An Evidence of Compliance Statement issued under those circumstances and conditions detailed in these Rules and Regulations.

75. Tenant: A Person or entity leasing Premises pursuant to a current lease agreement.

76. Protected-Tenant: A Residential Tenant, not a Customer, whose Dwelling Unit and water/sewer service at the time of rental, and who would be adversely affected by a shut off of service Protected-Tenants are covered by the Discontinuance of Service to Leased Premises Act (DSLPA), 66 Pa.C.S. § 1521, et. seq. Applicability of the Utility Service Tenants Rights Act (USTRA), 68 Pa. S.A. § 399.1 - 399.18, as amended, is subject to further Commission review. An individual is not a Protected-Tenant if he or she is or has agreed under the rental agreement to be a Customer or if he or she took possession of the Dwelling Unit when it was without water/sewer service.

77. Undeveloped Property: Any property that is not considered developed property.

78. Vacancy Affidavit: A notarized statement by the Owner of a property certifying that the property has been vacant and water service has been terminated at the Curb Stop for a period in excess of 90 days.

79. Wastes: Any liquid, gaseous, or solid substances or combination thereof which are discarded, leached, or spilled substances or combination thereof including wastewater but excluding unpolluted, storm and ground waters.

80. Wastewater: Liquid waste discharged into the Sewer System by Dwelling Units or Non-Residential Properties, including wash water, Sewage, and other contaminants.

PART III: RULES AND REGULATIONS

Section A - Storm Water Service

All properties within the Authority's storm water service territory shall be subject to the rules and regulations described herein.

1. Service Application Required: The Authority may require applications for service to be completed in writing on a form(s) provided by the Authority and signed by the Owner or Occupant of the property, as outlined in these Rules and Regulations and as otherwise provided in the Authority's Supplemental Service Conditions.

    a. Service Conditions: The Authority will furnish service only in accordance with its PUC Approved Tariff and Supplemental Service Conditions, which are made a part of every application, contract, agreement, or license entered into between the Owner or Customer and the Authority. All such changes to these Supplemental Service Conditions will be a part of every application, contract, agreement or license for water, sewer, and storm water service in effect at the time such changes are adopted by the Authority.

2. Change in Ownership or Tenancy: Customers shall be responsible for storm water service charges until the Authority obtains evidence of a recorded land transfer, or upon any change in the identity of the Customer. The Authority shall consider the date of the change in ownership as the date of title transfer established by the record deed or otherwise established by sufficient evidence to show title to the property.

    a. Date of eligibility to Assume Ownership: The Owner of a Dwelling Unit becomes a Customer as of the date of property title transfer established by the record deed or otherwise established by sufficient evidence to show the Owner's title to the property.

    b. Unpaid Account Balances: The Authority may require, as a condition of furnishing service to an Owner, the

payment of any outstanding residential account balance(s) that accrued within the prior 4 years for which the applicant is legally responsible and for which the applicant was properly billed.

3. Service Stipulations for Residential Tenants and Non-Owner Occupants

a. Prospective Tenants and other Non-Owner Occupants are encouraged to contact the Authority prior to signing a lease to determine whether there is an existing, delinquent account for a Dwelling Unit or property.

b. The Authority may require, as a condition of furnishing residential service to a Tenant or Non-Owner Occupant:

i. Payment by the Owner or their agent of any delinquent balance for the Dwelling Unit or property for which an Owner was properly billed;

ii. Payment by the applicant of any outstanding residential account that accrued within the prior 4 years for which the applicant is legally responsible and for which the applicant was properly billed.

iii. A tenant will not be required to assume liability for debt previously accrued at the property for which the tenant was not residing and/or for which the tenant was not on the mortgage, deed or lease as a condition to establishing service.

c. Except as otherwise provided applicable to Protected-Tenant rights, a Tenant or Non-Owner Occupant of a Dwelling Unit who wishes to become a Customer of the Authority must submit:

i. Satisfactory evidence, as determined by the Authority, of the Owner's consent to possession of the Dwelling Unit, which may be a current rental agreement, rent book, receipts, cancelled checks, other utility bills in the Tenant's or Occupant's name at that address, or other written

evidence of the Owner's consent to occupancy; and,

ii. At least one personal identification document such as a driver's license, birth certificate, military ID card or passport or other document issued by a public agency or public utility which contains the name and address of the tenant. If the personal identification does not bear the applicant's photograph, a second piece of personal identification may be required at the discretion of the Authority.

d. The Authority may notify the Property Owner if Residential Tenants and Non-Owner Occupants are delinquent in paying amounts due to the Authority.

4. Service Stipulations for Non-Residential Customers

a. The Authority accepts Non-Residential property Owners, their duly authorized agents or Guaranteed Lessees as Authority Customers.

b. The Owner of a property is eligible to become a Customer when the Authority obtains evidence of a recorded land transfer established by the record deed or otherwise established by sufficient evidence to show the Owner's title to the property.

c. A tenant of a non-residential property who wishes to become a Non-Residential Customer of the Authority may apply to become a Guaranteed Lessee. A tenant applying for storm water service must submit:

i. names of the business' principals, official address, and a business license;

ii. satisfactory evidence of the Owner's consent to possession of the property by the tenant; generally, a copy of the lease agreement or other written evidence of the Owner's consent;

iii. written guarantee from the Owner assuring payment of any charges and fees billed to the tenant; and

iv. where violations of the Health Department Plumbing Code exist, certification by a Registered Plumber that necessary corrections have been made and that the Non-Residential Property is compliant with the applicable Plumbing Codes.

d. The Authority may notify the Property Owner if the tenant of a non-residential property is delinquent in paying amounts due to the Authority.

5. Application Forms: Application forms can be obtained at the Authority's local business office, presently located at 1200 Penn Avenue, Pittsburgh PA 15222; or by other means, as determined by the Authority.

6. Properties With Multiple Owners: Where a property has more than one owner, all property owners jointly and severally shall be responsible for payment of Authority charges. The Authority will not issue separate bills, divide applicable charges or take any other action to modify its standard policies and practices for such properties.

Section B - Construction and Maintenance of Facilities

1. Customer Lateral: The Customer Lateral shall be furnished, installed, maintained and/or replaced, when necessary, by and at the sole expense of the Customer. The Authority reserves the right to determine the size, location, type, material, and depth of Customer Laterals.

a. No person shall connect a private sewer, Storm Sewer or Sanitary Sewer to an Authority Sewer System without first obtaining a permit from the Authority.

b. No Person shall do any of the following without the written authorization of the Authority:

i. make an opening of any kind in an Authority Sewer Main; or

ii. make any connection with any Sewer Lateral.

c. The Authority may require the Owner of any structure located within the Authority's service area that has

access to a public Storm Sewer, Sanitary Sewer, or Combination Sewer to connect to the applicable public sewer or sewers by means of Sewer Laterals constructed, at the property Owner's cost, of materials and in a manner acceptable to the Authority and to the Health Department.

i. No structure shall be used or occupied as a Dwelling Unit if the structure or Premises does not have an approved connection with the Authority's Sewer System or alternate sewage facilities approved by the Health Department.

2. Separate Trench: The customer lateral shall not be laid in the same trench with electrical, gas, drain or water pipe, the facilities of any other public utility or of any municipality or municipal authority that provides a public utility service, or within three (3) feet of any open excavation, unless a written exception is granted by the Authority.

3. Customer's Responsibilities: All customer laterals, connections and fixtures furnished by the Customer shall be maintained by the Customer in good working order. All equipment and appliances furnished by the Authority and on property owned or leased by the Customer shall be protected properly by the Customer. All leaks on the customer lateral or any pipe or fixtures in or upon the Customer's premises must be repaired immediately by the Customer.

4. Right to Reject: The Authority may refuse to connect with any piping system or furnish service through a lateral already connected if such system or lateral is not properly installed or maintained. The Authority, at any time, may request a Gravity Sewer Test be performed on the building lateral, at the sole expense of the owner, whenever it has evidence the lateral is leaking excessively, as determined by the Authority. Generally, leakage is considered excessive when the groundwater flow exceeds one hundred (100) gallon per inch of nominal diameter per mile of pipe per day. The Gravity Sewer Test shall be in accordance with Section 312.6 of the International Plumbing Code.©

5. Individual Laterals: Except as otherwise expressly authorized by the Authority and/or as expressly approved by the Health Department, each individual Customer shall be served only through a separate lateral connected directly to the Authority's conveyance main, and that lateral shall not serve any other Customer or premise. No additional attachment may be made to any customer's lateral for any purpose without the express written approval of the Authority.

6. Connection to Authority Conveyance Mains: No connection shall be made to the Authority conveyance main or detachment from it, except under the direction and control of the Authority's authorized representative or it agent. All such connections shall be the property of the Authority and shall be accessible to it and under its control.

   a. All connections to the Authority's Sanitary Sewers, Combined Sewers, and Storm Sewers shall be made in conformity with plans and specifications approved by the Authority and shall be subject to the Authority's inspection.

   b. Requirements for connections to Authority Sanitary Sewer, Combined Sewer, or Storm Sewer Mains for residential Development greater than a single-family residence or involving proposed flows of greater than 799 gallons per day, and for Non-Residential Properties, are contained In the Authority's Procedures Manual for Developers, which is incorporated in these Rules and Regulations and made a part hereof.

7. Privilege to Investigate/Right of Access: The Authority's authorized representatives shall have the right of access at all reasonable times to all parts of any premises connected with the Authority's Collection Mains and/or the Authority's Storm Sewers, including meters, manholes, Laterals and other property owned by it on the premises of the Customer, for the purpose of examining and inspecting connections and fixtures, including but not limited to BMPs pending credit approval, approved BMPs, for disconnecting service for any proper cause, for purposes of replacement, maintenance, operation or repair thereof, or for the purpose of examining and inspecting

any aspect of the premises that contributed runoff to the Authority's facilities.

Section C - Discontinuance of Service

1. Customer Responsibilities: Customers will remain responsible for paying all future charges for storm water service to the Property until such time as there is acceptance of a new Customer for the Property by the Authority.

2. Termination of Free Service Under Certain Contracts and Other Instruments: Notwithstanding any contract provision contained in any deed, grant, contract, franchise, permit, consent or other instrument (other than an instrument expressly set forth in and constituting a part of this tariff) made, executed or delivered between the Authority or any predecessor in interest and a Customer of the Authority or any predecessor in interest:

   a. Every Customer who receives services under this tariff shall pay for such services as provided in the applicable schedule of rates set forth herein and subject to the rules and regulations of the Authority.

   b. No credit, off-set or other allowance shall be allowed by the Authority against any bill for storm water service on account of the making, execution, or delivery of, or pursuant to any provisions of, any such instrument.

Section D - Reserved For Future Use

Section E - Billing and Collection

1. Issuance of Bills: The Authority will bill each Customer within fifteen (15) days of the last day of each billing period.

2. Billing Due Date: The due date for payment of a bill for nonresidential service shall be no less than fifteen (15) days from the date of transmittal. The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the Authority are not open to the general public, the due date shall be extended to the next business day. Failure to receive a bill shall not relieve the Customer from their payment obligation. Pending credit applications shall not relieve the Customer from their payment obligation. The Authority may not impose a late-payment charge unless payment is received more than five (5) days after the stated due date.

3. Late Payment Charge: All amounts not paid when due shall accrue a late payment charge at the rate of 0.83 percent per billing period, not to exceed ten percent (10%) per year when not paid as prescribed in paragraph E.2 of this Section. Such charge shall be calculated every thirty (30) days thereafter only on the overdue portion of the bill excluding previous late charges.

4. Change in Billing Address: Where a Customer fails to notify the Authority of a change in billing address, the Customer shall remain responsible to remit payment by the billing due date.

5. Application of Payment: For utility bills rendered by the Authority that include amounts due for water and/or wastewater service in addition to storm water service, the Customer's partial remittance to the utility shall first be applied to the storm water service charge, then outstanding regulated water charges, and then wastewater charges. Where a Customer remittance to the Authority includes payment for any non-utility services, proceeds will be applied first to pay all outstanding regulated utility charges.

6. Return Check Charges: The Customer will be responsible for the payment of a charge for each time a check or automatic transfer of funds presented to the Authority for payment on that Customer's utility bill is returned by the payor bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date, account garnished, or unauthorized signature. This charge is in addition to any charge which may be assessed against the Customer by the bank with interest. Interest shall be calculated at the applicable rate for late payment charges.

7. Disputed Bills: In the event of a dispute between the Customer and the Authority with respect to any bill, the Authority will promptly make such investigation as may be required by the particular case and report the result to the Customer. The Customer is not obligated to pay the disputed portion of the bill during the pendency of the Authority's investigation. When the Authority has made a report to the Customer sustaining the bill as rendered, the Customer shall have fifteen (15) days from the date of such report in which to pay the bill. If the Authority determines that the bill originally rendered is incorrect, the Authority will issue a corrected bill with a new due date for payment. Any amounts received by the Authority in excess of the amount determined to be due by the Authority's investigation of the dispute shall be refunded to the Customer with interest computed at 1.5% per month.

9. ERU Adjustments: The determination of the number of ERUs applicable to a non-residential customer may be adjusted from time to time as more accurate information is obtained or the condition of the property is altered, consistent with the following:

   a. If an ERU adjustment will increase a Customer's bill, the following shall apply:

      i. For ERU adjustments occurring outside of a base rate case filed with the Commission, the Authority will provide written notice to the Customer at least sixty (60) days in advance of the effective date of the ERU adjustment.

ii. For ERU adjustments occurring concurrent with a base rate case filed with the Commission, the Authority will include information regarding the ERU adjustment in its written notice to the Customer. The Authority may delay the effective date of the ERU adjustment until the conclusion of the base rate case.

b. If an ERU adjustment will decrease a Customer's bill, the following shall apply:

i. The effective date of the ERU adjustment shall be the date the Authority received or collected the ERU data that resulted in the ERU adjustment.

ii. Any amounts received by the Authority in excess of the amount determined to be due by the Authority shall be provided as a credit to the Customer's account. If the excess amount is greater than the Customer's next bill, the Authority shall refund the difference between the excess amount and the Customer's next bill upon request by a Customer.

10. Limitation of Liability for Reliance on ERU Data: The Authority will undertake to use reasonable care and diligence to ensure ERU data is accurate but cannot and does not guarantee the accuracy of ERU data. The Authority's liability to a Customer for any loss or damage from reliance on ERU data shall be limited to an amount no more than amounts received by the utility in excess of the amount determined to be due by the Authority's investigation of the dispute.

Section F - Reserved

Section G - Reserved

Section H - Reserved

Section I - Service Continuity

1. Regularity of Service: The Authority may, at any time, interrupt service in case of accident or for the purpose of making connections, alterations, repairs or changes, or for other reasons. The Authority will, pursuant to Commission regulations at 52 Pa. Code § 67.1 and as circumstances permit, notify customers to be affected by service interruptions. The Authority reserves the right to restrict the use of service whenever the public welfare may require it.

2. Liability for Service Interruptions:

a. Limitation of Damages: The Authority's liability to a Customer for any loss or damage from any excess or deficiency in the storm water service due to any cause other than willful misconduct or negligence by the Authority, its employees or agents shall be limited to an amount no more than the customer charge or minimum bill for the period in question. The Authority will undertake to use reasonable care and diligence in order to prevent and avoid interruptions in storm water service, but cannot and does not guarantee that such will not occur. The Authority shall not be considered in any manner an insurer of property or persons against loss or damage by storm water, or otherwise. The Authority shall not be liable in any action where the loss or damage involves an act of God, force majeure or does not involve a duty of the Authority.

b. Responsibility for Customer Facilities: The Authority shall not be liable for any loss or damage caused by reason of any breaks, leaks, stoppages or other defects in property owner or customer-owned facilities including pipes, joints, fixtures or other installations except

where the expense or damage is a result of the negligence or willful misconduct of the Authority, its employees or agents.

The maintenance, repair and replacement of privately-owned facilities is the responsibility of the property owner or the Customer served by such facilities.

The Authority reserves the right to require the property owner or the Customer served by privately-owned facilities to repair or replace such facilities, or enter into a main extension agreement, at the property owner or Customer's option, if such facilities are in disrepair, can no longer be used for whatever reason or are determined by the Authority or a court of competent jurisdiction to be a nuisance. The property owner or Customer must perform such repair or replacement at the property owner or Customer's own expense. The property owner or Customer must perform such repair or enter into a main extension agreement immediately after receiving notice from the Authority that the privately-owned facilities are a nuisance or within ten days after receiving notice from the Authority that the privately-owned facilities are in disrepair or can no longer be used.

The Authority reserves the right to prevent or limit a Customer's use of Authority facilities after legal notice of such required action is not taken within the time indicated above.

3. Inadequate Facilities

The Authority may decline to provide service to an applicant if it does not possess adequate existing facilities required to render the service desired or if such service is of a character that is likely to have a detrimental effect upon service to other customers.

4. Interference with Authority Facilities

No person shall physically alter Authority facilities without the Authority's consent.

Section J - Waivers

The Authority may, at its sole discretion, waive any of the rules contained herein that operate for the benefit of the Authority; provided, that no such waiver will be valid unless in writing and signed by an authorized representative of the Authority, and provided that no waiver will be allowed where the waiver would constitute a violation of the Public Utility Code, the regulations of the Commission or of any other applicable statute, law or regulation.

Section K - Amendment of Commission Regulations

Whenever Commission regulations in Title 52 of the Pennsylvania Code are duly amended in such a way as would produce a difference between Commission regulations and this tariff, this tariff is deemed to be amended so as to be consistent with the amendments to the regulations, except that if application of the amendment to Title 52 is discretionary, this tariff will remain unchanged.

Section L - Prohibited conduct

1. No Person shall:

   a. Damage, injure or displace, by willful, careless or negligent act, any Sanitary Sewer, Combined Sewer, or Storm Sewer operated and maintained by the Authority, or any portion or component thereof, or anything else pertaining to the Authority's Sewer System.

   b. Throw, discard, discharge, or otherwise place or allow to flow or enter into the water of any fountain, pond, lake, stream, or other body of water in or adjacent to any park or any tributary, stream, Storm Sewer or drain flowing into such waters, any hazardous materials or other substances that the person knows or should know will result in pollution of the water.

   c. Open, remove or in any way disturb or tamper with the lid, grate, or cover of any manhole, Inlet, or catch basin that is a part of the Authority's Sewer System.

2. No Person shall discharge or permit the discharge or infiltration of any of the following substances into any Authority storm drain or sewer:

   a. mineral acids, waste acid, pickling or plating of liquors from the pickling or plating of iron, steel, brass, copper, or chromium, or any other dissolved or solid substances, in such amounts that shall endanger health or safety, interfere with the flow in sewers, attack or corrode sewers, or otherwise interfere with the operation of the Sewer System or ALCOSAN;

   b. cyanides or cyanogen compounds capable of liberating hydrocyanic gas on acidification

   c. gas tar, phenols in concentrations greater than 60 parts per million, residues from petroleum storage, refining or processing, excess fuel or lubricating oil, gasoline, naphtha, benzene, or explosive, flammable liquids, solids, or gases;

   d. ashes, cinders, sand, mud, lime, or acetylene sludges, straw, shavings, metals, glass, rags, feathers, tar, plastics, wood, sawdust, paunch manure, hair, hides, dead animals, spent mash and grain, pulp from food processing, water or wastes containing excess grease, cement or cementitious materials, or any other solid, semi-solid, or viscous substances capable of causing obstruction to the flow in sewers or other Interference with the proper operation of the Authority's or ALCOSAN's facilities;

      i. The combined concentration of oil and grease shall not exceed 200 parts per million.

   e. sludges or other materials from septic tanks or similar facilities or from sewage or industrial waste treatment plants or from water treatment plants, unless the discharge of such sludges and other materials as permitted by existing permits, regulations, code, or orders of the Authority, the City, the Health Department, ALCOSAN, or the Commonwealth;

f. garbage, whether ground or not, except properly shredded garbage In a private Dwelling Unit, hotel, commercial restaurant, or retail food store resulting from the proper use of a garbage grinder or disposer of a type approved by the City, the Health Department, or ALCOSAN and maintained in good operating condition;

g. water or wastes having a pH lower than 5.0 or higher than 10.0 or having any other corrosive property capable of causing damage or hazard to structures, equipment, or individuals;

h. any industrial, commercial, or medical waste or discharge that violates Categorical or General Pretreatment Standards as established by authorized agencies of the federal government or of the Commonwealth of Pennsylvania or which violates specific ALCOSAN discharge standards;

i. any waste that exceeds the naturally occurring background levels for alpha, beta, or gamma radiation or any Wastewater containing any radioactive wastes or Isotopes of half-life or concentration not In compliance with applicable federal or state regulations;

j. any wastes that are defined or listed as hazardous under the laws and regulations of the federal government or the Commonwealth of Pennsylvania; or

k. any noxious or malodorous liquids, gases, or solids that either singly or in combination with other wastes may create a public nuisance or adversely affect public health or safety.

3. Penalties and damages:

a. In the event of any damage to the Authority's Collection Mains or the Authority's Storm Water Sewers caused by a Customer, such damage shall be immediately reported to the Authority and said Customer shall reimburse the Authority for the costs of repairs.

b. The Authority will refer to the City for prosecution as a summary offense any violation of Sections L.1 or L.2

above. Any Person who is found to have violated any of these tariff provisions shall, upon conviction, be punished by a fine of $300.00 for each offense, recoverable with costs, and in default of payment of the fine and costs, shall be subject to imprisonment for a period not exceeding 30 days, in addition to any other remedies at law. Each day that a violation is continued shall constitute a separate offense. If the offender is a partnership or association, the penalty may be imposed upon the partners or members thereof. If the offender is a corporation, the penalty may be imposed upon the officers thereof.

c. Any Person who willfully or negligently discharges or permits the discharge into an Authority sewer of any substance prohibited by Section L.2 shall be responsible for the containment, clean up, abatement, removal, and disposal of any pollutant or obstructing substance or material discharged into the Sewer System. The Authority shall give notice to such Person that a violation has occurred and shall require such Person to immediately contain, clean up, abate, remove, and dispose of the discharge. Such notice shall be sufficient if hand delivered or mailed to the Person at the person's last known address.

d. If a Person notified under Section L.3.c fails to comply with the notice, the Authority may perform the containment, clean up, abatement, removal, and disposal of the discharge. Costs incurred by the Authority In such activities shall be charged to the Person notified.

e. When the Authority determines that a discharge to the Sewer System in violation of this section has caused an imminent threat to human health or the environment, the Authority may contain, clean up, abate, remove, and dispose of any such discharge without prior notice. Costs incurred in such activities shall be charged to the Person who has violated this section L.

In addition, if there is a discharge of an explosive or flammable material or any other material which is highly toxic or creates a toxic gas so that there is imminent

danger to the personnel or property of the Authority or treatment process of ALCOSAN, or to the public or the environment, then the Authority shall take whatever action is necessary to halt service and to protect the life and property.

f. When the Authority charges its costs to a Person under this section, such charges shall be due within 30 days of the date the bill is rendered. If the charges remain unpaid more than 30 days after the date the bill is rendered, a lien In the amount of the bill shall be recorded against the property causing the discharge.

g. The penalties and remedies contained in this section L shall be cumulative, not exclusive. Further, the penalties and remedies contained herein shall be in addition to any other penalties or remedies available under federal, state, or local laws, regulations or ordinances.

4. No Owner or Occupant of any real property fronting a street shall fail to keep the street gutters open and clear of refuse, debris, snow, and ice, so as to prevent an obstruction of the street gutters.

PART IV: Compliance Statements

Section A - Sales of real property and City Lien Verification Letters

A request to the City for a City Lien Verification Letter must be accompanied by:

a. a valid Evidence of Compliance Statement; or

b. a valid Temporary Evidence of Compliance Statement.

Section B - Applications for Evidence of Compliance Statement

1. Any Person selling real property located within the City shall apply to the Authority for an Evidence of Compliance Statement at least 14 days in advance of the date of closing and shall pay the required application fee. The application for an Evidence of Compliance Statement may be found at www.pgh2o.com/dyetest.htm or by calling 412-255-0801.

2. If the Authority determines that the real property is served by a Combined Sewer, the Authority shall issue a certified Evidence of Compliance Statement within 7 business days of the Authority's receipt of the properly completed application therefor.

3. If the Authority determines that the real property is served by a Sanitary Sewer, then within 7 business days of its receipt of the properly completed application for an Evidence Of Compliance Statement, the Authority shall notify the applicant that a Dye Test is required and provide the applicant with a Dye Testing Results Form.

Section C - Sales of vacant, undeveloped property

1. Where the real property proposed for sale is vacant property upon which no buildings or structures exist, the applicant for an Evidence of Compliance Statement shall so indicate and, within 7 business days of receipt of the application, the Authority shall conduct a visual inspection of the property to verify that there are no Illegal Surface Storm Water Connections.

2. If the Authority verifies upon visual inspection that there are no Illegal Surface Storm Water Connections on the property, the Authority shall issue an Evidence of Compliance Statement within 3 business days of the visual inspection.

3. If the Authority determines upon visual inspection that there are possible Illegal Surface Storm Water Connections on the property, then within 3 business days of the visual inspection, the Authority shall notify the applicant by Issuance of a letter that a Dye Test is required as provided under Section E of this Part.

Section D - Reserved

Section E - Dye testing

1. Except for visual inspection requests for vacant properties containing no buildings or structures pursuant to Section C or this Part, and sales that are exempt under the Dye Testing Ordinance, any Person selling real property located within the City shall have a Registered Plumber perform a Dye Test on the property to be sold.

2. Upon completion of the Dye Test, the Registered Plumber shall complete the Dye Testing Results Form confirming that the dye testing has been completed and certifying the results of the Dye Test.

3. If the Registered Plumber certifies that there are no illegal Surface Storm Water Connections on the property to be sold, the Authority shall issue a certified Evidence of Compliance Statement within 7 business days of the Authority's receipt of the properly completed Dye Test Results Form.

4. If the Dye Test reveals the existence of an illegal Surface Storm Water Connection, the Registered Plumber shall certify that there is an Illegal Surface Storm Water Connection on the real property.

5. If one or more illegal Surface Storm Water Connections exist on the real property, the Authority will not issue an Evidence

of Compliance Statement until the connection or connections have been disconnected or removed as required by Part VI, Section E and the disconnection and removal has been certified by a Registered Plumber.

6. The Authority shall issue a certified Evidence of Compliance Statement within 7 business days of the Authority's receipt of:

   a. a properly completed statement by a Registered Plumber describing and certifying the disconnection and removal of the Illegal Surface Storm Water Connection; or

   b. verification that the real property in question is not located in an area served by Sanitary Sewers.

7. A certified Evidence of Compliance Statement shall be valid for 3 years following the date of its Issuance. If any additions are made to the property within the 3 year period, certification that the addition has no Illegal Storm Water Connections shall be provided to the Authority by a Registered Plumber. Provided, however, that if the Evidence of Compliance Statement is issued because the property in question is served by a Combination Sewer, and the public sewers serving the property are divided into separate Sanitary Sewers and Storm Sewers within the 3-year period, then the Evidence of Compliance Statement will automatically expire.

Section F - Application for Temporary Evidence of Compliance Statement due to inclement weather

1. In the event that weather conditions or other factors do not permit a Dye Test to be done in a timely manner, the sellers and the buyers of the real property may submit a signed agreement promising that dye testing will be completed as soon as conditions permit. The agreement must provide that the buyer of the real property will be responsible for the performance of the Dye Test.

2. An Application for a Temporary Evidence of Compliance Statement must be accompanied by the agreement and by a $1,000.00 security deposit in the form of cash, certified check, or cashier's check to guarantee that the Dye Test will

be completed. The security deposit will be returned to the applicant after a Registered Plumber certifies that the Dye Test has been completed.

3. Once conditions permit the performance of the Dye Test, the test shall be performed, the results certified, and the Evidence of Compliance Statement Issued as provided in section E of this Part.

Section G - Application for Temporary Evidence of Compliance Statement with present illegal Surface Storm Water Connection

1. In the event an Illegal Surface Storm Water Connection is discovered during the performance of a Dye Test or otherwise, and the necessary remediation of the condition would require a length of time to perform such that it would create an undue hardship on the applicant to perform prior to the date of closing on the sale of the real property, the applicant may apply to the Authority for a Temporary Evidence of Compliance Statement, which must be accompanied by the following:

   a. a bona fide, executed agreement between the applicant and a Registered Plumber requiring the Registered Plumber to complete the necessary remedial work to correct and/or disconnect and remove the Illegal Surface Storm Water Connection, and granting the Authority the right and power to enforce the contract as a third-party beneficiary;

   b. a security deposit in the form of cash, a certified check, or a cashier's check in the amount of 120 percent of the contract described in Section G.1.a above, which will be held by the Authority in a non-interest bearing account and returned to the applicant upon the Authority's receipt of a properly completed statement by a Registered Plumber describing and certifying the disconnection and removal of the Illegal Surface Storm Water Connection; and

   c. a written acknowledgement and notarized agreement in which the buyer agrees to be responsible for all cost overruns related to the remedial work, together with the

grant to the Authority of a license to enter upon the property to complete the work at the expense and cost of the buyer should the contractor or the applicant default on the agreement.

2. Should the Authority issue a Temporary Evidence of Compliance Statement, It will be effective for no more than 60 days. The expiration date of the Temporary Evidence of Compliance Statement will be clearly noted on the Statement.

3. Remediation of the Illegal Surface Storm Water Connections shall proceed as required by Sections E and F of this Part.

4. If, upon the expiration of the Temporary Evidence of Compliance Statement, the Authority has not received certification from a Registered Plumber that the Illegal Surface Storm Water Connection has been remedied, then the Authority may use the cash security, or a portion of the cash security, to have the required remedial work completed. Any balance remaining in the security deposit will be returned to the buyer. Any additional cost of the remedial work, in excess of the security deposit, will be the sole and exclusive responsibility of the buyer and will constitute a lien against the property.

Section H - Rejection of applications

1. The Authority may reject an application for an Evidence of Compliance Statement or a Temporary Evidence of Compliance Statement whenever the requirements of the Dye Testing Ordinance or of these Rules and Regulations have not been met.

2. In rejecting the application for an Evidence of Compliance Statement or Temporary Evidence of Compliance Statement, the Authority shall specify the nature of the deficiency and what action or actions must be taken to comply with the requirements of the Dye Testing Ordinance and/or these Rules and Regulations.

3. In the event of such a rejection, the applicant may file an appeal as set forth in Section I of this Part.

Section I - Application appeals

1. Any applicant or person aggrieved by a decision of the Authority rejecting an application for an Evidence of Compliance Statement or a Temporary Evidence of Compliance Statement shall have the right to appeal to the Authority Board of Directors, provided that a written application for an appeal is made within 30 days of the date of the Authority's rejection. Appeals shall be made in writing and sent by certified mail to the Authority, to the attention of the Executive Director.

2. Any appeal made under this section shall state with specificity the reason(s) why the applicant is appealing the rejection and shall provide sufficient factual information and documentation, including a statement by a Registered Plumber or professional engineer, to support the appellant's position that the Evidence of Compliance Statement or the Temporary Evidence of Compliance Statement should have been issued by the Authority.

Section J - Fees

1. All applications for an Evidence of Compliance Statement or Temporary Evidence of Compliance Statement or for visual inspection by the Authority shall be accompanied by the appropriate application fee set from time to time by the Authority. No application shall be processed by the Authority if it is not accompanied by the applicable fee.

2. Fees for applications for Evidence or Temporary Evidence of Compliance are set forth in Part I, Section H of this tariff.

PART VI: Storm Water

Section A - Ownership and maintenance of Storm Sewers

1. The Authority has a duty to operate, maintain, inspect, repair, replace or abandon only those Storm Sewers that are a part of or connected to the public Sewer System and that fall into one of the following classifications:

   a. Storm Sewers leased to the Authority by the City under the Capital Lease Agreement effective July 27, 1995, as amended;

   b. Storm Sewers constructed by the City or the Authority for public use and accepted by the Authority since July 27, 1995; and

   c. Storm Sewers dedicated to public use and accepted by the Authority on or after July 27, 1995.

2. Storm sewers that have been created or constructed by parties other than the City or the Authority, that have never been dedicated to or accepted for public use, or that do not connect to any of the Authority's Sewer Mains are not owned by the City or the Authority, and neither the City nor the Authority has any responsibility for their condition, operation, maintenance, inspection, repair, replacement, or abandonment. Responsibility for such private or common storm sewers lies with the Owners of the property or properties served by them.

Section B - Illegal Surface Storm Water Connections

No Person shall construct, install, maintain, repair, operate, use or allow an Illegal Surface Storm Water Connection on real estate that Person owns. This prohibition expressly includes, without limitation, illegal Surface Storm Water Connections made prior to the effective date of the Dye Testing Ordinance and prior to the effective date of these Rules and Regulations.

Section C - Permit requirements of other government entities

Prior to the commencement of any remedial work on the Illegal Surface Storm Water Connection, all necessary and required building permits, street opening permits, sidewalk opening permits, tap-in permits and fees, and other approvals and permits that may be necessary to accomplish the disconnection and redirection of the Storm Water shall be obtained.

Section D - Methods of Illegal Surface Storm Water disconnections

1. Acceptable remediation of an Illegal Storm Water Connection to the Sanitary Sewer shall mean that the Illegal Storm Water Connection Is disconnected from the Sanitary Sewer, the access point to the Sanitary Sewer is capped and sealed, and the private storm Sewer Lateral redirected as directed by the Health Department.

2. In no event is Storm Water to be collected and discharged upon or across public sidewalks or upon public streets, or discharged upon adjacent property owned by another person.

Section E - Completion of illegal Surface Storm Water disconnections

1. After disconnection of the illegal Surface Storm Water Connection to the Sanitary Sewer and the redirection of the Storm Water, the real property shall be Dye Tested again to demonstrate that all Illegal Surface Storm Water Connections have been remedied.

2. The disconnection and the successful repeat Dye Test shall be certified by a Registered Plumber on a Dye Testing Results Form submitted to the Authority.

3. The Authority shall issue an Evidence of Compliance Statement within 7 business days of the submission of the appropriately completed Dye Testing Results Form.

Section F - Illegal connections to public Storm Sewers

1. No Person shall construct, Install, maintain, repair, operate, or use any drain or conveyance, whether on or below the surface, that allows any non-Storm Water discharge, including the discharge of Sewage, process Wastewater, or wash water, to enter the public Storm Sewers operated and maintained by the Authority. This prohibition expressly includes, without limitation, connections made prior to the effective date of the Dye Testing Ordinance and/or prior to the effective date of these Rules and Regulations.

2. Provided they do not significantly contribute to pollution of the waters of the Commonwealth, the following discharges may enter the Storm Sewers:

   a. discharges from firefighting activities;
   b. potable water from sources such as de-chlorinated water lines and fire hydrant flushing;
   c. air conditioning condensate
   d. pavement wash waters, unless contaminated by toxic or hazardous materials or detergents;
   e. flow from watering of lawns, unless contaminated by fertilizers or by toxic or hazardous materials;
   f. dechlorinated swimming pool discharges;
   g. water from car washing on Residential Property, unless contaminated by detergents or toxic or hazardous materials;
   h. water from external washing of Residential or Non-Residential Properties, unless contaminated by detergents or toxic or hazardous materials;
   i. Irrigation drainage, unless contaminated by fertilizers or by toxic or hazardous materials;
   j. water from crawl space pumps, unless contaminated by toxic or hazardous materials;
   k. uncontaminated water from foundations or from footing drains;
   l. uncontaminated springs;
   m. uncontaminated flows from riparian habitats or wetlands;
   n. uncontaminated groundwater; and

o. any activity authorized by a valid Pennsylvania permit for discharge to the waters of the Commonwealth.

3. Should the Authority, the City, or the Commonwealth Department of Environmental Protection determine that any of the discharges otherwise permitted by Section F.2 significantly contribute to the pollution of the waters of the Commonwealth, then the Authority, the City or the Department of Environmental Protection will notify the responsible Person to cease the discharge.

Exhibit BD-4

Stormwater - Pa. P.U.C. No. 1
Original Title Page

(UTILITY NAME AS CERTIFICATED)

RATES, RULES AND REGULATIONS GOVERNING

THE PROVISION OF STORMWATER COLLECTION, CONVEYANCE,

TREATMENT AND/OR DISPOSAL SERVICE TO THE PUBLIC IN:

(Description of Service Territory, including county and

municipal or political subdivision)

By: (Name and Title of Responsible Company Representative)
(Company Business Address)
(Company Telephone Number)
(Company Email Address)

Issued: (Issued Date)

Effective: (Effective Date)

Disclaimer regarding the Commission's Model Stormwater Tariff

Act 65 of 2017 amended the Pennsylvania Public Utility Code to include Chapter 32 which provides for the Commission's jurisdiction over the provision of water, wastewater and stormwater service by Pennsylvania cities of the second class under the Municipal Authorities Act, namely the Pittsburgh Water and Sewer Authority. 66 Pa. C.S. Chapter 32. The model stormwater tariff drafted by the Commission's Bureau of Technical Utility Services and made available on the Commission's website is an informal staff opinion issued pursuant to 52 Pa. Code § 1.96 whereby Commission personnel may provide unofficial, informal opinions and reports that are not binding upon the Commonwealth or the Commission. The Bureau of Technical Utility Services makes the model stormwater tariff available as an aid to the public. The model tariff does not have the force and effect of law and is not a legal determination; it is not binding upon the Commonwealth or the Commission. The model stormwater tariff renders no opinions on any formal or informal matters pending before the Commission either presently or in the future. The model stormwater tariff is intended and provided only to facilitate a framework of potential concepts and information that a stormwater utility may choose to consider in developing a stormwater tariff for submission to and consideration by the Commission.

LIST OF CHANGES

Establish initial tariff.

TABLE OF CONTENTS

PART I: SCHEDULE OF RATES AND CHARGES

SECTION A: STORMWATER MANAGEMENT SERVICE CHARGE

1. RESIDENTIAL SERVICE

APPLICABILITY

The rates under this schedule apply throughout the utility's service territory for service rendered on and after the effective date shown at the bottom of this page.

AVAILABILITY

The rates under this schedule are available to residential customers.

RATE

Each customer receiving service under this schedule will be assessed a monthly service charge at the following rate:

Service Charge
$XX.XX

2. NON-RESIDENTIAL SERVICE

APPLICABILITY

The rates under this schedule apply throughout the utility's service territory for service rendered on and after the effective date shown at the bottom of this page.

AVAILABILITY

The rates under this schedule are available to non-residential customers.

RATE

[*Note:* Equitable rates may be established through various methods; for the purposes of this model tariff, two example rate structure methodologies are depicted. The utility should select a methodology that best suits its situation and is fair and equitable to its customer base.]

a. Methodology I – Equivalent Residential Unit (ERU) Basis:

Each customer receiving service under this schedule will be assessed the following monthly service charge(s). The number of ERUs applicable to each property shall be calculated to the thousandth place and rounded down to the nearest hundredth place:

Service Charge

Service Charge = (PGA/MRGA) * ERUR

Where:

PGA	=	The customer's property gross area (sq. ft.) as observed or calculated by the utility rounded down to the nearest hundred square feet.
MRGA	=	The mean residential gross area (sq. ft.) calculated in determining the residential service charge.
ERUR	=	The residential service charge, which is the equivalent rate for one (1) ERU.

The minimum service charge assigned to a customer receiving service under this schedule shall be $XX.XX.

b. Methodology II – Parcel Area-Basis:

Each customer receiving service under this schedule will be assessed the following monthly service charge(s) according to the property's observed GA and IA, rounded down to the nearest hundred square feet:

Service Charge

GA Rate $X.XXXX per sq. ft.

IA Rate $X.XXXX per sq. ft.

Service Charge = (GAR * PGA) + (IAR * PIA)

Where:

GAR	=	GA Rate
PGA	=	The customer's property gross area (sq. ft.) as observed or calculated by the utility rounded down to the nearest hundred square feet.
IAR	=	IA Rate
PIA	=	The customer's property impervious area (sq. ft.) as observed or calculated by the utility rounded down to the nearest hundred square feet.

The minimum service charge assigned to a customer receiving service under this schedule shall be $XX.XX.

3. CONTRIBUTING MUNICIPALITY SERVICE

APPLICABILITY

The rates under this schedule apply for service rendered on and after the effective date shown at the bottom of this page.

AVAILABILITY

The rates under this schedule are available to all adjacent municipalities contributing stormwater to utility-owned facilities within the utility's service territory either directly or indirectly.

RATE

[*Note:* The method below depicts an option a utility may exercise to recover the cost of service provided by the utility at points or areas within its service territory to customers located outside of its service territory.]

Each customer receiving service under this schedule will be assessed a monthly service charge at the following rate(s):

Service Charge

Municipality 1: $XXX,XXX

Municipality 2: $XXX,XXX

TERMS

Rates charged to the contributing municipality shall be calculated based upon a hydrologic and hydraulic study, or by other recognized engineering methods, to quantify the extent to which properties, adjacent to the utility's service territory, are contributing stormwater runoff to utility owned facility(s) acting as the point(s) of service. The GA and IA characteristics shall be determined for each contributing property. Total GA and IA square footages shall be calculated based on the total area of the contributing properties. Multiplying the GA and IA square foot totals with the GA and IA rate per square foot will yield the contributing municipality's stormwater service charge.

The utility, alternatively, may determine the rate charged to the municipality by multiplying the number of contributing parcels by the regularly filed and published rates of this tariff, applicable to residential and non-residential customers within the utility's approved service territory.

Agreement

Municipalities shall be provided with the option to enter into a mutually acceptable agreement in lieu of being subject to the utility's tariff, provided that such an agreement may not materially restrict the utility's ability to secure a fair return on its investment or unduly burden the utility's existing customers. If a mutually acceptable agreement cannot be achieved, the utility may propose rates under this schedule for such municipalities as part of a base rate proceeding before the Commission.

SECTION B: STORMWATER MANAGEMENT SERVICE CHARGE CREDITS

1. BEST MANAGEMENT PRACTICE CREDIT

APPLICABILITY

The credits under this schedule apply throughout the utility's service territory for service rendered on and after the effective date shown at the bottom of this page.

AVAILABILITY

This credit is available to non-residential customers that: (i) have one or more utility approved Best Management Practices (BMPs) located on the customer owned property; (ii) are located on a property with an IA greater than X square feet; and (iii) are 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.

DETERMINATION OF CREDIT

The amount of credit shall be based upon the benefit the utility receives from the approved BMP(s). The utility, at its sole discretion, will determine the amount of the credit to be provided to a customer and will provide the applicant a breakdown of the credit calculation. The maximum amount of credit shall be X% of the otherwise applicable monthly tariff charges. Customers whose properties contain BMPs funded, in whole or in part, by the utility may be provided a reduced credit under this schedule based upon the value of the utility's investment.

TERMS

Application and Application Fee

Customers must submit a completed BMP credit application. The current application will be available on the utility's website. Customers applying for this credit will be subject to a non-refundable application fee of $X.

Maintenance Agreement Required

As part of the BMP credit application process, and prior to the utility's approval of any BMP credit application, the customer will be required to sign a Maintenance Agreement, which will specify, among other things, the customer's responsibilities for maintenance of the approved BMP(s). The Maintenance Agreement is subject to revision by the utility from time to time, which will be communicated to the customer via the applicable notice provisions stated in the Maintenance Agreement, and the customer's agreement to any such revisions will be required to remain eligible for the credit.

Credit Expiration

This credit shall expire after X years. Customers may reapply to the utility to receive a credit under this schedule.

Credit Transfer

The credits approved under this section are not transferrable upon the sale of the property by the customer. A new credit application will be required for any customer seeking a credit under this schedule. The utility may require an inspection of any Stormwater Management (SWM) facilities or BMPs prior to granting a credit under the terms then in effect including, but not limited to, requiring the customer to enter into a new Maintenance Agreement with the utility.

Self-Certification and Compliance

Customers that fail to provide the utility with a completed self-certification form annually may become ineligible for this credit. Customers receiving this credit must notify the utility if the 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 or SWM facility such that, in the utility's sole determination, it ceases to function or provide the stormwater runoff reduction in compliance with the performance standard, the utility may terminate the customer's credit within X days of notifying the customer.

Site Inspection

In accordance with Part III, Section G, Rule 12 of this Tariff, the utility 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.

2. ALTERNATIVE DISCHARGE METHOD CREDIT

APPLICABILITY

The credit under this schedule apply throughout the utility's service territory for service rendered on and after the effective date shown at the bottom of this page.

AVAILABILITY

This credit is available to non-residential customers that: (i) use a utility-approved alterative discharge method that prevents at least X% of stormwater originating from the property from entering the utility's facilities; (ii) do not rely on utility facilities to manage stormwater in any manner; and (iii) are 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.

METHODS

The following alternative discharge methods may be approved by the utility: (a) receiving water method; (b) National Pollutant Discharge Elimination System (NPDES) method.

a. Receiving Water Method

This method is available for properties that discharge stormwater directly into receiving waters through non-point source methods. Customers may apply to the utility to become eligible for this credit. Customers applying to become eligible for this credit shall provide the utility with a hydrological study and any engineering calculations required by the utility to demonstrate to the utility that the customer is eligible for this credit. Properties approved under this credit method shall be eligible for a credit of X% of the otherwise applicable monthly tariff charge(s).

b. NPDES Method

This method is available for properties that discharge stormwater into receiving waters as permitted under an approved NPDES Permit. Customers must apply to the utility to receive this credit and provide the utility with a copy of their effective NPDES permit. Customers must provide the utility with copies of renewal NPDES permits prior to the expiration date of NPDES permits previously provided to the utility to remain eligible for this credit. Additionally, customers must inform utility within X days of receipt of any violations of their NPDES permit or any such correspondence from a local, county, state or federal agency dealing with the detrimental quantity or quality of water being

discharged from the property. Properties using this method shall be eligible for a credit of X% of the otherwise applicable monthly tariff charge(s).

TERMS

Application and Application Fee

Customers must submit a completed alternative discharge method credit application. The current application will be available on the utility's website. Customers applying for this credit will be subject to a non-refundable application fee of $X.

Credit Expiration

This credit shall expire after X years or upon the expiration of a property's NPDES permit as applicable to the alternative discharge method. Customers may reapply to the utility to receive a credit under this schedule.

Credit Transfer

The credits approved under the NPDES method are not transferrable upon the sale of the property or transfer of the NPDES permit by the customer. A new application will be required upon the sale of the property or the transfer or expiration of the NPDES permit. The utility may require an inspection of the transferred NPDES permit prior to granting a credit under the terms then in effect.

Site Inspection

In accordance with Part III, Section G, Rule 12 of this Tariff, the utility has the right to inspect the parcel to verify the information provided in the application and to verify ongoing compliance with the Tariff.

Site Characteristics

The Customer is required to provide X days prior notice to the utility before the commencement of any modification to the property affecting greater than X% of the gross area which changes the site characteristics by increasing the impervious area, altering surface elevations, or otherwise changing the property hydrology. If a customer fails to notify the utility of property modifications, the utility may terminate the customer's credit within X days of notifying the customer.

SECTION C: MISCELLANEOUS CHARGES AND FEES

1. **RETURNED CHECK CHARGE:**

A charge of _____ dollars ($___.00) will be assessed any time where a check which has been presented to the utility for payment on account has been returned by the payer's bank for any reason. Terms and conditions regarding this charge are found in Section X, Rule and Regulation X.

2. **LATE PAYMENT CHARGE:**

A late payment charge will be assessed to any customer who fails to pay all of the amount invoiced by the utility in a timely manner as prescribed in Part III, Section D, Rule 3. A late payment charge of _____percent (___%) per month on any overdue amount will be assessed in the utility's subsequent invoice.

3. **FAILURE TO CLEANUP AND REMEDY PROHIBITED DISCHARGES CHARGE:**

Failure of the owner of any property and/or customer to satisfactorily cleanup and remedy any prohibited discharge by act or omission, willfully, recklessly or negligently as characterized in Part III, Section E, within twenty-four (24) hours, will result in a penalty of X dollars ($X), plus an additional X dollars ($X) for each day thereafter of non-compliance. The owner and/or customer shall additionally be responsible for payment of the remedial cleanup costs, as well as any costs to or damages or losses suffered by the utility as a result of any interference in operation of the utility's systems.

The utility reserves the right to compel the discontinuance of the use of any system in order to prevent the discharge of any wastes to the stormwater or combined sewer system which may be deemed harmful to the stormwater or combined sewer system, or to have an adverse effect on effluent or discharge requirements by the applicable regulatory agencies.

4. **CONNECTION PERMIT APPLICATION AND CUSTOMER FACILITIES INSPECTION CHARGE**

A charge of X dollars ($X.XX) will be assessed to the owner of an improved property to cover the costs incidental to the processing of a connection application and the inspection of the customer's facilities following installation. This charge shall be payable when the connection application is filed.

PART II: DEFINITIONS

The following words and phrases, when used in this tariff shall have the meanings assigned below unless the context specifically and clearly indicates otherwise:

1. Applicant: Any person, at least 18 years of age, who has an interest in property located within the utility's service territory, including property owners, persons who have entered into an agreement, or other persons having a similar interest.

2. Association Property: A type of non-residential property, portions of which are designated for separate ownership and the remainder of which is designated for common ownership by the owners of these portions. Individual owners of fee simple property within the association property, regardless of the method of apportionment of the stormwater management service charge, shall be treated as residential customers.

3. Best Management Practices or BMPs: Activities, facilities, designs, measures or procedures used to manage stormwater runoff, control sediment, stabilize soil, reduce nonpoint source pollution and/or meet state water quality requirements. Refer to 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.

4. Combined Sewer System: A wastewater collection and/or conveyance system which collects and/or conveys both sanitary and stormwater flows.

5. Commission: The Pennsylvania Public Utility Commission.

6. Utility: ***(insert the Utility's Name)***, acting through its properly authorized agents or employees, each acting with the scope of the duties entrusted to them.

7. Utility Collection Mains: A network of pipes located in public highways, streets, alleys or any other public or private rights-of-way for the purpose of gathering stormwater from those public highways, streets, alleys or other public or private rights-of-way and conveying stormwater to a surface water body and/or a treatment or retention facility.

8. Customer: An owner of any property who by operation of law or agreement is responsible for payment of stormwater service charges. Customers are classified as either residential, non-residential or contributing municipality. Contributing municipalities may be customers by operation of law or agreement.

9. Customer Facilities: The portion of any collection and/or conveyance asset connected to the utility's facilities from a property which is owned and maintained by one or more customers or property owners.

10. Design Storm: The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence and duration, used in the design and evaluation of stormwater facilities, green infrastructure and gray infrastructure.

11. Developed Property: A parcel altered from a natural state that contains an impervious area equal to or greater than X square feet.

12. Developer: Any person(s) requesting an extension to provide service to an existing property or group of properties where service is to be provided to a property or structure other than a preexisting residential property or structure. This term also includes any person converting undeveloped property into developed property.

13. Direct Connection: Customer facilities that discharge stormwater into utility facilities through any method other than sheet flow. Direct Connections include, but are not limited to, physical connections between customer facilities and utility facilities.

14. Equivalent Residential Unit or ERU: A unit of measurement that equates and standardizes non-residential properties to the estimated equivalent amount of stormwater discharged by a typical residential property. One (1) ERU shall be equal to X square feet of impervious area and to X square feet of gross area.

15. [Billing Unit] Adjustment: A change in the number of [billing units] assigned to a non-residential customer due to a difference between existing and updated [billing unit] Data.

16. [Billing Unit] Data: Records accepted and used by the utility to determine the number of [billing units] assigned to a non-residential customer. Such records may include, but are not limited to, aerial imagery accepted by the utility, visual inspections performed by the utility, as-built drawings and land surveys.

17. Extension: An addition to the utility's facilities to extend service within the utility's service territory to accommodate more than one customer.

18. Facilities or Utility Facilities: All plant and equipment of the utility, including all tangible and intangible, real and personal property without limitation, and any and all means and instrumentalities in any manner owned, operated, leased,

licensed, used, controlled, furnished, or supplied for, by, or in connection with, the business of the utility. This term does not include Customer Facilities.

19. Facility Owner: The person(s) responsible for operation and maintenance of a facility.

20. Garbage: Discarded solid waste generated by human activity including, among other things, paper, plastics, metals and food matter.

21. Gray Infrastructure: Structures or equipment engineered to collect, convey, capture, and/or store stormwater such as pipes, tanks, tunnels, manholes, basins.

22. Green Infrastructure: Structures or technology designed to capture, store, delay, or reduce the quantity and/or improve the quality of stormwater runoff reaching the utility's stormwater system.

23. Gross Area or GA: The area within the legally described boundaries of a property excluding streets, medians and sidewalks in the public right-of-way and railroad tracks and station platforms in the railroad right-of-way.

24. Impervious Area or IA: A surface 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, most conventionally hardscaped surfaces such as streets, driveways, roofs, sidewalks, parking lots, walkways, patio areas, attached and detached structures, and other similar surfaces.

25. Infiltration: Any groundwater entering the system through cracks and defective joints in pipes.

26. Inflow: Any water discharged into the system through illicit connections such as foundation and roof drains, floor drains, sump pumps, outdoor paved areas, cooling water from air conditioners, and unpolluted waters.

27. Inspection(s): Examination of stormwater facilities or control measures, including but not limited to, reviewing all application materials, construction as-builts, maintenance records, and surrounding property attributes to ensure proper function.

28. Interference: A discharge which, alone or in conjunction with a discharge from other sources, does the following:

    a. Inhibits or disrupts the stormwater treatment facilities, its treatment processes or operations or its biosolids processes, use or disposal; or

b. Is a cause of a violation of a requirement of the utility's NPDES permit(s) – including an increase in the magnitude or duration of a violation – or of the prevention of biosolids use or disposal in compliance with the following statutory provisions and regulations or permits issued there under – or more stringent State or local regulations:

   i. Section 405 of the Clean Water Act (33 U.S.C.A. § 1345).

   ii. The Solid Waste Disposal Act (SWDA) (42 U.S.C.A. § § 6901 – 6987), including Title II, more commonly referred to as the Resource Conservation and Recovery Act of 1976 (RCRA).

   iii. Regulations contained in the State's biosolids management plan prepared under Subtitle D of the SWDA, the Clean Air Act (42 U.S.C.A. § § 7401 – 7642), the Toxic Substances Control Act (15 U.S.C.A. § § 2601 – 2629) and the Marine Protection, Research, and Sanctuaries Act of 1972 (16 U.S.C.A. § § 1431 – 1434; 33 U.S.C.A. § § 1401, 1402, 1411 – 1421 and 1441 – 1445).

30. Land Survey: A land survey completed by a Pennsylvania-registered land surveyor that shows a property's gross area, impervious area and types of surface materials, as appropriate, and any other information required by the utility.

31. Municipal Separate Storm Sewer System or MS4: Municipally owned and maintained real property, infrastructure or natural features used and/or constructed for purposes of transporting, conveying, retaining, detaining, or discharging stormwater runoff, fully separate of any wastewater collection system, subject to NPDES permitting requirements. See also Title 40 of the Code of Federal Regulations (CFR) 122.26 and CFR 122.30-122.37.

32. Non-Residential Property: Any property which is not considered residential property.

33. Non-Residential Service: Stormwater service supplied to any property that is not considered residential property.

34. National Pollutant Discharge Elimination System or NPDES Permit: National Pollutant Discharge Elimination System permit or equivalent document or requirement issued by the Environment Protection Agency, or if appropriate, by the Pennsylvania Department of Environmental Protection, to regulate the discharge of pollutants under Section 402 of the Clean Water Act (33 U.S.C.A. § 1342).

35. Nuisance: A public nuisance as known in common law or in equity jurisprudence; whatever is dangerous to human life or detrimental to health or the environment.

36. Owner: Any person(s) vested with title, legal or equitable, sole or partial, of any property.

37. Person: Any individual, at least 18 years of age, partnership, utility, association, society, trust, corporation or other group or entity, including municipalities, municipal authorities, school districts and other units of government, and lessee, assignee, receiver, executor, administrator and other successors in interest.

38. Pollutants: Dredged spoil, solid waste, incinerator residue, filter backwash, wastewater, garbage, stormwater treatment biosolids, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural, commercial and industrial wastes, and certain characteristics of wastewater.

39. Point of Service: The point at which stormwater runoff originating from one or more properties enters utility facilities. Such entry may be at an approved direct connection or other utility stormwater collection inlets or retention structures.

40. Premises: Unless otherwise indicated, the customer's property.

41. Property: Any parcel of land owned in fee simple absolute, including any home(s), condominium(s), homeowner's association or building(s) affixed thereto, which is delineated by the description contained on the recorded deed, and which may be further delineated by any public roads, that contributes stormwater runoff to the utility's facilities. Each property is either a developed property or an undeveloped property.

42. 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 property that is provided stormwater service by the utility.

43. 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 condominium property. Each residential property is considered to be a residential customer.

44. Residential Service: Stormwater service supplied to a residential property.

45. Regulatory Agency: Agencies, including but not limited to the Pennsylvania Public Utility Commission (PUC), the Pennsylvania Department of Environmental Protection (DEP), U.S. Environmental Protection Agency (EPA), and the river basin commissions, which have authority over the operations and/or discharges into and/or from the utility's stormwater system. This term also includes any local, state or federal government agency with jurisdiction over a property.

46. Runoff: Any water flow, resulting from either naturally occurring precipitation, snowmelt or human activity, that is not immediately absorbed into the ground and travels along the ground surface potentially picking up pollutants until it is absorbed, collected or reaches a receiving water body.

47. Service Territory: The land area where the utility has the exclusive right to provide stormwater service. The boundaries of this land area were approved by the Pennsylvania Public Utility Commission in an order dated ***(insert entered date)***, in accordance with its certificate of public convenience at docket no. ***(insert docket no.)***.

48. Sheet Flow: Runoff which flows over the ground surface as a thin layer, not concentrated in a channel.

49. Stormwater Credit: A temporary reduction to the stormwater management service charge available to a non-residential customer for implementing certain eligible activities or property conditions.

50. Stormwater Management Facility or SWM Facility: Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, infiltrates, evaporates, transpires, cleans, or otherwise affects stormwater runoff.

51. Street: Any cart way, road, highway, lane, avenue, court, cul-de-sac, alley public way or public square, including such streets as are dedicated to public use.

52. Stormwater: Any water flow occurring during or resulting from any form of natural precipitation, including snowmelt.

53. Surface Discharge: The discharge of stormwater runoff from a property to an adjacent surface water body without the use of utility infrastructure.

54. Stormwater Management Service Charge or SMSC: The service charge imposed by the utility hereunder, as amended from time to time, against each customer for the use of the stormwater system.

55. Stormwater System: A system of collection and conveyance facilities, including, but not limited to, underground pipes, conduits, mains, inlets, culverts, catch basins, gutters, ditches, manholes, outfalls, dams, flood control structures, channels, detention ponds, public streets, curbs, drains and all devices, appliances, appurtenances and facilities appurtenant thereto used for collecting, conducting, pumping, conveying, detaining, discharging and/or treating stormwater. The stormwater system shall further be defined to include the combined sewer and municipal separate storm sewer systems and to include utility facilities and any customer facilities contributing stormwater to the utility's facilities.

56. Tariff: All service rates, charges, rules and regulations issued by the utility, together with any supplements or revisions thereto, officially approved by the commission and contained in this document.

57. Toxic Substances: Any gaseous, liquid or solid waste substance which, when discharged to the utility's facilities in sufficient quantities, will be detrimental to any biological stormwater treatment process, constitute a hazard to human beings or animals, inhibit aquatic life, or create a hazard to recreation in receiving waters of the effluent from the stormwater treatment plant, as defined pursuant to PL 92-500 (federal water pollution control act amendments of 1972) or its amendments.

58. Undeveloped Property: Any property that is not considered developed property.

59. Wastes: Any liquid, gaseous, or solid substances or combination thereof which are discarded, leached, or spilled substances or combination thereof including wastewater but excluding unpolluted, storm and ground waters.

60. Wastewater: Any used water carrying household and toilet wastes, water-carried solids or industrial wastes discharged from any developed property and any water resulting from inflow and infiltration, stormwater, which is or is to be, mixed with water as described herein within a combined sewer system or water as may be present in utility collection mains and laterals. This term does not include stormwater collected in a MS4.

PART III: RULES AND REGULATIONS

SECTION A: STORMWATER SERVICE

All properties within the utility's stormwater service territory shall be subject to the rules and regulations described herein.

1. Service Application Required for Properties Not Served As of XX/XX/XXXX:

The utility may serve additional properties not served by the utility as of XX/XX/XXXX only after each of the following conditions are met:

a. The utility must receive an application for service. The utility, at its sole discretion, may require applicants to sign separate applications. All applications must be in writing on an application form provided by the utility and signed by one or more of the following:

   i. The owner(s) of the property to which service will be provided.

   ii. A regulatory agency with jurisdiction over the properties.

b. The utility has applied for and received approval from the Commission to provide stormwater service in the geographic location of the property requesting service.

c. The utility's tariff rules and regulations governing main and facility extensions have been satisfied.

2. Change in Ownership:

Customers shall be responsible for service charges until the utility receives evidence of a recorded land transfer. The Utility shall apply service charges until the day prior to the effective date of the recorded land transfer. A new application must be made to the utility upon any change in ownership where the owner of the property is the customer, or upon any change in the identity of a lessee where the lessee of the property is the customer.

3. Acceptance of Application:

An application for service shall be considered accepted by the utility only upon written approval by the utility. The utility may provide service to the applicant pending formal review and acceptance of the application. The person(s) making the application must sign the same and will be considered the customer(s) under the contract and will be responsible for all charges and proper observance of these rules and regulations.

4. Application Form:

An application for service form can be obtained at the utility's local business office, presently located at ***(utility's business office address)***.

5. Application to Transfer Ownership of Customer Stormwater Facilities:

Customer facilities may become utility facilities only upon ownership transfer by the private owner(s) and acceptance by the utility. The utility may require the customer to provide any necessary easements or rights-of-way or perform or cause to be performed repairs or replacements deemed necessary by the utility, as a condition of accepting facilities.

6. Notice of Availability of Stormwater Service and Billing After Notice:

At the time of filing an application to operate and maintain facilities to serve properties in an area not previously served by the utility, the utility shall provide individual notice to such properties. Such properties shall become customers of the utility and shall be subject to the utility's tariff upon Commission approval of the utility's application.

7. Direct Connections:

Any customer wishing to construct a direct connection to utility facilities must apply to the utility to request service by direct connection. All applications must be in writing on an application form provided by the utility. The utility will review all applications and decide whether a direct connection may be approved based upon the available capacity of the utility's facilities. Approval of the application shall be at the utility's sole discretion.

8. Properties With Multiple Owners:

Notwithstanding where a property has more than one owner, all property owners jointly and severally shall be responsible for payment of utility charges. The utility will not issue separate bills, divide applicable charges or take any other action to modify its standard policies and practices for such properties.

SECTION B: CONSTRUCTION AND MAINTENANCE OF CUSTOMER'S FACILITIES

1. Customer's Responsibilities:

All customer facilities including building service lines, connections, cleanouts, traps, interceptors, separators and screens furnished by the owner shall be maintained by the owner in good working order. All pipes, connections, couplings, valves, meters and fixtures furnished by the utility and on property owned or leased by the customer shall be protected properly by the customer. When there is a backup in the premises, the

customer should contact the utility's office to report the problem. The utility will dispatch an authorized representative or agent to inspect its facilities to investigate the cause of the problem and will inform the caller of their findings. This inspection service is provided free of charge. The customer is responsible for the immediate repair of any leaks or blockages hindering the operation of their facilities. The utility shall not be liable for any damage or expense resulting from leaks, stoppages or defective plumbing or from any other cause occurring to any premises or within any building or structure when such damage or expense is found to have resulted from stoppage, damage or defects in customer facilities. The utility shall not be liable for a deficiency or failure of service when occasioned by an emergency, required repair, or failure from any cause beyond its control.

2. Right to Reject and Test:

The utility may refuse to furnish service through a direct connection already connected if such direct connection is not properly installed, maintained, tested, repaired or replaced to the satisfaction of the utility. The utility at any time may request a gravity sewer test be performed on the direct connection, at the sole expense of the owner, whenever it has evidenced the direct connection is experiencing excessive inflow and/or infiltration into the system. The leakage is excessive when the groundwater flow exceeds XX gallon per inch of nominal diameter per mile of pipe per day. The Gravity Sewer Test shall be in accordance with Section 312.6 of the International Plumbing Code®.

3. Individual Direct Connection Requirements:

Except as otherwise expressly authorized by the utility, each property shall be served primarily by sheet flow or by an approved direct connection. No additional attachment may be made to direct connections for any purpose without the express written approval of the utility. Direct connections shall not pass through or across any property other than that to be served.

4. Direct Connection to Utility's Facilities:

No direct connection shall be made to utility facilities without prior permission from the utility through an application for a direct connection.

a. The customer's facilities shall be installed in a workmanlike manner and shall conform to all rules and regulations of the utility.

b. Where a customer is required and approved to install a direct connection, the utility will specify the size, kind, quality and location of all materials used in the customer's facilities and the customer shall comply with those specifications.

c. Customers must maintain their facilities in good condition and free from defects at the customer's cost and expense.

d. The utility shall make changes and bear the full cost of direct connection changes required due to changes in grade, relocation of utility facilities and other causes not related to the customer. The customer shall bear the full cost of direct connection changes desired by the customer for the customer's convenience.

5. Change in Location:

Whenever a change in location of utility facilities is ordered by a municipality, the utility and the municipality shall rely upon prior records to establish the antecedence of the land or easement rights of each entity to determine if such changes will be made at the expense of the municipality or the utility.

SECTION C: CONNECTION MANAGEMENT AND DISCONNECTIONS

1. Stormwater Connections to Combined Sewer System

No person shall install any new direct connection to discharge stormwater or groundwater drainage to the stormwater system, or undertake any modification that increases the flow of stormwater or groundwater being discharged via an existing direct connection to the stormwater system, without completing an application and receiving approval from the utility. Consideration and issuance of any connection application is subject to the following:

a. No new or increased discharge of stormwater or groundwater to the combined sewer system will be permitted if MS4 facilities or receiving streams exist in a reasonable proximity to the proposed connection to the combined sewer system. The person seeking a connection permit must demonstrate to the satisfaction of the utility that the discharge of stormwater or groundwater flows to anywhere but to the combined sewer system is not (i) technically or economically feasible or (ii) permissible under applicable environmental regulations.

b. No new or increased discharge of stormwater or groundwater will be allowed unless there is adequate capacity in the combined sewer system, and such flows can be managed in compliance with all laws and requirements applicable to the combined sewer system. When known or potential hydraulic capacity overloads exist or may be created as the result of the proposed new or modified direct connection to the combined sewer system, the utility reserves the right to require a detailed hydraulic

study of the affected portion of the combined sewer system. The work and cost associated with such study shall be paid for by the party seeking the connection.

c. Any new or modified direct connections involving the discharge of stormwater or groundwater to the combined sewer system shall comply with all applicable state regulations and municipal ordinances.

d. In the case of new or modified direct connections from a property that is presently contributing stormwater or groundwater to a combined sewer system, the peak rate of discharge must be controlled. The peak rate of discharge to the combined sewer system after development or improvement shall be no greater than XX% of the peak rate of discharge to the combined sewer system prior to development or improvement under storm conditions for a X-year rainfall event. Refer to most current edition of the Pennsylvania Stormwater Best Management Practices Manual.

e. Except where specifically approved by the utility, all new sanitary sewers laterals and mains shall be separate from stormwater laterals and mains.

f. If a connection to the combined sewer system, is permitted as provided above: (1) any facilities using the direct connection to the combined sewer system shall utilize inlet structures equipped with devices to prevent solids and floatable debris from entering the combined sewer system of a design approved by the utility; and (2) the connection shall be made to an existing or new manhole or other utility approved structure that complies with design standards prescribed by the utility.

g. No downspout gutter shall be connected to the combined sewer system.

2. Stormwater Disconnections from the Combined Sewer System:

When the utility, either through its planned replacement program or any other maintenance or emergency activity related to a combined sewer system, discovers an illegal or historical stormwater direct connection extending from a property to said combined sewer system, the utility will take all actions necessary to remove those stormwater direct connections from the combined sewer system to conform with the EPA's CSO Policy and the Nine Minimum Technology-Based Controls.

3. Notice and Timing of Disconnection and/or Termination of Water Service:

The utility will notify the customer in writing when one or more conditions that warrant disconnection is/are discovered, including violations of Rule 1, c., e. or g. of this section.

Notice of disconnection will be given in such a matter as may be specified in the Public Utility Code, 66 Pa. C.S. §§ 101 et seq. The utility reserves the right to terminate water service to the property until these conditions are corrected, consistent with the utility's water tariff and applicable agreements between the utility and other entities that provide water service to the utility's customers.

A reasonable time will be allowed to investigate, correct or cure the condition(s) specified when the customer provides written notification to the utility of a realistic time schedule. A customer who does not notify the utility is subject to disconnection without further notice from Monday through Friday.

SECTION D: BILLING

1. Issuance of Bills:

The utility will bill each customer within fifteen (15) days of the last day of each billing period.

2. Billing Due Date:

The due date for payment of a bill for residential service shall be no less than twenty (20) days from the date of transmittal. The due date for payment of a bill for non-residential service shall be no less than fifteen (15) days from the date of transmittal. If the last day for payment falls on a Saturday, Sunday or bank holiday, or on any day when the offices of the utility are not open to the general public, the due date shall be extended to the next business day. Failure to receive a bill shall not relieve the customer from their payment obligation. Pending BMP or alternative discharge method credit applications shall not relieve the customer from their payment obligation. The presentation of bills to customers is a matter of accommodation and not a waiver of this rule. For bills paid by mail, the date of the postal service postmark is considered the payment date.

3. Late-Payment Charge:

All amounts not paid when due shall accrue a late-payment charge. The utility may not impose a late-payment charge unless payment is received more than five (5) days after the billing due date. Such charge shall be calculated every thirty (30) days thereafter only on the overdue portion of the bill excluding previous late charges.

4. Change in Billing Address:

Where a customer fails to notify the utility of a change in billing address, the customer shall remain responsible to remit payment by the billing due date.

5. Application of Payment:

Utility bills rendered by the utility that include amounts due for other regulatory utility service in addition to stormwater service, the customers remittance to the utility shall first be applied to outstanding regulated stormwater charges, then wastewater, and then water service.

6. Return Check Charges:

The customer will be responsible for the payment of a charge, for each time a check or automatic transfer of funds is presented to the utility for payment on a customer's bill, if the check is returned by the bank for any reason including, but not limited to, insufficient funds, account closed, payment stopped, two signatures required, post-dated, stale date, no account, drawn against uncollected funds or unauthorized signature. This charge is in addition to any charge, which may be assessed against the customer by the bank.

7. Disputed Bills:

In the event of a dispute between the customer and the utility with respect to any bill, the utility will promptly make such investigation as may be required by the particular case and report the result to the customer. The customer is not obligated to pay the disputed amount during the pendency of the utility's investigation. When the utility has made a report to the customer sustaining the bill as rendered, the customer shall have fifteen (15) days from the date of such report in which to pay the bill. If the utility determines that the bill originally rendered is incorrect, the utility will issue a corrected bill with a new due date for payment. Any amounts received by the utility in excess of the amount determined to be due by the utility's investigation of the dispute shall be refunded to the customer.

8. [Billing Unit] Adjustments:

[Note: Billing Unit will be replaced with ERU or Parcel Area depending on the rate methodology chosen by the utility]

The determination of the number of [Billing Units] applicable to a non-residential customer may be adjusted from time to time as more accurate information is obtained or the condition of the property is altered, consistent with the following:

a. If a [Billing Unit] adjustment will increase a customer's bill, the following shall apply:

i. For [Billing Unit] adjustments occurring outside of a base rate case filed with the Commission, the utility will provide written notice to the customer at least sixty (60) days in advance of the effective date of the [Billing Unit] adjustment.

ii. For [Billing Unit] adjustments occurring concurrent with a base rate case filed with the Commission, the utility will include information regarding the [Billing Unit] adjustment in its written notice to the customer. The utility may delay the effective date of the [Billing Unit] adjustment until the conclusion of the base rate case.

b. If a [Billing Unit] adjustment will decrease a customer's bill, the following shall apply:

i. The effective date of the [Billing Unit] adjustment shall be the date the utility received or collected the [Billing Unit] data that resulted in the [Billing Unit] adjustment.

ii. Any amounts received by the utility in excess of the amount determined to be due by the utility shall be provided as a credit to the customer's account. If the excess amount is greater than the customer's next bill, the utility shall refund the difference between the excess amount and the customer's next bill upon request by a customer.

9. Limitation of Liability for Reliance on [Billing Unit] Data

The utility will undertake to use reasonable care and diligence to ensure [Billing Unit] data is accurate but cannot and does not guarantee the accuracy of [Billing Unit] data. The utility's liability to a customer for any loss or damage from reliance on [Billing Unit] data shall be limited to an amount no more than amounts received by the utility in excess of the amount determined to be due by the utility's investigation of the dispute.

10. Appeal Procedure:

All customers shall comply with the following appeal procedure:

a. For All Customers:

i. All appeals shall be made using forms supplied by the utility.

ii. All customers may appeal the classification of their property.

iii. The grounds supporting the basis of the customer's appeal shall be stated in writing and shall include any exhibits, such as photographs, drawings or maps, site plans, and affidavits that support the claim.

iv. The customer filing the appeal is solely responsible to demonstrate, by clear and convincing evidence, that the information used by the utility is erroneous.

v. The filing of an appeal shall not prevent the imposition, calculation or duty to pay undisputed amounts.

b. For Non-Residential Customers:

i. Non-residential customers may appeal the [Billing Unit] calculation for their property if the appeal would result in a material change in the number of calculated [Billing Units] for their property. A material change is a change that would decrease the non-residential customer's monthly stormwater management service charge by more than $X.

ii. Non-residential customers may appeal [Billing Unit] adjustments.

iii. For properties with more than X [Billing Unit], a land survey shall be attached to non-residential customer appeals. The utility may waive the submission of a land survey if the utility determines the land survey is not necessary to make a determination on the appeal.

SECTION E: STORMWATER CONTROL REGULATIONS

1. Prohibited Stormwater Discharges:

No person shall cause or permit to be discharged into the utility's stormwater system any pollutants, substances, or stormwater having any of the following characteristics:

a. Stormwater containing any gasoline, benzene, naphtha, fuel oil or other explosive liquids, or solids which by reason of their nature or quality may cause a fire or explosion, or be in any other way injurious to persons, the structures, or equipment of the stormwater system, or its operation.

b. Stormwater containing ashes, cinders, sand, litter, mud, straw, shavings, metal, glass, tar, rubber, plastics, wood, bottles, cans, utensils, shoes, rags, clothing, undergarments, hand towels, cotton, wool, or other fibers, chemical or paint residues, feathers, hair and fleshing, bone, entrails, whole blood, paunch, manure, butcher's offal, lime slurry or any other solid

or viscous material of such character or in such quantity as in the opinion of the utility may cause an obstruction to the flow in the utility collection mains or otherwise interferes with the proper operation of the stormwater system.

c. Stormwater containing any pollutants or substances, including conventional pollutants or substances released at a flow rate and/or concentration that may cause interference with the operation of the stormwater system.

2. Disposal of Wastes from Holding and Septic Tanks or Cesspools

No person shall dispose of wastes from holding and septic tanks, cesspools, or other such sources of domestic waste to the utility's stormwater system.

3. Damage to System and Indemnification

In the event of any damage to the utility's stormwater system caused by a customer, such damage shall be immediately reported to the utility and said customer shall reimburse utility for the costs of repairs.

SECTION F: UTILITY COLLECTION MAIN EXTENSIONS FOR A BONA FIDE SERVICE APPLICANT

1. Request by a Bona Fide Service Applicant:

When the applicant making an application for stormwater service is determined by the utility to be a bona fide service applicant, the utility will execute an extension agreement for a bona fide service applicant to the extent that the contents do not materially handicap its ability to secure a fair return on investment or does not unduly burden its existing customers consistent with the following directives:

a. The collection main extension will be funded by the utility without a customer advance from the bona fide service applicant where the annual revenue from the collection main extension will equal or exceed the utility's annual collection main extension costs.

b. If the annual revenue from the collection main extension will not equal or exceed the utility's annual collection main extension costs, a bona fide service applicant may be required to provide a customer advance towards the utility's cost of construction for the collection main extension. The utility's investment for the collection main extension shall be the portion of the total construction costs which generate the annual collection main

extension costs equal to annual revenue from the collection main extension. The customer advance amount shall be determined by subtracting the utility's investment for the collection main extension from the total construction costs.

c. The utility's investment for the collection main extension shall be based on the following formula, where x equals the utility's investment attributed to each bona fide service applicant:

X = [AR - OM] divided by [I + D]; where:

AR = the utility's annual revenue,

OM = the utility's operating and maintenance costs,

I = the utility's current debt ratio multiplied by the utility's weighted long-term debt cost rate, and

D = the utility's current depreciation accrual rate.

2. Definitions:

The following words or phrases, when used in this section shall have the meanings assigned below unless context specifically and clearly indicates otherwise.

a. Annual Collection Main Extension Costs: the sum of a utility's additional annual operating and maintenance costs, debt service costs and depreciation charges associated with the collection main extension.

b. Annual Revenue: the utility's expected additional annual revenue from the collection main extension based on the utility's currently effective tariff rates and on the average annual usage of customers similar in nature and size to the bona fide service applicant.

c. Bona Fide Service Applicant: a person applying for stormwater service to an existing or proposed structure within the utility's service territory for which a valid occupancy or building permit has been issued if the structure is either a primary residence of the applicant or a place of business. An applicant shall not be deemed a bona fide service applicant if:

i. An applicant is requesting stormwater service to a building lot, subdivision or a secondary residential dwelling;

ii. The request for service is part of a plan for the development of a residential dwelling or subdivision; or

iii. The request for service requires special utility service.

d. Collection Main Extension: an extension to the utility existing collection main system which is necessary to serve a bona fide service applicant's property located within the utility's service territory.

e. Debt Service Costs: the utility's additional annual cost of debt associated with financing the collection main extension's investment based on the current debt ratio and weighted long-term debt cost rate for the utility, or that of a comparable jurisdictional wastewater utility.

f. Depreciation Charges: the utility's additional annual depreciation charges associated with the collection main extension's investment, based on the current depreciation accrual rates for the utility, or that of a comparable jurisdictional wastewater utility.

g. Operating and Maintenance Costs: the utility's average annual operating and maintenance costs associated with serving an additional customer, including customer accounting, billing and collection, power, chemicals, and other variable costs based on the current total utility level of such costs, as well as costs particular to the specific needs of that customer.

h. Special Utility Service: A person or entity applying for stormwater service to an existing or proposed structure within the utility's service territory will be deemed to be requesting special utility service if one or more of the following applies. An otherwise bona fide applicant requesting service which includes a special utility service component is entitled to bona fide applicant status, including the corresponding contribution toward the costs of the collection main extension which do not meet the special utility service criteria:

i. If the property's stormwater service needs exceed that required for one (1) [Billing Unit] of stormwater discharge;

ii. If the property's stormwater discharge needs are already adequately met by an alternative means; or

iii. If the property requires the installation of facilities such as oversized mains, booster pumps or storage tanks to provide adequate service.

3. Customer Advance Financing, Refunds and Facilities on Private Property:

a. When a customer advance is required from a bona fide service applicant, and an additional customer or customers are served by the collection main extension within a ten (10) years period, the utility shall refund a portion of the advance to the customer. Deposits made for additional facilities other than the collection main extension are contributions-in-aid-of-construction and are not refundable.

b. The utility will refund to the bona fide service applicant, during a period of ten (10) years from the signing date of the final memorandum, a per customer amount for each additional bona fide service applicant served by such collection main extension, as distinguished from extensions or branches thereof. Provided, however, that the total amount refunded shall not exceed the original deposit without interest, and provided that all or any part of the deposit not refunded within the said ten (10) year period shall become the property of the utility, and shall be treated as contributions-in-aid-of-construction for ratemaking purposes. The per customer refund amount shall equal the utility's investment attributed to each bona fide service applicant as calculated in the formula contained in Section G, Rule 1, Subsection c. of this tariff.

c. The utility shall require the bona fide service applicant to pay in advance a reasonable charge for any equipment or devices installed on private property for the exclusive use of the bona fide service applicant. These other facilities which may be installed by the utility, will be owned by, maintained by, and will become the sole responsibility of the bona fide service applicant.

d. Section G, Rule 1, a. through c. of this tariff does not apply to special utility service. By way of illustration and not limited to, special utility service component shall include: the cost for installation of facilities such as a manhole for the purpose of sampling, measurement, and observation of a discharge, an oversized collection main or installation of or upgrade of existing pumping facilities as necessary to provide adequate service to the bona fide service applicant. An otherwise bona fide service applicant requesting service which includes a "special utility service" component is entitled to bona fide service applicant status, including the corresponding utility contribution toward the costs for the collection main extension which does not meet the special utility service criteria.

4. Utility Collection Main Extensions for a Developer

a. A developer who wants to request stormwater service to an area outside of the utility's existing service territory shall execute a collection main extension agreement. The construction cost of the collection main extension shall be estimated and shown in the preliminary memorandum. A master agreement may be executed where collection main extensions are to be made in phases over a period of time. A separate agreement and payment of a separate customer advance shall be made with each phase.

b. The preliminary memorandum shall include a fee for the utility's administrative, engineering and inspection costs to be paid by the land developer. The utility's construction overhead costs which relate to its administrative, engineering and inspection expenses will be expressed as a percentage rate shall be applied to the land developer's estimated and final cost of construction and is intended to offset the administrative, engineering and inspection costs that are incurred by the utility as a result of the project.

c. The developer shall be required to install the collection main extension and appurtenances through a pre-qualified contractor retained by the land developer and to pay all costs related thereto. The utility shall supply the developer with a list of utility approved contractors. At the sole discretion of the utility, the utility may undertake construction of all or part of the facilities otherwise subject to this section, in which event the developer will retain financial responsibility for the installation of collection mains and appurtenances as specified.

d. All construction costs, whether initially incurred by the developer or the utility, related to the collection main extension shall be the responsibility of the land developer.

e. Collection mains and appurtenance installation work shall be performed in accordance with the specifications and conditions of the utility.

f. All costs of materials, installations, permits, inspection and the utility's construction overhead costs required to serve the developer's property shall be the responsibility of the developer. The developer shall contract directly with a pre-qualified contractor, recognized and approved by the utility, for all collection mains and appurtenances required to serve the project.

g. Any construction involving pre-existing facilities of the utility including, but not limited to, relocation of existing facilities and connection of collection mains or direct connections with existing facilities shall be the responsibility of the developer.

h. The developer's estimate of the cost for the project must be acceptable to the utility. Estimates which appear to be inaccurate may be rejected by the utility.

i. The developer shall obtain all necessary permits from federal, state and local authorities. If any of these authorities require the utility to obtain such permits, the utility will apply for the permits, at the developer's expense.

j. All construction shall be subjected to inspection by the utility's employees or agents. No trenches shall be backfilled prior to approval from the utility's inspectors.

k. The developer shall supply the utility with an accurate "as built" set of plans for the construction project. This set of "as built" plans shall be created in accordance with the standards and specifications of the utility. The developer's engineer of record shall provide a letter certifying the "as built" information is correct, and that all necessary properties, easements and/or rights-of-way has been identified with running descriptions.

l. The utility, in its sole discretion, will not accept ownership of the facilities or provide stormwater service to any connection therefrom until the utility determines:

   i. That all construction related to the collection mains and appurtenance installation work is properly completed in accordance with the official plans and specifications;

   ii. That all of the facilities are acceptable for public service;

   iii. That the utility costs have been paid;

   iv. That a proper accounting of construction costs has been provided to the utility;

   v. That the utility received certified copies of all legal instruments, duly recorded in the county office of the recorder of deeds, describing the necessary properties, easements and/or right-of-way; and

vi. That the utility has received the "as built" plans and the letter from the engineer of record, as specified above.

m. Following acceptance of the completion of all items specified above, ownership of all the facilities shall be transferred to the utility, at no cost to the utility and free and clear of any liens.

n. At the time of transfer of ownership of the facilities to the utility, the customer shall provide, at no cost to the utility, all appropriate rights-of-way with any and all easement dedications that are necessary for future access to repair, maintain, replace or other related reasons.

o. Upon completion of the ownership transfer, a final memorandum shall be prepared and completed by the land developer and signed by both parties showing the actual costs and the utility construction overhead costs.

p. The developer shall warrant and be responsible for all maintenance of facilities constructed by the developer and holds the utility harmless against all costs, expenses and losses, including, without limitation, incidental and consequential damages resulting from any defects in the facilities, including, without limitation, defects in materials and workmanship, which are discovered or arise within a one (1) year period following the signing of the final memorandum as described in paragraph 15 above. As security for the developer's performance of its representation and warranty, simultaneously with the conveyance of the facilities to the utility, the developer shall deliver to the utility an executed performance bond or another utility approved financial instrument, in form and substance satisfactory to the utility. The performance bond shall be in the amount of one hundred percent (100%) of the total actual costs including the utility's construction overhead costs. The performance bond shall have as the surety thereon such surety utility, acceptable to the utility, as is authorized to write bonds of such character and amount under the laws of the Commonwealth of Pennsylvania. The attorney-in-fact, or other officer who signs the bond for a surety utility, must file with such bond a certified copy of their power of attorney authorizing them to do so. Subject to the approval of the utility, the land developer may elect to deliver to the utility a performance bond in compliance with all requirements herein and in a form acceptable to the utility, from the developer's contractors as the principal with the developer and the utility as co-obliges. The performance bond shall remain in force for a period of two (2) years, beginning on the date of transfer for the ownership of the faculties to the utility, as defined herein.

q. Once the utility is aware of a defect in the facilities, the developer will be notified of the defect(s) within ten (10) business days. If the developer fails to make or commence timely repairs or replacements of any defects in the facilities discovered or arising within the said two (2) year period, the developer or their surety shall be liable to the utility for all costs arising there from. All documents referred to in or required by this paragraph, and the prior paragraph, shall be a form acceptable to the utility.

5. Nuisance Abatement

Where it is prudent, reasonable and in the public interest, the utility may, at its option, enter into nuisance abatement contracts with regulatory agencies which depart from the standard terms of the utility's collection main extension agreements. The regulatory agency must demonstrate, to the utility's satisfaction, that one or more existing conditions on one or more properties is/are a nuisance and that an extension of utility facilities would abate this nuisance. These nuisance abatement agreements shall become effective thirty (30) days after the utility has filed a copy thereof with the Commission, or in the event that the Commission institutes an investigation, at such time as the Commission grants its approval thereof.

6. Customer Facility Investment Program

Where it is prudent, reasonable and in the public interest, the utility may, at its option, enter into contracts or agreements with property owners to finance or guarantee a project involving the construction or improvement of privately-owned stormwater facilities. These agreements shall become effective thirty (30) days after the utility has filed a copy thereof with the Commission, or in the event that the Commission institutes an investigation, at such time as the Commission grants its approval thereof.

One or more property owner(s) may apply to the utility, on an application form provided by the utility, for the utility to consider their proposed project. Each year, the utility shall publish on its website the amount of funding available under this program. If the amount of funding available under this program is greater than $0, the following shall apply:

a. Projects eligible for funding under this program must have an estimated construction or improvement cost greater than $X.

b. The utility shall announce the projects selected under this program every X months.

c. The utility's prioritization of projects, and the amount of the utility's funding/guarantee, shall based upon the following factors:

i. The project's financial benefit to the utility;

ii. The project's ability to reduce stormwater runoff; and

iii. The project's ability to improve water quality.

d. The utility may provide one or more of the following:

i. Grant funding, which may be based upon, in whole or in part, the customer providing funding equal to the amount of the utility's contribution;

ii. Loan funding, which may be based upon, in whole or in part, the applicant's ability to secure the loan and the applicant's selection of a fixed or variable interest rate; or

iii. A loan guarantee by the utility.

SECTION G: GENERAL

1. Limitation of Liability of Utility for Damages

The utility's liability to a property owner for any loss or damage from any excess or deficiency in stormwater service due to any cause other than willful misconduct or negligence by the utility, its employees or agents shall be limited to an amount no more than the customer charge or minimum bill for the period in question. The utility will undertake to use reasonable care and diligence in order to prevent and avoid any excess or deficiency in stormwater service but cannot and does not guarantee that such will not occur. The utility shall not be considered in any manner an insurer of property or persons against loss or damage by stormwater, or otherwise. The utility shall not be liable in any action where the loss or damage involves an act of God, force majeure or does not involve a duty of the utility.

2. Responsibility for Property Owner and Customer Facilities

The utility shall not be liable for any loss or damage caused by reason of any breaks, leaks, stoppages or other defects in property owner or customer-owned facilities including pipes, joints, fixtures or other installations except where the expense or damage is a result of the negligence or willful misconduct of the utility, its employees or agents.

The maintenance, repair and replacement of privately-owned facilities is the responsibility of the property owner or the customer served by such facilities.

The utility reserves the right to require the property owner or the customer served by privately-owned facilities to repair or replace such facilities, or enter into a main extension agreement, at the property owner or customer's option, if such facilities are in disrepair, can no longer be used for whatever reason or are determined by the utility or a court of competent jurisdiction to be a nuisance. The property owner or customer must perform such repair or replacement at the property owner or customer's own expense. The property owner or customer must perform such repair or enter into a main extension agreement immediately after receiving notice from the utility that the privately-owned facilities are a nuisance or within ten days after receiving notice from the utility that the privately-owned facilities are in disrepair or can no longer be used.

The utility reserves the right to prevent or limit a customer's use of utility facilities after legal notice of such required action is not taken within the time indicated above.

3. Service Continuity

The utility may, at any time, prevent or inhibit use of the stormwater system in case of accident or for the purposes of making connections, alterations, repairs, changes or for other reasons, including emergencies that pose an imminent risk to public welfare or safety.

4. Inadequate Facilities

The utility may decline to provide service to an applicant if it does not possess adequate existing facilities required to render the service desired or if such service is of a character that is likely to have a detrimental effect upon service to other customers.

5. Interference with Utility Facilities

No person shall physically alter utility facilities without the utility's consent.

6. Termination of Free Service Under Certain Contracts and Other Instruments

Notwithstanding any contract provision contained in any deed, grant, contract, franchise, permit, consent or other instrument (other than an instrument expressly set forth in and constituting a part of this tariff) made, executed or delivered between the utility or any predecessor in interest and a customer of the utility or any predecessor in interest:

a. Every person who receives services under this tariff shall pay for such services as provided in the applicable schedule of rates set forth herein and subject to the rules and regulations of the utility.

b. No credit, off-set or other allowance shall be allowed by the utility against any bill for stormwater service on account of the making, execution, or delivery of, or pursuant to any provisions of, any such instrument.

7. Waiver

The utility may, at its sole discretion, waive any of the rules contained herein that operate for the benefit of the utility; provided, that no such waiver will be valid unless in writing and signed by an authorized representative of the utility, and provided that no waiver will be allowed where the waiver would constitute a violation of the public utility code, the regulations of the commission or of any other applicable statute, law or regulation.

8. Amendment of Commission Regulations

Whenever Commission regulations in Title 52 of the Pennsylvania Code are duly amended in such a way as would produce a difference between Commission regulations and this tariff, this tariff is deemed to be amended so as to be consistent with the amendments to the regulations, except that if application of the amendment to Title 52 is discretionary, this tariff will remain unchanged.

9. Industrial and Commercial Establishments Service Limitations

The U.S. Environmental Protection Agency (EPA) Regional Administrator has not determined that the Utility needs a Pretreatment Program meeting the criteria established in Title 40 Code of Federal Regulations (CFR) Part 403. Therefore, the Utility's NPDES permit currently does not required it to administer an approved Pretreatment Program to control the discharges from non-domestic sources. All industrial and commercial waste proposed for discharge into the utility's system shall be studied to determine the degree of pretreatment, if any, necessary in order that the waste will not adversely affect the collection system and/or the stormwater treatment facilities. The utility will have the authority to properly control any waste discharge into its system by regulating the rate of any waste discharge, by requiring necessary equalization and/or pretreatment, and by excluding certain waste, if necessary, to protect the integrity of the system.

10. Utility Limitations:

The utility will not be liable nor bound to increase stormwater collection capacity and/or operations to accommodate industrial or commercial waste.

11. Specific Dangers:

In general, any waste will be considered harmful to the utility stormwater system if it may cause any of the following damaging effects:

a. Chemical reaction either directly or indirectly with the materials of construction of the system in such a manner as to impair the strength or durability of the structures;

b. Mechanical action that will destroy the structures;

c. Restriction of the hydraulic capacity of the structures or system;

d. Restriction of the normal inspection or maintenance of the structures or system;

e. Danger to public health and safety; or

f. Obnoxious condition contrary to public interest.

12. Right to Inspect / Right of Access:

The utility, its employees and authorized agents shall have the right to access and enter at all reasonable hours, the customer's private property including the access to all parts of any premise connected to the system, for the purpose of examining and inspecting connections, facilities and fixtures, including but not limited to BMPs pending credit approval, approved BMPs, alternative discharge methods pending credit approval, approved alternative discharge methods; for the purpose of disconnecting service for any proper cause; and for the purpose of examining and inspecting any aspect of the premise that contributes runoff to the utility's facilities. The inspections of premises will occur at the utility's reasonable discretion. The inspection of non-residential facilities and property may also occur at any hour the facility is in operation to aid in compliance monitoring. It is the responsibility of the customer to grant permission to the utility, its employees and authorized agents to enter the customer's private property for inspection and disconnection purposes.

13. Rule Variance:

No employee of the utility can vary these rules and regulations, and no authorized representatives, agent or employee of the utility can bind it by any agreement or representation except when authorized in writing by the utility.

EXHIBIT 1: SAMPLE CALCULATIONS

RESIDENTIAL SERVICE

Sample Charge Determination:

(i) Based upon the infiltration rate, soil characteristics and other specific area factors, as determined by the utility, the service area revenue requirement allocation shall be assigned as follows:

Gross Area = XX%
Impervious Area = XX%

(ii) Utilizing a 2-year average of all residential parcel data within the service territory, compute the mean GA and mean IA.

(iii) Determine the total revenue requirement.

(iv) Multiply the total revenue requirement by the rate base GA and IA revenue requirement allocation.

(v) Divide the total GA revenue requirement by the total GA for all parcels to determine the yearly GA rate per square foot. Divide the yearly GA rate per square foot by 12 to yield the monthly GA rate per sq. ft.

(vi) Divide the total IA revenue requirement by the total IA for all parcels to determine the yearly IA rate per square foot. Divide the yearly IA rate per square foot by 12 to yield the monthly IA rate per sq. ft.

(vii) Multiply the GA rate per square foot with the mean GA to determine the GA component of the customer charge.

(viii) Multiply the IA rate per square foot with the mean IA to determine the IA component of the customer charge.

(ix) Add the GA component charge and the IA component charge together to establish the total monthly residential stormwater service charge.

Sample Calculation:

A service territory has a total gross area of 2,100,433,600 sq. ft. comprised of 972,980,000 sq. ft. of residential gross area and 1,127,453,600 sq. ft. of non-residential gross area. The associated total

impervious area is 1,120,160,520 sq. ft. comprised of 492,124,000 sq. ft. of residential impervious area and 628,036,520 sq. ft. of non-residential impervious area. The approved total revenue requirement is $177,100,000.

The determined revenue requirement allocation is:

Gross Area = 20%
Impervious Area = 80%

Additionally, the service territory has a 2-year average of residential parcel data with a calculated mean GA equal to 2,100 square feet and a mean IA equal to 1,200 square feet.

Approved Revenue Requirement = $177,100,000
Gross Area Revenue Allocation = $177,100,000 x .20 = $35,420,000
Impervious Area Revenue Allocation = $177,100,000 x .80 = $141,680,000
Monthly GA Rate per sq. ft. = ($35,420,000 ÷ 2,100,433,600)/12 = $0.0014/sq. ft.
Monthly IA Rate per sq. ft. = ($141,680,000 ÷ 1,120,160,520)/12 = $0.0105/sq. ft.

GA = $0.0014/sq. ft.
IA = $0.0105/sq. ft.
GA Component Charge = 2,100 sq. ft. x $0.0014/sq. ft. = $2.94
IA Component Charge = 1,200 sq. ft. x $0.0105/sq. ft. = $12.60
Monthly Stormwater Management Service Charge = $2.94 + $12.72 = $15.54

NON-RESIDENTIAL SERVICE

Methodology I – Equivalent Residential Unit (ERU) Basis:

Sample Charge Determination:

(i) Calculate or observe the property's gross area in sq. ft. rounded down to the nearest hundred feet.

(ii) Divide property gross area by the mean residential gross area to the nearest thousandth rounded down to the nearest hundredth place to determine the number of property ERUs.

(iii) Multiply the property's ERUs by the ERU Rate, which is the residential service charge per one (1) ERU, to establish property's monthly stormwater management service charge.

Sample Calculation:

A property has a gross area equal to 11,211.86 sq. ft., rounded down to 11,200 sq. ft.

PGA = 11,200 sq. ft.
MRGA = 2,100 sq. ft.
ERUR = $15.54/ERU

Monthly Stormwater Management Service Charge =

(11,200 sq. ft./2,100 sq. ft.) * $15.54 = $82.82

Methodology II – Parcel Area-Basis:

Sample Charge Determination:

(i) Based upon the infiltration rate, soil characteristics and other specific area factors, as determined by the utility, the service area revenue requirement allocation shall be assigned as follows:

Gross Area = XX%
Impervious Area = XX%

(ii) Determine the total revenue requirement allocated to providing non-residential service.

(iii) Multiply the total non-residential revenue requirement by the rate base GA and IA revenue requirement allocation.

(iv) Divide the total GA non-residential revenue requirement by the total GA for all non-residential parcels to determine the GA rate per square foot.

(v) Divide the total IA non-residential revenue requirement by the total IA for all non-residential parcels to determine the IA rate per square foot.

(vi) Multiply the GA rate by the property's gross area to determine the property's GA charge.

(vii) Multiply the IA rate by the property's impervious area to determine the property's IA charge.

(viii) Add the GA charge and the IA Charge together for the total monthly Stormwater Management Service Charge.

Sample Calculation:

A property has a GA of 11,211.86 sq. ft., rounded down to 11,200 sq. ft. and IA of 7,124.67 sq. ft., rounded down to 7,100 sq. ft.

GAR = $0.0014/sq. ft.
IAR = $0.0105/sq. ft.
PGA = 11,200 sq. ft.
PIA = 7,100 sq. ft.

Monthly Stormwater Service Charge =

($0.0014/sq. ft. * 11,200 sq. ft.) + ($0.0105/sq. ft. * 7,100 sq. ft.) = $90.23

BEST MANAGEMENT PRACTICE *CREDIT*

[Utility provided Sample Calculation based upon Credit Program]

[End of the Model Tariff.]