BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

VOLUME II

TESTIMONY AND EXHIBITS

ON BEHALF OF
PHILADELPHIA GAS WORKS

PHILADELPHIA GAS WORKS

R-2020-3017206

FEBRUARY 2020

Philadelphia Gas Works
2020 Base Rate Case

Docket No. R-2020-3017206

INDEX OF DIRECT TESTIMONY

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

GREGORY STUNDER

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:
Rate Filing Overview
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February 28, 2020

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I. INTRODUCTION

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

A. My name is Gregory Stunder. My position with PGW is Vice President, Regulatory and Legislative Affairs.

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A. I have been employed with PGW since 2001. I became Vice President, Regulatory and Legislative Affairs in January 2015. Prior to that, I was a Senior Attorney from 2003 to 2015 and a Staff Attorney from 2001 to 2003. I received my Juris Doctor (J.D.) from Temple University - James E. Beasley School of Law in 1995, and my Bachelor's Degree, Accounting, from La Salle University in 1985.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I testified before the Pennsylvania Public Utility Commission ("PUC" or "Commission") in Philadelphia Gas Works' most recent base rate proceeding at Docket No. R-2017-2586783.

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

A. I will provide the Commission with an overview of PGW's base rate filing and discuss the objectives that PGW seeks to accomplish in this proceeding. I will also introduce PGW's other witnesses who provide detailed testimony and supporting documentation for revenues, expenses and rate base items included in the fully projected future test year used in this base rate filing, testimony supporting PGW's cost of service study and revenue allocation as well as PGW's proposed tariff revisions.

II. OVERVIEW OF REASONS FOR RATE FILING

Q. PLEASE DISCUSS THE RATE RELIEF THAT PGW IS REQUESTING.

A. PGW is requesting an increase in its annual base rate operating revenues of $70 million, or 10.5% percent on a total revenue basis, with a proposed effective date of April 28, 2020. Consistent with its mandatory budget process, the base rate increase requested in this filing is based on a fully projected future test year starting on September 1, 2020 ("FPFTY").[1]

Q. ON WHAT BASIS IS PGW'S REQUESTED RATE RELIEF TO BE CONSIDERED?

A. PGW is a "City Natural Gas Distribution Operation" as that term is defined in the Public Utility Code.[2] As such, just and reasonable rates for PGW are determined using the Cash Flow Method. PGW has no shareholders and does not pay a dividend or a rate of return to its owner (instead it remits a fixed annual payment to the City of Philadelphia). Accordingly, all of the funds it needs to run the Company come from ratepayers or from borrowing (the costs of which then must be paid by ratepayers). Therefore, rather than having its revenue requirement determined on the basis of a fair rate of return on a used and useful rate base, PGW's rates are set by determining the appropriate levels of cash and other financial metrics necessary to enable PGW to pay its bills and maintain access to the capital markets at reasonable rates. The PUC issued a policy statement more fully setting forth these criteria and the financial and other considerations that are to be looked to in setting PGW's base rates at just and reasonable levels.[3]

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1 The statutory definition of FPFTY, 66 Pa.C.S. § 315(e), would require that the FPFTY commence in November 2020 and continue for 12 months. As in the prior rate proceeding, and simultaneously with the filing of general base case, PGW has filed a Petition requesting that the Commission waive the application of the statutory definition of fully projected future test year ("FPFTY") so as to permit PGW to use a FPFTY beginning on September 1, 2020 in this proceeding.

2 66 Pa.C.S. § 102 (definitions).

3 52 Pa. Code §§ 69.2702, 2703.

Q. WHY HAS PGW MADE THIS FILING?

A. PGW's last base rate increase was filed on February 27, 2017, and partially settled later that year. The Commission approved a settlement in which the active parties agreed that PGW could increase its distribution rates by $42 million. The increase was needed in order to permit PGW to continue its aggressive capital improvement program and continue to improve customer service, while assuring that its financial metrics were maintained at acceptable levels. Since that time, PGW has maintained its financial health and, in turn, this has given PGW the ability to concentrate on modernizing its distribution system, improving safety, increasing efficiency and enhancing customer service.

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

A. Since PGW's last base rate case in 2017, the Company has continued a number of initiatives to modernize its infrastructure, make its system safer and more efficient and improve customer service. While some of those efforts have been financed through surcharges (i.e., the acceleration of PGW's main replacement program) and base rates, PGW issued revenue bonds in 2017 and uses "pay as you go financing" from rate based internally generated funds. PGW has experienced increases in pension costs, post-retirement benefit costs, capital spending and debt service. It is critically important that PGW maintains its financial metrics and current financial position so that it can maintain access to, and improve its borrowing costs for long-term bond transactions and access to credit facilities. PGW's *pro forma* results clearly demonstrate that a rate increase is needed if the Company 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. OBJECTIVES

Q. PLEASE SUMMARIZE PGW'S MAJOR OBJECTIVES IN THIS PROCEEDING.

A. PGW seeks Commission approval to establish rate levels adequate to continue its efforts to modernize its system and to provide safe and adequate service by making its system safer and more efficient and improving customer service. To do this, PGW must be able to have the cash to pay its bills, provide for other obligations, and to achieve financial metrics that will enable it to maintain its present bond ratings and, if possible, improve its rating. An improved bond rating will reduce borrowing costs which, in turn will reduce costs that customers will have to bear over the life of PGW's bonds. Approval of PGW's request will demonstrate to the investment community that the Commission continues to support the need for intensified focus on system infrastructure as well as the need for reasonable and predictable earnings.

Q. DOES PGW HAVE ANY OTHER OBJECTIVES IN THIS PROCEEDING?

A. Yes, the Company is seeking several tariff changes. First, PGW seeks to continue its Technology and Economic Development (TED) Rider beyond the initial three-year pilot period. Second, the Company proposes the continuation of its Back-Up Service – Rate BUS and a clarification as to how it is applied. Third, the Company seeks to modify the incentives offered through its micro-combined heat and power (CHP) incentives program to encourage customers to install micro-CHP equipment of various sizes up to 50 kW. Fourth, PGW proposes to modify its daily imbalance surcharge. Fifth, PGW is seeking to clarify firm supplier obligations with respect to released capacity and establish pricing for firm pool imbalances when suppliers discontinue serving PGW customers.

IV. MANAGEMENT QUALITY, EFFICIENCY AND EFFECTIVENESS

Q. PLEASE SUMMARIZE THE COMPANY'S INITIATIVES AND ACTIVITIES RELATED TO MANAGEMENT'S COMMITMENT TO OPERATING SAFELY AND RELIABILITY, AND PROVIDING QUALITY SERVICE TO CUSTOMERS.

A. The Company has focused on a number of areas that demonstrate the quality and effectiveness of PGW's current management performance and its management's focus on safe, reliable, and outstanding service. The following initiatives and activities are described more fully in PGW witness Moser's testimony:

- PGW is committed to providing safe, reliable natural gas service to the homes and businesses in the City of Philadelphia. Since its last rate case, in order to assure safety and reliability, PGW has continued to reduce the amount of cast iron main in its system. PGW witness Moser explains PGW's projection that it will replace all cast iron main inventory in 40.1 years and that $70 million in rate relief would allow PGW to reduce this overall replacement time frame by 14% to 34.6 years.

- PGW has worked hard to manage costs and improve system performance while continuing its commitment to safely and reliably delivering natural gas to its customers. PGW witness Moser provides details on the multi-faceted approach undertaken to build efficiencies into PGW's employee benefit programs and details the following cost savings:

    - By revising its medical and dental benefits plans to become self-insured, PGW reduced its health insurance costs by an estimated $68.7 million from FY 2012 – FY 2019.

- PGW's efforts to control post-retirement health care costs by amending its post-retirement healthcare coverage from lifetime to five years for new employees is anticipated to save $52.7 million.

- Modification to PGW's pension benefit that permits employees to voluntarily choose a defined contribution option have resulted in significant cost savings. It is estimated that PGW has saved $4.5 million since its inception in 2011 and the present value of the savings over the next ten years is $19.2 million, for a combined total of $23.7 million.

- PGW has taken advantage of provisions in the Internal Revenue Code that permit municipal gas companies to use tax exempt bond financed prepaid gas purchase arrangements to obtain significant discounts on those purchases. For FY 2020, PGW will save approximately $2.3 million for gas sales customers as a result of prepaid gas purchase arrangements. For FY 2021, PGW anticipates that gas sales customers will save approximately $2.9 million from the prepaid arrangements.

- Initiatives to improve overall customer satisfaction that include, but are not limited to: (1) improving operations at its customer service centers; (2) launching new options for customers desiring to pay their bill or obtain information about their account; and (3) implementing a tool that allows customers to apply for its Customer Responsibility Program online. Since PGW's last rate case, overall customer satisfaction has improved by over 2% increasing from 83% to 85%. Since the last filing, PGW has also improved its overall J.D. Power customer satisfaction score by 66 points.

Q. PLEASE DISCUSS THE IMPACTS OF THE REQUESTED RATE RELIEF

A. PGW is requesting an increase in the delivery charge as well as the customer charge for most customer classes. For example, the Company is proposing a residential customer charge (under Rate GS) of $19.25 per month, as compared to the current charge of $13.75 per month to better reflect the direct customer costs per customer as calculated by PGW's cost of service witness, Ms. Constance Heppenstall. Customer charge increases are also discussed in greater detail by PGW witness Dybalski.

The requested residential customer charge compares to the monthly charges of other NGDCs as follows:

Residential Customer Charge Comparison

NGDC	Customer Charge	Notes
PGW	$19.25 (P)	Current $13.75
Columbia	$16.75	Last Increase: R-2018-2647577
National Fuel Gas	$12.00	Last Increase: R-00061493 (2006)
PECO (Gas)	$11.75	Last Increase: R-2010-2161592
Peoples & Peoples - Equitable	$14.50	Last Increase: R-2018-3006818
Peoples Gas (Formerly Peoples TWP)	$15.75	Last Increase: R-2013-2355886
UGI Utilities (Gas)	$14.60 $19.95 (P)	Last Increase: R-2018-3006814; Rate case pending at R-2019-3015162

(P) = Proposed
Sources:
NGDC Tariffs filed with the Commission and made available online by each NGDC; and Pennsylvania Public Utility Commission Rate Comparison Reports, which are available at: http://www.puc.pa.gov/filing_resources/rate_comparison_report.aspx

The Company is also proposing increases to delivery charges for most customer classes. The increase for each customer class is discussed in greater detail by PGW witness Dybalski. I would like to highlight certain proposed increases in delivery charges from Table 4 of his testimony:

Rate Class	Current ($/MCF)	% Increase from Current	Proposed ($/MCF)*
Residential	6.6967	10%	7.3893
Commercial	4.8651	1%	4.9034
Industrial	4.7698	0%	4.7843
PHA GS	5.7105	13%	6.4535
Municipal	4.2723	20%	5.1105
PHA (Rate 8)	5.0163	0%	5.0163
NGVS	1.2833	0%	1.2833
IT-A	2.2885	53%	3.4928
IT-B	1.1077	53%	1.6906
IT-C	0.8643	53%	1.3191
IT-D	0.7669	53%	1.1705
IT-E	0.7426	53%	1.1334

*** The proposed delivery charge ($/MCF) does not include the Merchant Function Charge ("MFC") and the Gas Procurement Charge ("GPC")**

In addition, I would note that the average impacts for the increased distribution rates are as follows:

- If PGW's base rate case is approved, the bill for a typical PGW residential heating customer who uses 75 Mcf per year will increase $11.16 per month from $99.52 to $110.68 per month or by 11.2%.
- The bill for a typical PGW commercial heating customer who uses 342 Mcf per year will increase $11.56 per month from $351.92 to $363.48 per month or by 3.3%.
- The bill for a typical PGW industrial customer who uses 956 Mcf year will increase by $31.40 per month from $974.86 to $1,006.26 per month or by 3.2%.

V. SUMMARY OF FILING

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

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

- Mr. Joseph F. Golden, Jr., (PGW Statement No. 2) is PGW's Executive Vice President and Acting Chief Financial Officer. Mr. Golden provides documentation and supporting methodology for the schedules and exhibits that are included in PGW's base rate filing. He describes PGW's financial results for the FPFTY (comprised of the period from September 1, 2020 through August 31, 2021). He also details and provides supporting justification for PGW's requested annual increase in existing base rate of $70 million.

- Mr. Daniel J. Hartman (PGW Statement No. 3) is a Managing Director and Partner with PFM Financial Advisors LLC. He is an expert on financial markets and financial instruments. Mr. Hartman testifies to the importance of PGW obtaining the rate increase being sought, in order to maintain its bond ratings, access to the municipal capital markets at reasonable pricing, and to ensure there are not unforeseen impacts to PGW's capital structure. Specifically, his testimony focuses on the adverse financial consequences to PGW, which could be considerable and broadly based, if the Company does not receive full approval of its needed and requested rate increase.

- Mr. Harold Walker III (PGW Statement No. 4) is the Manager of Financial Studies at Gannett Fleming Valuation and Rate Consultants, LLC. He is an expert on financial economics and specializes in regulatory and financial economics, especially for gas, electric, water and wastewater utilities. Mr. Walker discusses the results of a comparable utility analysis. His testimony benchmarks the financial performance of PGW over the 2014-2018 time period, and analyzes both average performance over the time period and also trends over the time period. The benchmarking indicates that there is a continued need to support PGW's financial stability with timely and appropriate rate increases to enable PGW to further strengthen its credit profile.

- Ms. Constance E. Heppenstall (PGW Statement No. 5) is a Senior Project Manager of Rate Studies at Gannett Fleming Valuation and Rate Consultants, LLC. Ms. Heppenstall presents the Company's class cost of service study ("CCOSS"), which is provided in Exhibit CEH-1. The primary purpose of the present CCOSS is to allocate the Company's costs of providing service to each Rate Class. The purpose of her testimony is to describe the principles, methodology, and data used in the present CCOSS. Ms. Heppenstall also shows the monthly fixed customer cost per class.

- Mr. Kenneth S. Dybalski (PGW Statement No. 6) is the Vice President - Energy Planning & Technical Compliance at PGW. Mr. Dybalski describes and supports: (1) the process used to develop the sales forecast for the test year; (2) the allocation of the proposed base rate increase by customer class; and (3) the proposed customer charges by class.

- Mr. Douglas A. Moser (PGW Statement No. 7) is PGW's Executive Vice President and Acting Chief Operating Officer. Mr. Moser provides an overview of PGW's operations. He discusses PGW's initiatives taken to improve its overall safety and reliability and to improve customer service. He also sponsors: (1) Proposed Tariff Supplement No. 128 to PGW Gas Service Tariff No. 2 that sets forth the proposed rate schedule changes as well as certain tariff changes explained by him as well as PGW witness Teme; and (2) Proposed Tariff Supplement No. 85 to PGW Gas Supplier Tariff No. 1.

- Mr. Florian Teme (PGW Statement No. 8) is PGW's Vice President, Marketing and Sales. Mr. Teme explains and provides support for: (1) the continuation of the Technology and Economic Development (TED) Rider; (2) modifications to the Micro-Combined Heat and Power Incentives; and (3) PGW's proposal to clarify tariff language on the Back-Up Service – Rate BUS.

In addition to these statements, PGW is submitting the information and data required by the PUC's filing requirements (Volume I) and the proposed Tariff Supplements (Volume III) which set forth all of the changes and rate increases proposed by PGW as part of this case.

VI. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

I, Gregory Stunder, hereby state that: (1) I am the Vice President – Regulatory and Legislative Affairs for Philadelphia Gas Works ("PGW"); (2) the facts set forth in my testimony 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).

February 28, 2020
Dated

Gregory Stunder
Vice President – Regulatory and Legislative Affairs
Philadelphia Gas Works

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

JOSEPH F. GOLDEN, JR.

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:

Financial Condition
Presentation of Pro Forma Test Year Data
Supporting Justification for Requested Increase

February 28, 2020

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TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Joseph F. Golden, Jr. My position is Executive Vice President and Acting Chief Financial Officer for Philadelphia Gas Works ("PGW" or "Company").

Q. HOW LONG HAVE YOU HELD THIS POSITION?

A. I was appointed Executive Vice President and Acting Chief Financial Officer in March 2012. I started with PGW in August 1986. My prior titles at PGW include: Controller, Treasurer, Manager Treasury Department, Senior Staff Accountant, and Staff Accountant. Before starting with PGW, I had prior work experience in public accounting, treasury accounting and cash management, and cost accounting for a manufacturing company.

Q. WHAT ARE YOUR VARIOUS JOB RESPONSIBILITIES?

A. In my present position, I am responsible for the treasury, accounting, and budgeting functions.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I hold a Bachelor of Science degree in Accounting from Villanova University, a Master of Business Administration degree from Drexel University, and a Juris Doctor degree, *cum laude*, from Temple University School of Law.

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

A. Yes. I submitted testimony in PGW's last base rate proceeding (Docket No. R-2017-2586783). I also submitted rebuttal testimony on behalf of PGW in the Petition of Philadelphia Gas Works for Waiver of Provisions of Act 11 to Increase the Distribution

System Improvement Charge ("DSIC") Cap and to Permit Levelization of DSIC Charges (Docket No. P-2015-2501500).

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 PGW's base rate filing; 2) describe PGW's financial results for the Fully Projected Future Test Year (comprised of the period from September 1, 2020 through August 31, 2021); and 3) detail and provide supporting justification for PGW's requested increase in existing annual base rates of $70.0 million (in year one).

Q. ARE YOU SPONSORING ANY EXHIBITS?

A. Yes. I am sponsoring the following exhibits:

- **Exh. JFG-1:** Exhibit JFG-1 provides schedules showing PGW's Statement of Income, Cash Flow Statement, Debt Service Coverage Statement and Balance Sheet <u>at present rates</u> for the Historical Test Year ("HTY"), FY 2019, the Future Test Year ("FTY"), FY 2020, and the Fully Projected Future Test Year ("FPFTY"), FY 2021 and the period, FY 2022 through FY 2025 ("Forecast Period").
- **Exh. JFG-2:** Exhibit JFG-2 provides schedules showing PGW's Statement of Income, Cash Flow Statement, Debt Service Coverage Statement and Balance Sheet <u>at requested rates</u> for the HTY, FTY and FPFTY and the Forecast Period.
- **Exh. JFG-3:** Exhibit JFG-3 contains copies of ratings reports from the three rating agencies that rate the City of Philadelphia Gas Works Revenue Bonds.

- **Exh. JFG-4:** Exhibit JFG-4 is an exhibit I presented in my rebuttal testimony in PGW's last base rate proceeding (Docket No. R-2017-2586783). The exhibit provides the set of projected results for PGW in the fully projected future test year at proposed rates submitted in that proceeding.

II. BACKGROUND FOR CONSIDERATION OF RATE REQUEST

A. Financial Condition

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

A. Since its last general rate increase in 2017, PGW's financial strength has been steady and stable. The ratings from the three rating agencies[1] that rate the City of Philadelphia Gas Works Revenue Bonds ("PGW's Bonds") are:

Moody's: A3 (Stable Outlook)
S&P: A (Stable Outlook)
Fitch: BBB+ (Stable Outlook)

Since PGW's last base rate proceeding, PGW's rating from Moody's has improved from Baa1 to A3. But, as Mr. Moser (PGW St. No. 7) explains, as its financial health has improved, PGW has steadily increased its efforts to improve safety, reliability, and customer service on its system. And, as Mr. Hartman (PGW St. No. 3) also explains, it is crucially important that PGW, at least, maintain these bond ratings – or, ideally, improve them – so that it can continue to have access to the capital markets on acceptable terms and to finance a portion of these improvements through internally generated funds ("IGF"). In the last ten fiscal years, PGW has been able to finance approximately $260.9

[1] *See* Exhibit JFG-3.

million of capital additions through IGF, which otherwise would have had to come from additional long-term borrowing. Mr. Hartman describes the importance of PGW continuing to fund a portion of its capital improvement program through IGF as well as meeting or exceeding the other financial metrics PGW must maintain in order to continue to be able to access the capital markets on reasonable terms. Thus, the rate increase requested by PGW is critically necessary to place the Company in a position to continue to modernize its infrastructure, take additional steps to make its distribution system safer and more efficient, and continue to improve customer service.

B. Long-Term Debt

Q. PLEASE SUMMARIZE RECENT ACTIVITY REGARDING PGW'S LONG-TERM DEBT ISSUANCES.

PGW successfully completed the issuance of revenue bonds, City of Philadelphia Gas Works Revenue Bonds, in the par amount of $273.1 million in fiscal year ("FY") 2017, the 12 months ended August 31, 2017. On August 16, 2017, the City issued Gas Works Revenue Bonds, Fifteenth Series (1998 General Ordinance) in the par amount of $273.1 million. A portion of the proceeds from the sale of the Fifteenth Series Bonds were utilized to refund a portion of the Seventh Series Bonds and redeem the City's outstanding Capital Project Notes. The Fifteenth Series Bonds also contained new money debt issued to finance a portion of PGW's ongoing Capital Improvement Program, pay the costs of issuing the bonds, and provide a deposit to the Sinking Fund Reserve. The Fifteenth Series Bonds, with fixed interest rates that range from 2.0% to 5.0%, have maturity dates through 2047. The loss on the refunding component was $0.3 million, which will be amortized over the life of the Fifteenth Series Bonds. This refunding transaction provided net present value debt service savings of $0.7 million utilizing an arbitrage yield of 2.98%. The savings as a percentage of refunded bonds was 10.11%.

As Mr. Hartman explains, PGW's ability to continue to take advantage of an attractive interest rate environment and refinance existing debt requires PGW to maintain or improve its current financial condition.

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

A. PGW anticipates issuing City of Philadelphia Gas Works Revenue Bonds in the par amount of $260.0 million in the FTY, which is FY 2020, the 12 months ended August 31, 2020. The exact timing of the issuance would be subject to market conditions. The next bond issuance is projected to be in FY 2023 and in the amount of $235.0 million.

III. PGW'S NEED FOR RATE RELIEF

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

A. PGW is requesting an increase in its annual base rate operating revenues of $70.0 million, or 10.5% on a total revenue basis.

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

A. Since PGW's last base rate case in 2017, the Company has continued to modernize its infrastructure, make its system safer and more efficient and improve customer service. While some of those efforts have been financed through surcharges (i.e., the acceleration of PGW's main replacement program via the DSIC), PGW has undertaken numerous other efforts that have been financed through base rates or additional borrowing. At the same time, PGW has experienced material increases in operating costs while seeing weather normalized levels of sales and associated revenues. During this period, PGW's financial health has continued to improve, compared to 2008 levels. However, PGW's pro forma results clearly demonstrate that a rate increase is needed if the Company is going to maintain its improving 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.

Q. WHAT ARE SOME OF THE KEY DRIVERS FOR THE REQUESTED INCREASE?

A. Some of the key drivers for the requested base rate increase are: increasing health care costs, general higher costs of operations, and higher levels of capital spending financed by IGF. The statement of income as presented on an accrual basis, shows operating expenses remaining relatively the same in the FPFTY as the recent prior years. However, the increase in cash outlays for OPEB payments and cash outlays for pension payments are not seen because, as a result of the implementation of recent GASB pronouncements, some of these cash outlays are not recorded on the income statement (rather, on the balance sheet). Given that PGW's rates are based on the cash flow ratemaking methodology, these cash outlays must be considered as well. Other key drivers include increased capital spending for projects like the CIS replacement and building consolidation which are financed, in part, by internally generated funds. Additionally, debt service has increased.

Q. HAS PGW TAKEN STEPS TO CONTROL THE GROWTH OF ITS OPERATING EXPENSES?

A. Yes, as explained by Mr. Moser, PGW continues to benefit from its efforts to reduce health care costs for its active and retired workers through self-insurance and an actively managed wellness program. PGW is also benefitting from past steps taken to reduce pension costs, which continue to keep costs lower than they otherwise would be.[2]

Q. PLEASE EXPLAIN PGW'S EFFORTS TO REDUCE ITS OVERALL BORROWING COSTS RELATED TO LONG-TERM DEBT.

A. In fiscal years 2015, 2016, and 2017 PGW refunded portions of its outstanding revenue bonds. I previously noted the results of PGW's FY 2017 revenue bond transaction. On August 30, 2016, the City issued Gas Works Revenue Bonds, Fourteenth Series (1998 General Ordinance) in the amount of $312.4 million for the purpose of advanced refunding of select maturities of the Seventh Series Bonds (1998 General Ordinance), Ninth Series Bonds (1998 General Ordinance), and Eighth Series A Bonds (1998 General Ordinance), and to make termination payments with respect to a portion of the swap agreements associated with certain maturities of the Eighth Series B, C, D, and E Bonds. The Fourteenth Series Bonds, with fixed interest rates that range from 2.0% to 5.0%, have maturity dates through 2038. The loss on this refunding was $33.5 million, which will be amortized over the life of the Fourteenth Series Bonds. This transaction provided net present value debt service savings of $38.2 million utilizing an arbitrage yield of 2.11%. The savings as a percentage of refunded bonds was 10.86%.

On August 18, 2015, the City issued Gas Works Revenue Bonds, Thirteenth Series (1998 General Ordinance) in the amount of $261.8 million for the purpose of redeeming, refunding, or defeasing all outstanding City of Philadelphia Gas Works Revenue Bonds under the 1975 Ordinance and to redeem all of the outstanding Fourth Series Bonds (1998 General Ordinance), Fifth Series A-1 Bonds (1998 General Ordinance), defease a portion of the Outstanding Seventh Series Bonds (1998 General

[2] See, PGW St. 7 (Moser).

Ordinance), and paying the costs of issuing the bonds. The Thirteenth Series Bonds, with fixed interest rates that range from 3.0% to 5.0%, have maturity dates through 2034. The loss on this refunding was $13.5 million, which will be amortized over the life of the Thirteenth Series Bonds. This transaction provided net present value debt service savings of $34.3 million utilizing an arbitrage yield of 2.91%. The savings as a percentage of refunded bonds was 11.02%.

Additionally, PGW has been able to reduce its costs associated with its Tax-Exempt Commercial Paper program and the cost of the Letters of Credit associated with its variable rate long-term debt. In August 2017, PGW's cost associated with the Letters of Credit was approximately $1.2 million per year, or 81 basis points. The projected cost is approximately $0.4 million per year, or 29 basis points. In addition to current market trends, this decrease in the costs can be related to PGW's 2017 rate increase and PGW's good working relationship with the PUC.

IV. PRO FORMA FINANCIAL RESULTS

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

A. Yes.

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

A. As permitted by Act 11 of 2012, PGW has based its claimed revenue requirement on the fully forecasted 12 months ending August 31, 2021, referred to as the Fully Projected Future Test Year ("FPFTY"). The Future Test Year ("FTY") is FY 2020 and the Historical Test Year ("HTY") is FY 2019. Those results are displayed on Exhibit JFG-1.

Each page of this exhibit shows data for: (1) the HTY, the 12 months ended August 31, 2019 or FY 2019; (2) the FTY, the 12 months ended August 31, 2020 or FY 2020; and, (3) the FPFTY, the 12 months ended August 31, 2021 or FY 2021. The Exhibit also shows projections for FY 2022 through FY 2025 (which I refer to as the "Forecast Period"). Page 1 of Exhibit JFG-1 displays operating revenues, operating expenses and net earnings (Statement of Income); page 2 displays PGW's Cash Flow Statement, page 3 shows Debt Service Coverage; and page 4 shows the Company's Balance Sheet and capitalization ratios.

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

A. The HTY is the actual audited results for FY 2019.

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

A. The FTY and FPFTY results were derived by starting with PGW's current (FY 2020) Budget ("Budget year"), approved by the Philadelphia Gas Commission ("PGC"). PGW develops its annual Budget in the following manner. With respect to revenues, PGW's Marketing and Gas Planning departments calculated revenues and sales by class for the Budget year, and provided projections for the forecast years. This process is fully described in the testimony of Kenneth Dybalski (PGW St. 6). Revenue-related expenses (chiefly natural gas) were then calculated.

Q. PLEASE EXPLAIN HOW BUDGET YEAR EXPENSES ARE DETERMINED.

A. Budget year expenses are determined in the following manner. Each department submitted its view of the expense levels it will experience in the budget year. Where a specific cost category increases or changes affecting the expense level were identified, those levels were used to establish the expense for the respective Budget year. For example, PGW utilized the annual wage increases established in its current collective bargaining agreement to calculate wage expense for various departments. Also, PGW utilized information provided by its actuary and benefits consultant to project health care costs and other benefit costs, including pension expense and Other Post-Employment Benefits ("OPEB"). Long-term debt interest expense and debt amortization were also adjusted to reflect more recent information concerning the results of the recent debt refinancing. These results were then used to prepare the four key financial schedules for FY 2020: income statement; cash flow statement; debt service coverage; and the balance sheet.

Q. DOES PGW ALSO PREPARE A FIVE-YEAR FORECAST OF FINANCIAL OPERATIONS?

A. Yes. Using the Budget year as the base year, PGW rolls forward its budgeted operating results to create a five-year forecast, taking account of any known rate or other changes that might affect the results in a particular year. PGW is using the first year of its five-year forecast, FY 2021, as its FPFTY.

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

A. In addition to an internal review and approval process by the PGW executive team, PGW is required to obtain approval of its annual budget from both the Philadelphia Facilities Management Corporation ("PFMC") (the equivalent of PGW's Board of Directors) and the PGC. PGW's capital budget must be approved by the PFMC, the PGC, and Philadelphia City Council.

Q. ARE THE AMOUNTS SHOWN ON JFG-1 DIFFERENT THAN THOSE APPROVED BY PFMC, PGC, AND PHILADELPHIA CITY COUNCIL (WHERE APPLICABLE)?

A. No, the amounts shown on JFG-1 are not different.

Q. PLEASE EXPLAIN THE ITEM SHOWN ON LINE 4, PAGE 1 OF EXHIBIT JFG-1 LABELED "REVENUE ADJUSTMENT (TED/BUS RATE)."

A. This reflects a minor upward adjustment to Total Gas Revenues to reflect an update of the additional revenue PGW is projecting it will receive from TED/BUS Rider customers in the FTY and FPFTY.

Q. AN ADJUSTMENT LABELED "UNBILLED ADJUSTMENT" APPEARS ON LINE 7. CAN YOU EXPLAIN WHAT THIS IS AND WHY THIS ADJUSTMENT WAS MADE?

A. Based on PGW's cyclical billing, adjustments are made for natural gas delivered to customers but not yet billed. This is the annual cumulative effect of these adjustments.

Q. WERE ANY ADJUSTMENTS TO BUDGETED OPERATING EXPENSES MADE ON EXHIBIT JFG-1?

A. No adjustments were made.

Q. WHAT OTHER ITEMS HAVE BEEN UPDATED?

A. The cost of PGW's anticipated bond issuance in the FTY (FY 2020) has been reflected in the FPFTY. In addition, PGW's rate case expense has been amortized over five years.

V. CALCULATION OF REVENUE REQUIREMENT

A. Cash Flow Ratemaking

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

A. As noted, PGW is not regulated on the basis of a fair rate of return on a used and useful rate base as are investor-owned utilities; instead, the Company's revenue requirement is established on the basis of the "Cash Flow Method." While I am informed that the use of the Cash Flow Method is mandated by the Gas Choice Act,[3] the Commission has

[3] 66 Pa.C.S. § 2212(e); 52 Pa.Code § 69.2702(b) ("The Commission is obligated under law to use the cash flow methodology to determine PGW's just and reasonable rates.").

explained how it intends to implement that standard for PGW. In its 2010 Policy Statement, the Commission described the requirements of the Cash Flow Method as follows:

> (b) The Commission is obligated under law to use the cash flow methodology to determine PGW's just and reasonable rates. Included in that requirement is the subsidiary obligation to provide revenue allowances from rates adequate to cover its 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.[4]

The Commission also stated that, in determining just and reasonable rate levels for PGW it would consider, among other relevant items, the following financial factors:

- PGW's test year-end and (as a check) projected future levels of non-borrowed year-end cash.
- Available short-term borrowing capacity and internal generation of funds to fund construction.
- Debt to equity ratios and financial performance of similarly situated utility enterprises.
- Level of financial performance needed to maintain or improve PGW's bond rating thereby permitting PGW to access the capital markets at the lowest reasonable costs to customers over time.[5]

Q. PLEASE EXPLAIN HOW PGW HAS APPLIED THIS GUIDANCE IN DETERMINING ITS REVENUE REQUIREMENT.

A. As a "cash flow" regulated company, PGW's operations are entirely funded from rates, either indirectly as a result of short-term or long-term borrowing (which then must be

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4 52 Pa.Code § 69.2702.

5 52 Pa.Code § 69.2703.

paid back by ratepayers) or directly through charges to customers. Accordingly, PGW's most important financial metrics are:

1) debt service coverage ratios; and

2) end of year days cash on hand; and, separately,

3) liquidity balance; and

4) debt to equity capitalization ratio.

First, PGW's debt service coverage levels are crucial because if the Company falls below the 1.5x minimum requirement in its bond covenants, reflected in the City of Philadelphia Ordinance that establishes the requirements for PGW's bonds,[6] it will be in technical default and its access to capital markets will be severely harmed. However, it needs higher levels of debt service coverage (above the 1.5x minimum) in order to meet cash requirements not contained in the Bond Ordinance calculation or in the operating expense category of the income statement.

Second, PGW's end of year cash balance is also crucial because PGW needs an accumulated balance of cash in its accounts at fiscal year-end to pay its substantial obligations (the largest of which are invoices for natural gas and upstream pipeline capacity used by its customers) and working capital requirements beginning in the fall and continuing into the winter, prior to collecting revenues for the winter heating season.

[6] The General Gas Works Revenue Bond Ordinance of 1998, approved on May 30, 1998, Bill No. 980232, as amended and supplemented from time to time (the "1998 General Ordinance") and the General Gas Works Revenue Bond Ordinance of 1975, approved on May 30, 1975, Bill No. 1871, as amended and supplemented from time to time (the "1975 General Ordinance") (collectively referred to as the "Bond Ordinance").

Third, PGW's year-end liquidity (cash plus available short-term borrowing capacity) is also important to meet its substantial obligations during the winter prior to receiving revenues from customers, and to provide a responsible and reasonable measure of cushion for unforeseen circumstances.

In addition to the three metrics discussed above, the other indices that are important are the Company's capitalization ratio and its sources of IGF to fund construction. Both of these factors are listed in the Commission's 2010 Policy Statement and are among the main focus points that are considered by the bond rating agencies in evaluating the creditworthiness of PGW.[7]

Q. HOW DO THE OPERATING RESULTS SHOWN ON THE ATTACHED EXHIBITS TREAT THE CITY PAYMENT OF $18.0 MILLION?

A. The City Payment is shown as an expense of the Company since PGW is legally obligated to make this payment.[8] Based upon the latest budget and forecast information submitted by the City, it intends to continue to have PGW remit this fee for the foreseeable future. Accordingly, the City Payment is treated as a "known and definite" expense in PGW's operating results and resulting financial metrics.

B. Justification for Requested Increase

Non-Borrowed Year-End Cash

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

A. At present rates, and for the FPFTY (FY 2021), PGW is projecting that it will end the year with just $45.2 million in cash; this cash projection is negative in FY 2022 and

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[7] *See, e.g.,* Exhibit JFG-3 at Moody's Investors Service, Philadelphia (City of) PA Gas Works, Credit Opinion (August 8, 2016); S & P Global Ratings Direct, Philadelphia; Gas; Joint Criteria (August 10, 2016).

[8] *See* 66 Pa.C.S. 2212(f).

dramatically decreases in the remainder of the Forecast Period (FY 2023 through FY 2025). That level of cash in the FPFTY (FY 2021) equates to just 33.9 days of cash on hand[9] — with the cash balance being negative starting FY 2022 and continuing to be negative throughout the Forecast Period.

As more fully explained by Mr. Hartman, the bond rating agencies that closely follow PGW's financial performance have indicated that a cash balance of between 70 and 100 days of cash on hand is necessary for PGW to maintain its existing bond rating and not be downgraded.[10] Therefore, a cash balance of only 33.9 days would not only be extremely concerning to the rating agencies, it would also pose real challenges to the Company's ability to meet all of its obligations when they came due.

It is important to understand that the measurement of 33.9 days cash on hand is being presented as of the end of the FPFTY (i.e., August 31, 2021), PGW's fiscal year-end. PGW's cash balance changes throughout the fiscal year and is at a low point in the middle of the fiscal year. Maintaining a days' cash on hand balance of 70 to 100 days at August 31st will be followed by a lower balance in the middle of PGW's fiscal year. Thus, the FPFTY's balance of just 33.9 days cash on hand at fiscal year-end would result in zero or close to zero balances in January and February, leaving very little ability to respond to contingencies such as lower than *pro forma* sales or unanticipated expenditures.

Debt Service Coverage

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9 Days of cash on hand calculation: Total Operating Expenses, less non-cash items, depreciation and amortized pensions, divided by 365, divided into cash balance.

10 Exhibit JFG-3 at Moody's Rating Action, June 10, 2019, p. 4 (Days cash on hand is forecast to remain in the 70-100 days range for the next several years.)

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 covers cash obligations that are not shown on the cash flow statement and provides assurance to investors that the utility will be able to make timely debt service payments. The recent rating agency reports have emphasized the need for PGW to improve debt service coverage. Maintaining or improving debt service coverage is critically necessary to keep PGW 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 IGF as necessary to provide significant savings to ratepayers over time.

Q. PLEASE DISCUSS, AT PRESENT RATES, PGW'S DEBT SERVICE COVERAGE RATIOS IN THE FPFTY AND IN THE FORECAST PERIOD.

A. Turning back to the first important financial metric, at present rates, PGW's debt service coverage ratios are minimally above its Bond Ordinance coverage requirement of 1.5x in the FPFTY. This coverage calculation does not take account of certain cash obligations that are not in the operating expense section of the income statement, including the City Payment, capital funding, and certain pension and OPEB obligations, all of which must be paid out of the cash that is part of the "coverage" in excess of the debt service. PGW's calculations show that it needs coverage at approximately 2.2x and above in order to produce enough cash to be able to meet all of its obligations throughout the year, including the City Payment, pensions, OPEBs, capital funding from IGF, and additional funds for working capital.

Q. PLEASE EXPLAIN PGW'S USE OF THE CASH GENERATED BY THE DEBT SERVICE COVERAGE RATIO REQUIREMENT IN EXCESS OF 1.0 TIMES COVERAGE.

A. Under the Bond Ordinance, PGW has a mandatory debt service coverage ratio of 1.5x the debt service, which is calculated by subtracting operating expenses from total funds available to derive total funds available to cover debt service. The cash generated by this ratio (funds available to cover debt service) is used to pay other expenses that do not appear on the Statement of Income. These payments include the $18.0 million City Payment, $18.5 million to the OPEB Trust Fund, $2.0 to $3.0 million to the pension fund, and $5.0 million towards retiree health care cost. Additionally, PGW continues to utilize IGF for capital construction to reduce its dependence on long-term debt financing and contributed between $18.0 million to $33.0 million in the last five fiscal years (i.e. FY 2015 to FY 2019) towards IGF. As of August 2019, this has saved PGW approximately $13.7 million in interest costs over the last five fiscal years. PGW's base rates need to produce approximately $42.0 million in IGF in order for PGW to continue to meet its IGF goals.

Q. WOULD THE RATING AGENCIES VIEW A DEBT SERVICE COVERAGE LEVEL JUST ABOVE 1.5X AS CAUSE FOR A DOWNGRADE?

A. In my opinion, yes, most definitely. And, without rate relief, PGW would experience debt service coverage at these unacceptably low levels. While the FPFTY debt service coverage on an "Ordinance" basis is 1.71x, Ordinance coverage drops to 1.59x in FY 2022 and below 1.5x in 2024.

FY 2021 FPFTY	FY 2022 Forecast	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast
1.71x	1.59	1.65	1.46x	1.35x

Again, coverages below 1.5x constitutes a default on PGW's bonds. However, the rating agencies calculate PGW coverage differently than in the Bond Ordinance, accurately treating the $18.0 million City Payment as a fixed obligation. When the Company's debt service coverage is calculated to include the $18.0 million as a fixed obligation, PGW's debt service coverage falls to 1.54x in the FPFTY and drops to below 1.50x for the entire the Forecast Period:

FY 2021 FPFTY	FY 2022 Forecast	FY 2023 Forecast	FY 2024 Forecast	FY 2025 Forecast
1.54x	1.43	1.48	1.30x	1.20x

Since these coverage levels are materially below the 2.0 times that Moody's has observed for PGW in FY 2017 and FY 2018, they would very likely cause a downgrade by Moody's, followed by similar negative ratings action by the other bond rating agencies. PGW Witness Hartman (PGW St. 3) discusses this in detail in his testimony.

Debt To Equity Ratio; Short-Term Borrowing Capacity

Q. AT PRESENT RATES, WHAT IS PGW'S PROJECTED DEBT TO EQUITY RATIO FOR THE FULLY PROJECTED FUTURE TEST YEAR?

A. At present rates, PGW's debt to equity capitalization ratio in the FPFTY (FY 2021) is approximately 78.15%. That percentage is below the level in the HTY (FY 2019), 84.78%. The Forecast Period shows marginal reductions in this ratio. PGW would be very concerned about increasing its debt burden, resulting in even higher levels of debt, if it were required to do so to compensate for reduced levels of available IGF. Recall that

PGW has had a goal of reducing its debt to equity level to under <u>60%</u> of total capitalization, and the Commission Staff has opined that a level of 70% was not unreasonable.[11]

Q. WHY HAS PGW CHOSEN A FINANCING STRATEGY FOR CAPITAL SPENDING COMPRISED OF 50 PERCENT OF FUNDS FROM IGF AND 50 PERCENT OF FUNDS FROM DEBT?

A. PGW has chosen the financing strategy for capital spending comprised of 50 percent of funds from IGF and 50 percent of funds from debt in order to spread out some payments over time rather than have the ratepayers finance all capital improvements on a "pay-go" basis. This combination financing strategy allows PGW to use long-term debt, its tax-exempt commercial paper program, and IGF to finance the improvements to its infrastructure.

Q. IF PGW WERE FORCED TO UTILIZE DEBT FINANCING RATHER THAN IGF FOR THE NEXT FOUR YEARS WHAT WOULD THE IMPACT BE ON PROJECTED DEBT SERVICE AND THE DEBT SERVICE COVERAGE RATIO REQUIREMENT?

A. PGW would experience a decrease in its debt service coverage ratio for an incremental increase in debt service. Debt service on a bond issuance of $100.0 million at a composite rate of approximately 4% would be approximately $7.0 million per year. The bond covenant that mandates a 1.5x debt service coverage would require additional revenues of $10.5 million per year to take account of this requirement. After several bond issuances the debt service coverage requirement would exceed a "pay as you go" financing strategy. This significant savings to ratepayers over time is also why PGW does not finance its construction program using entirely long-term bonds. In addition, any increase

[11] Pennsylvania Public Utility Commission, Staff Report: Inquiry into the Philadelphia Gas Works' Pipeline Replacement Program, dated April 21, 2015, p. 6, 44, 50.

in the level of debt PGW is already projecting will drive its debt to total capitalization ratio to unacceptable levels.

Q. HOW DOES PGW CURRENTLY USE ITS COMMERCIAL PAPER?

A. Currently PGW utilizes its commercial paper for "bridge" capital financing. This strategy allows PGW to delay the issuance of long-term debt, thus putting off the associated costs, and also so that it can issue bonds at the optimal time relative to the long-term bond market. Such optimal market timing can also reduce the costs of long-term borrowing.

Bond Ratings

Q. WHY IS IT IMPORTANT FOR PGW TO MAINTAIN ITS CURRENT BOND RATINGS?

A. Credit ratings are important because PGW, like most utilities, is required to make significant capital infrastructure improvements each year for new and replacement assets. As explained by Mr. Hartman, credit ratings are a critical component in determining the cost of debt as the ratings signal PGW's ability and willingness to meet financial obligations in full and on time. A downgrade of the credit ratings for PGW's Bonds would result in an increase in PGW's borrowing costs and necessitate higher rate increases over time.

Q. WHAT WOULD HAPPEN IF PGW WERE TO EXPERIENCE THE FINANCIAL RESULTS, AT PRESENT RATES, PROJECTED FOR THE FY 2021 FPFTY?

A. PGW would be in serious risk of not being able to meet its cash obligations—and absent some timely rate relief—having its debt service coverage levels fall below the level mandated in the Bond Ordinance. If either of these events occurred, it would be entirely realistic for the rating agencies to downgrade or put a negative outlook on PGW's bonds. Such adverse actions by the rating agencies would add to PGW's borrowing costs and could trigger increased rates on PGW's variable rate debt (the Fifth Series A-2 Bonds and the Eighth Series B, C, D and E Bonds). The increased costs and/or the Company's liquidity profile would also limit PGW's reasonable access to capital markets. More importantly, the projected level of cash is not an adequate level for PGW with over $600.0 million in revenues and $500.0 million in operating expenses. If actual expenses were to exceed "normal" levels because of abnormally cold weather or an unanticipated spike in gas prices, PGW could be left having to rely on its limited short-term commercial paper for liquidity. Although PGW has the ability to issue up to $120.0 million of commercial paper on a short-term basis, this approach would add costs to customers and remove PGW's only source of short-term protection against a failure to be able to pay its bills when due.

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

A. There are a number of different metrics that the rating agencies monitor, as well as the regulatory environment in which PGW operates. In the most recent rating reports, the rating agencies specifically cite a number of variables or results that could lead to a rating downgrade. These triggers include a less support from the Commission related to rate increases, deteriorating debt service coverage levels from recent levels, increased leverage and reliance on debt funding, materially lower liquidity levels, and weaker collection rates. While there is no specific guidance from the rating agencies on the tipping point that would result in a rating downgrade, PGW carefully monitors all of the metrics identified to ensure that its financial plan would maintain or improve its bond ratings.

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. As demonstrated, it is crucially important that PGW obtain rate relief in order to maintain these financial indicators at adequate levels, as well as to have sufficient cash in order to prudently operate the Company. 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 PGW's access to capital markets.

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

A. PGW has determined that an increase of $70.0 million would provide sufficient additional revenues to enable it to maintain its financial metrics at adequate levels and maintain its existing bond rating.

Q. HAVE YOU CALCULATED PGW'S FINANCIAL RESULTS IN THE FPFTY AS WELL AS IN THE FORECAST PERIOD IF ITS PROPOSED $70.0 MILLION RATE INCREASE IS GRANTED?

A. Yes, those results are shown on Exhibit JFG-2. At $70.0 million, PGW would have debt service coverage that exceeds 2.0.x in the FPFTY and in the Forecast Period. This would be consistent with S&P's expectation that coverage will be maintained at or above 1.90x through FY 2025. Including the City Payment as an expense, PGW's debt service coverage for the FPFTY would meet or exceed 1.9x through FY 2025. As I indicated above, debt service coverage at this level is required to permit PGW to have the funds it needs throughout the year to satisfy all of its obligations.

The proposed rate increase would also produce about $113.3 million in year-end cash, or about 85.1 days of cash on hand at the end of the FPFTY. This is slightly lower than the level that Moody's observed for PGW for FY 2018 (98 days of cash on hand by Moody's calculation), but remains in the range (70 to 100 days) that Moody's has indicated it expects for a company rated at A3. This is consistent with Moody's June 2019 Credit Opinion.

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

A. In the FPFTY, it would similarly keep PGW nearer to the levels it was experiencing in the HTY (FY 2019) and the levels on which the rating agencies have commented favorably. For example, cash on hand would improve in FY 2021 to $113.3 million (85.1 days on hand) and then slowly decrease to $87.7 million (61 days on hand) in FY 2025. Debt service coverage (Ordinance Calculation) would stay above 2.0x in the Forecast Period until FY 2025 where it would fall to 1.92x. PGW's debt to capitalization ratio would slowly modulate to 60.66% in FY 2025. This highlights the fact that any Commission rate increase granted in 2020 will make steady improvement in PGW's financials because 100% of the excess over costs incurred is retained by the Company and used to finance construction and operations. This is essentially what is shown by the improved cash flow and debt service numbers.

Q. ARE THERE CIRCUMSTANCES THAT COULD MATERIALLY AFFECT THE FINANCIAL INDICATORS THAT YOU HAVE PROJECTED?

A. Yes, PGW's *pro forma* income statement is calculated assuming a 4% bad debt expense rate and a 96% collection rate. These projections do not assume any material change in PGW's collection practices.

Q. PLEASE PROVIDE YOUR OVERALL CONCLUSIONS CONCERNING THE NEED FOR AND REASONABLENESS OF PGW'S $70.0 MILLION RATE INCREASE REQUEST.

A. It is crucially important that PGW obtain the requested rate relief in order to maintain these financial indicators, as well as to provide sufficient cash to prudently operate the Company. A failure to achieve these results with additional revenues would almost certainly result in a bond rating downgrade, which would raise the costs of borrowing and limit PGW's access to capital markets.

VI. COMMITMENTS FROM PGW'S 2017 RATE CASE SETTLEMENT

Q. ARE YOU ADDRESSING ANY OF THE COMPANY'S COMMITMENTS IN THE JOINT PETITION FOR PARTIAL SETTLEMENT IN PGW'S LAST BASE RATE CASE AT DOCKET NO. R-2017-2586783[12] ("2017 PARTIAL SETTLEMENT")?

A. Yes. I will discuss the commitments under Paragraph 14 of the 2017 Partial Settlement. The commitment set forth in Paragraph 13 of the Partial Settlement is discussed by Mr. Moser.

Q. PLEASE DISCUSS THE COMMITMENTS UNDER PARAGRAPH 14 OF THE 2017 PARTIAL SETTLEMENT.

A. Paragraph 14 of the 2017 Partial Settlement requires PGW to prepare a comparison of its actual expenditures and financial results for FY 2018 compared to the FPFTY (FY 2018) amounts presented in the last case.

Q. WHAT DATA ARE YOU SUBMITTING IN COMPLIANCE WITH THIS SETTLEMENT OBLIGATION?

A. In satisfaction of that commitment, I am attaching Exhibit JFG-4. Exhibit JFG-4 is an exhibit I presented in my rebuttal testimony in PGW's last base rate proceeding. The column marked "Revised 10-year HDD Forecast 2017-18" on each page of that exhibit

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[12] http://www.puc.state.pa.us/pcdocs/1529631.pdf.

represents the set of projected results for PGW in the fully projected future test year at proposed rates submitted in that proceeding. The financial statements I am presenting in this case (Exhibits JFG-1 and JFG-2) show PGW's actual expenses and financial results for FY 2018. Please note that PGW's last rate case was settled on a "black box" basis, so no PUC-approved FPFTY financials exist. Moreover, the financials that appear in JFG-5 hereto are calculated: 1) assuming PGW's originally requested $70.0 million rate increase, rather than the $42.0 million that was ultimately implemented as a result of the Settlement; and 2) using pro forma revenues normalized on the basis of a 10-year average of experienced degree days, while the Settlement rates were based on a twenty year average. Accordingly, the two sets of financials are not comparable without additional adjustments.

VII. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

I, Joseph F. Golden, Jr., hereby state that: (1) I am the Executive Vice President and Acting Chief Financial Officer for Philadelphia Gas Works ("PGW"); (2) the facts set forth in my testimony 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).

February 28, 2020
Dated

Joseph F. Golden, Jr.
Joseph F. Golden, Jr.
Executive Vice President
Acting Chief Financial Officer
Philadelphia Gas Works

Exhibit JFG-1

Exhibit JFG-1
Present Rates

PHILADELPHIA GAS WORKS
STATEMENT OF INCOME
(Dollars In Thousands)

LINE NO.		Actual 2017-18	HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	OPERATING REVENUES									
1.	Non-Heating	$ 23,492	$ 25,065	$ 24,026	$ 21,466	$ 20,547	$ 19,683	$ 18,889	$ 18,031	1.
2.	Gas Transport Service	51,682	63,565	66,378	67,767	69,251	70,578	71,981	73,328	2.
3.	Heating	588,624	603,521	579,656	576,418	575,835	576,884	580,122	580,938	3
4	Revenue Adjustment (TED/BUS Rate)	-	-	270	400	531	662	792	922	4.
5	Weather Normalization Adjustment	(3,806)	1,596	92	-	-	-	-	-	5.
6.	Appropriation for Uncollectible Reserve	(30,826)	(29,983)	(30,927)	(29,951)	(29,289)	(29,355)	(29,524)	(29,582)	6.
7.	Unbilled Adjustment	(912)	320	617	(36)	(25)	14	13	38	7.
8.	Total Gas Revenues	628,254	664,084	640,112	636,064	636,850	638,466	642,273	643,675	8.
9.	Appliance Repair & Other Revenues	8,121	7,908	7,910	7,964	8,044	8,125	8,207	8,290	9.
10.	LNG Project Revenues	-	-	-	-	-	1,550	2,000	3,000	10.
11.	Other Operating Revenues	11,124	12,736	11,264	11,164	11,166	11,187	11,242	11,261	11
12.	Total Other Operating Revenues	19,245	20,644	19,174	19,128	19,210	20,862	21,449	22,551	12
13.	**Total Operating Revenues**	647,499	684,728	659,286	655,192	656,060	659,328	663,723	666,227	13
	OPERATING EXPENSES									
14	Natural Gas	186,254	206,801	195,397	191,548	189,544	191,040	194,269	196,115	14.
15.	Other Raw Material	11	24	10	10	10	10	10	10	15.
16.	Sub-Total Fuel	186,265	206,825	195,407	191,558	189,554	191,050	194,279	196,125	16.
17	**CONTRIBUTION MARGINS**	**461,234**	**477,903**	**463,879**	**463,634**	**466,506**	**468,278**	**469,444**	**470,102**	17
18.	Gas Processing	21,644	22,028	22,512	21,740	22,918	22,291	22,917	23,545	18
19	Field Services	39,291	-	-	-	-	-	-	-	19.
20	Distribution	47,762	-	-	-	-	-	-	-	20.
19	Field Operations	-	79,341	85,188	86,412	88,554	90,765	93,041	95,367	19.
20	Collection	4,097	4,212	4,383	4,430	4,541	4,654	4,771	4,889	20.
21	Customer Service	13,904	13,983	15,248	15,751	16,145	16,549	16,962	17,385	21
22	Account Management	7,878	8,277	9,206	9,245	9,476	9,712	9,954	10,202	22.
23.	Marketing	3,751	4,232	4,999	4,916	5,040	5,167	5,297	5,430	23.
24.	Administrative & General	69,179	69,631	84,074	86,167	85,521	86,768	90,163	90,559	24
25.	Health Insurance	22,242	22,080	25,340	27,151	29,091	31,171	33,402	35,794	25.
26.	Environmental	-	-	792	1,059	2,862	1,012	972	993	26
27.	Capitalized Fringe Benefits	(10,767)	(9,786)	(13,716)	(8,969)	(9,546)	(9,921)	(10,347)	(10,200)	27
28.	Capitalized Administrative Charges	(16,396)	(14,276)	(16,793)	(22,707)	(21,788)	(20,247)	(19,722)	(20,129)	28.
29.	Amortization of Restructuring Costs	-								29.
30.	Pensions	43,159	30,268	29,844	23,577	25,808	30,287	28,655	27,429	30.
31	Taxes	8,758	8,705	9,280	9,435	9,539	9,731	9,925	9,856	31.
32	Other Post Employment Benefits	32,889	28,351	24,732	25,422	31,592	20,795	24,446	22,197	32.
33	Proposed Bond Refunding Savings	-	-	(1,437)	(589)	(588)	(590)	(588)	(220)	33.
34.	Cost / Labor Savings	-	-	144	(164)	-	-	-	-	34.
35.	Sub-Total Other Operating & Maintenance	287,391	267,046	283,796	282,876	299,165	298,144	309,848	313,097	35.
36.	Depreciation	57,583	63,686	65,602	67,934	73,264	76,516	71,157	71,142	36.
37.	Cost of Removal	6,387	4,500	4,500	4,500	4,500	4,500	4,500	4,500	37.
38.	To Clearing Accounts	(7,516)	-	-	-	-	-	-	-	38.
39.	Net Depreciation	56,454	68,186	70,102	72,434	77,764	81,016	75,657	75,642	39
40.	**Sub-Total Other Operating Expenses**	343,845	335,232	353,898	355,310	376,929	379,160	385,505	388,739	40
41.	**TOTAL OPERATING EXPENSES**	530,110	542,057	549,305	546,868	566,483	570,210	579,784	584,864	41.
42.	OPERATING INCOME	117,389	142,671	109,981	108,324	89,577	89,117	83,939	81,363	42.
43.	**Interest Gain / (Loss) and Other Income**	4,634	10,787	4,369	7,400	6,706	5,897	7,473	7,098	43.
44.	INCOME BEFORE INTEREST	122,023	153,458	114,350	115,724	96,284	95,015	91,411	88,461	44.
45.	**INTEREST**									45.
46.	Long-Term Debt	48,351	46,136	50,520	54,442	51,549	48,512	57,937	54,824	46.
47.	Other	(10,618)	(10,523)	(11,337)	(9,612)	(6,980)	(1,543)	(5,690)	(5,280)	47.
48.	AFUDC	(1,353)	(1,295)	(1,718)	(2,212)	(2,504)	(2,091)	(1,922)	(1,956)	48.
49.	Loss From Extinguishment of Debt	5,560	5,278	4,845	4,460	4,047	3,615	3,348	2,972	49.
50.	**Total Interest**	41,940	39,596	42,310	47,078	46,112	48,493	53,673	50,560	50.
51.	**NET INCOME**	**80,083**	**113,862**	**72,040**	**68,646**	**50,172**	**46,522**	**37,738**	**37,900**	51.
52.	City Payment	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	52.
53.	**NET EARNINGS**	**$ 62,083**	**$ 95,862**	**$ 54,040**	**$ 50,646**	**$ 32,172**	**$ 28,522**	**$ 19,738**	**$ 19,900**	53.

PHILADELPHIA GAS WORKS
CASH FLOW STATEMENT
(Dollars in Thousands)

LINE NO.		Actual 2017-18	HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	SOURCES									
1.	Net Income	$ 80,083	$ 113,862	$ 72,040	$ 68,646	$ 50,172	$ 46,522	$ 37,738	$ 37,900	1.
2	Depreciation & Amortization	51,717	57,048	60,396	63,079	68,808	72,473	67,400	67,558	2.
3.	Earnings on Restricted Funds Withdrawal/(No Withdrawal)	(2,898)	(5,102)	(3,491)	(4,708)	(3,988)	(3,159)	(4,715)	(4,320)	3
	Elimination of Accrued Interest on Refunded Debt	-	-	-	-	-	-	-	-	.
	Equity Bond / Debt Reduction	-	-	-	-	-	-	-	-	
4.	Proceeds from Bond Refunding to Pay Cost of Issuance	-	-	2,600	-	-	-	2,350	-	4
5	Increased/(Decreased) Other Assets/Liabilities	(1,282)	(20,376)	(27,609)	(37,907)	(26,891)	(21,985)	(35,039)	(39,027)	5
6	Available From Operations	127,619	145,431	103,935	89,109	88,100	93,851	67,734	62,111	6.
7	Drawdown of Bond Proceeds	55,000	45,000	65,009	78,084	88,177	74,039	66,418	67,892	7.
	Grant Income	-	-	-	-	-	-	-	-	.
	Lease Funds Debt Service	-	-	-	-	-	-	-	-	.
	Capitalized Interest	-	-	-	-	-	-	-	-	.
8.	Release of Restricted Fund Asset	-	-	-	-	-	-	-	-	8
9	Release of Bond Proceeds to Pay Temporary Financing	-	-	-	-	-	-	-	-	9.
10	Temporary Financing	-	-	-	-	-	-	-	-	10.
11.	TOTAL SOURCES	$ 182,619	$ 190,431	$ 168,944	$ 167,193	$ 176,277	$ 167,890	$ 134,152	$ 130,003	11.
	USES									
12.	Net Construction Expenditures	$ 123,427	$ 110,523	$ 119,673	$ 154,084	$ 174,477	$ 145,691	$ 133,918	$ 136,292	12.
13.	Funded Debt Reduction	-	-	-	-	-	-	-	-	13
13.	Revenue Bonds	38,425	51,820	52,870	54,956	55,433	59,165	61,253	64,756	13
	Revenue Bond Subordinate Debt	-	-	-	-	-	-	-	-	
	Capital Lease	-	-	-	-	-	-	-	-	.
	Equity Bond Contribution/ Debt Reduction	-	-	-	-	-	-	-	-	.
14.	Temporary Financing Repayment	-	-	-	-	-	-	-	-	14
15.	Changes in City Equity	-	-	-	-	-	-	-	-	15.
16	Distribution of Earnings	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	16.
	Additions To (Reductions of)									
17.	Non-Cash Working Capital	(39,749)	16,994	742	(3,202)	1,181	(879)	3,555	218	17.
18.	Cash Needs	140,103	197,337	191,285	223,838	249,091	221,977	216,726	219,266	18
19.	Cash Surplus (Shortfall)	42,516	(6,906)	(22,341)	(56,644)	(72,814)	(54,087)	(82,574)	(89,263)	19.
20.	TOTAL USES	$ 182,619	$ 190,431	$ 168,944	$ 167,193	$ 176,277	$ 167,890	$ 134,152	$ 130,003	20.
21.	Cash - Beginning of Period	88,535	131,051	124,146	101,805	45,160	(27,653)	(81,740)	(164,314)	21
22.	Cash - Surplus (Shortfall)	42,516	(6,906)	(22,341)	(56,644)	(72,814)	(54,087)	(82,574)	(89,263)	22.
23	**ENDING CASH**	$ 131,051	$ 124,146	$ 101,805	$ 45,160	$ (27,653)	$ (81,740)	$ (164,314)	$ (253,577)	23.
24	**Outstanding Commercial Paper**	-	-	-	-	-	-	-	-	24.
25.	**Outstanding Commercial Paper - Capital**	-	-	-	-	-	-	-	-	25.
26.	**DSIC Spending**	50,440	35,641	33,000	35,000	37,000	37,000	37,000	37,000	26.
27.	**Internally Generated Funds**	17,987	29,882	21,664	41,000	49,300	34,652	30,500	31,400	27.
28.	**TOTAL IGF + Incremental DSIC Spending**	68,427	65,523	54,664	76,000	86,300	71,652	67,500	68,400	28

Exhibit JFG-1
Present Rates

PHILADELPHIA GAS WORKS
DEBT SERVICE COVERAGE
(Dollars In Thousands)

LINE NO.		Actual 2017-18	HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	FUNDS PROVIDED									
1	Total Gas Revenues	$ 659,080	$ 664,084	$ 640,112	$ 636,064	$ 636,850	$ 638,466	$ 642,273	$ 643,675	1.
2	Other Operating Revenues	(11,581)	20,644	19,174	19,128	19,210	20,862	21,449	22,551	2.
3.	Total Operating Revenues	647,499	684,728	659,286	655,192	656,060	659,328	663,723	666,227	3.
4.	Other Income Incr. / (Decr) Restricted Funds	4,634	10,787	878	2,692	2,718	2,738	2,758	2,777	4
5.	City Grant	-	-	-	-	-	-	-	-	5
5.	AFUDC (Interest)	1,353	1,295	1,718	2,212	2,504	2,091	1,922	1,956	5
6.	TOTAL FUNDS PROVIDED	653,486	696,810	661,882	660,095	661,282	664,157	668,402	670,960	6.
	FUNDS APPLIED									
7.	Fuel Costs	186,265	206,825	195,407	191,558	189,554	191,050	194,279	196,125	7
8.	Other Operating Costs	343,757	335,232	353,898	355,310	376,929	379,160	385,505	388,739	8
9.	Total Operating Expenses	530,110	542,057	549,305	546,868	566,483	570,210	579,784	584,864	9.
10.	Less Non-Cash Expenses	82,843	74,552	73,083	69,157	76,765	84,545	77,603	76,412	10.
11.	TOTAL FUNDS APPLIED	447,267	467,505	476,222	477,711	489,718	485,666	502,181	508,452	11.
12.	Funds Available to Cover Debt Service	206,219	229,305	185,659	182,384	171,565	178,491	166,221	162,509	12
13.	1975 Ordinance Bonds Debt Service	-	-	-	-	-	-	-	-	13.
14.	**Debt Service Coverage 1975 Bonds**	-	-	-	-	-	-	-	-	14
13.	Net Available after Prior Debt Service	206,219	229,305	185,659	182,384	171,565	178,491	166,221	162,509	13
14.	Equipment Leasing Debt Service	-	-	-	(47,075)	-	-	-	-	14.
15.	Net Available after Prior Capital Leases	206,219	229,305	185,659	229,459	171,565	178,491	166,221	162,509	15
16.	1998 Ordinance Bonds Debt Service	87,690	98,417	100,784	106,790	107,718	108,452	113,799	120,191	16
17.	1999 Ordinance Subordinate Bonds Debt Service - (TXCP)	-	-	-	-	-	-	-	-	17
18.	Total 1998 Ordinance Debt Service	87,690	98,417	100,784	106,790	107,718	108,452	113,799	120,191	18.
19.	**Debt Service Coverage 1998 Bonds**	**2.35**	**2.33**	**1.84**	**2.16**	**1.59**	**1.65**	**1.46**	**1.35**	19.
20.	Net Available after 1998 Debt Service	118,529	130,888	84,875	122,669	63,847	70,039	52,422	42,318	20
	1998 Ordinance Subordinate Bond Debt Service	-	-	-	-	-	-	-	-	.
	Debt Service Coverage Subordinate Bonds	-	-	-	-	-	-	-	-	.
21.	Aggregate Debt Service	87,690	98,417	100,784	106,790	107,718	108,452	113,799	120,191	21.
22	Debt Service Coverage (Combined liens)	2.35	2 33	1 84	1.71	1.59	1 65	1 46	1.35	22
23.	Debt Service Coverage (Combined liens with $18.0 City Fee)	**2.15**	**2.15**	**1.66**	**1.54**	**1.43**	**1.48**	**1.30**	**1.20**	23.

Exhibit JFG-1
Present Rates

PHILADELPHIA GAS WORKS
BALANCE SHEET
(Dollars In Thousands)

NO.		ACTUAL 8/31/18	HTY ACTUAL 8/31/19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	NO.
	ASSETS									
1.	Utility Plant Net	$ 1,403,956	$ 1,451,470	$ 1,505,541	$ 1,591,691	$ 1,692,904	$ 1,762,079	$ 1,824,840	$ 1,889,990	1.
2.	Leasehold Asset	-	-	-	852	36,088	34,324	33,695	31,932	2.
3.	Sinking Fund Reserve	103,255	106,509	125,588	127,803	130,058	132,352	150,539	153,195	3.
4.	Capital Improvement Fund - Current	61,000	68,634	78,084	88,177	74,039	10,125	67,892	82,740	4.
5.	Capital Improvement Fund - Long-Term	50,815	-	167,333	81,621	9,288	-	94,965	13,861	5.
6.	Workers' Compensation Fund									6.
7.	& Health Insurance Escrow	2,646	2,711	2,731	2,759	2,786	2,814	2,843	2,871	7.
8.	Cash	131,051	124,146	101,805	45,160	(27,653)	(81,740)	(164,314)	(253,577)	8.
9.	Accounts Receivable:									9.
10.	Gas	141,346	146,018	144,249	140,752	137,949	135,139	132,313	129,481	10.
11.	Other	2,964	1,775	1,800	1,825	1,850	1,875	1,900	1,925	11.
12.	Accrued Gas Revenues	4,628	4,947	5,564	5,528	5,503	5,517	5,530	5,568	12.
13.	Reserve for Uncollectible	(66,328)	(66,751)	(67,015)	(65,657)	(64,324)	(62,985)	(61,637)	(60,284)	13
14.	Total Accounts Receivable:	82,610	85,989	84,598	82,448	80,978	79,546	78,106	76,690	14.
15.	Materials & Supplies	52,368	51,691	51,546	50,851	51,308	52,191	53,267	54,028	15.
16.	Other Current Assets	2,501	3,258	3,000	3,160	3,165	3,170	3,175	3,180	16.
17.	Deferred Debits	15,499	14,885	12,867	12,940	12,525	12,502	12,481	12,452	17.
18.	Unamortized Bond Issuance Expense	290	258	232	209	189	173	159	146	18.
19.	Unamortized Loss on Reacquired Debt	42,054	36,776	31,931	27,471	23,424	19,808	16,461	13,489	19.
20.	Deferred Environmental	31,593	37,102	48,168	47,108	44,246	43,234	42,262	41,290	20.
21.	Deferred Pension Outflows	24,943	14,421	12,560	8,590	7,775.00	6,716.00	6,559.00	6,402.00	21.
22.	Deferred OPEB Outflows	81,048	91,175	71,633	52,091	32,548 00	25,282.00	25,282.00	25,282.00	22.
23.	Other Assets	9,650	16,387	29,174	28,934	31,610	33,319	33,057	35,797	23.
24.	**TOTAL ASSETS**	$ 2,095,279	$ 2,105,410	$ 2,326,791	$ 2,251,864	$ 2,205,277	$ 2,135,894	$ 2,281,268	$ 2,189,767	24.
	EQUITY & LIABILITIES									
25.	City Equity	$ 111,700	$ 207,562	$ 261,603	$ 312,249	$ 344,421	$ 372,942	$ 392,682	$ 412,580	25
26.	Revenue Bonds	1,016,300	964,476	1,171,606	1,116,650	1,061,217	1,002,052	1,175,799	1,111,043	26.
27.	Unamortized Discount	(64)	(56)	(52)	(48)	(44)	(40)	(36)	(32)	27.
28.	Unamortized Premium	109,237	98,000	87,919	78,577	70,050	62,371	55,247	48,675	28.
29.	Long Term Debt	1,125,473	1,062,420	1,259,473	1,195,179	1,131,223	1,064,383	1,231,010	1,159,686	29.
30.	Lease Obligations	-	-	-	852	36,088	34,324	33,695	31,932	30.
31.	Notes Payable	-	-	-	-	-	-	-	-	31.
32.	City Loan	-	-	-	-	-	-	-	-	32.
32.	Accounts Payable	72,620	67,530	68,782	68,769	68,676	68,537	68,292	68,068	32.
33.	Customer Deposits	2,644	3,090	2,956	2,828	2,707	2,592	2,482	2,378	33.
34.	Other Current Liabilities	5,942	4,207	3,733	4,647	3,208	2,869	4,501	3,134	34.
35.	Pension Liability	261,261	247,246	244,136	244,675	244,919	244,177	242,469	235,033	35.
36.	OPEB Liability	378,888	336,079	316,130	293,105	266,991	237,796	205,133	169,348	36.
37.	Deferred Credits	16,494	8,284	3,848	4,013	2,154	2,105	2,096	2,090	37.
38.	Deferred Pension Inflows	13,266	18,230	18,166	6,344	693	664	1,260	6,719	38.
39.	Deferred OPEB Inflows	36,134	69,874	45,987	22,099	5,942	6,979	6,979	6,979	39.
40.	Accrued Interest	8,080	8,326	7,601	7,073	7,809	8,584	3,194	3,805	40.
41.	Accrued Taxes & Wages	3,889	4,080	4,042	4,222	4,394	4,573	4,760	4,954	41.
42.	Accrued Distribution to City	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	42.
43.	Other Liabilities	55,888	65,482	87,334	82,810	83,053	82,369	79,714	80,062	43.
44.	**TOTAL EQUITY & LIABILITIES**	$ 2,095,279	$ 2,105,410	$ 2,326,791	$ 2,251,864	$ 2,205,277	$ 2,135,894	$ 2,281,268	$ 2,189,767	44.
	CAPITALIZATION									
45.	Total Capitalization	1,237,173	1,253,628	1,521,076	1,507,428	1,475,643	1,437,325	1,623,692	1,572,266	45.
46.	Total Long Term Debt	1,125,473	1,062,772	1,259,473	1,195,179	1,131,223	1,064,383	1,231,010	1,159,686	46.
47.	Debt to Equity Ratio	90.97%	84.78%	82.80%	79.29%	76.66%	74.05%	75.82%	73.76%	47.
48.	Capitalization Ratio	10.08	5.57	4.81	3.83	3.28	2.85	3.13	2.81	48.

Exhibit JFG-2

PHILADELPHIA GAS WORKS
STATEMENT OF INCOME
(Dollars in Thousands)

LINE NO.		HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	OPERATING REVENUES								
1.	Non-Heating	$ 25,065	$ 24,026	$ 21,466	$ 20,547	$ 19,683	$ 18,889	$ 18,031	1.
2.	Gas Transport Service	63,565	66,378	67,767	69,251	70,578	71,981	73,328	2.
3.	Heating	603,521	579,656	576,418	575,835	576,884	580,122	580,938	3.
4	Revenue Adjustment (TED/BUS Rate)	-	270	400	531	662	792	922	4.
5.	Revenue Enhancement / Cost Reduction - FY2021	-	-	70,000	70,000	70,000	70,000	70,000	5
6	Weather Normalization Adjustment	1,596	92	-	-	-	-	-	6
7	Appropriation for Uncollectible Reserve	(29,983)	(30,927)	(33,101)	(32,369)	(32,435)	(32,604)	(32,662)	7.
8.	Unbilled Adjustment	320	617	(36)	(25)	14	13	38	8
9.	Total Gas Revenues	664,084	640,112	702,914	703,770	705,386	709,193	710,595	9.
10.	Appliance Repair & Other Revenues	7,908	7,910	7,964	8,044	8,125	8,207	8,290	10.
11.	LNG Project Revenues	-	-	-	-	1,550	2,000	3,000	11.
12.	Other Operating Revenues	12,736	11,264	12,161	12,162	12,184	12,239	12,257	12.
13.	Total Other Operating Revenues	20,644	19,174	20,125	20,206	21,859	22,446	23,547	13
14.	**Total Operating Revenues**	684,728	659,286	723,039	723,976	727,245	731,640	734,143	14.
	OPERATING EXPENSES								
15.	Natural Gas	206,801	195,397	191,548	189,544	191,040	194,269	196,115	15.
16.	Other Raw Material	24	10	10	10	10	10	10	16
17.	Sub-Total Fuel	206,825	195,407	191,558	189,554	191,050	194,279	196,125	17
18.	**CONTRIBUTION MARGINS**	**477,903**	**463,879**	**531,481**	**534,422**	**536,195**	**537,361**	**538,018**	18.
19	Gas Processing	22,028	22,512	21,740	22,918	22,291	22,917	23,545	19
20	Field Services	-	-	-	-	-	-	-	20.
21	Distribution	-	-	-	-	-	-	-	21.
20	Field Operations	79,341	85,188	86,412	88,554	90,765	93,041	95,367	20.
21.	Collection	4,212	4,383	4,430	4,541	4,654	4,771	4,889	21.
22.	Customer Service	13,983	15,248	15,751	16,145	16,549	16,962	17,385	22.
23.	Account Management	8,277	9,206	9,245	9,476	9,712	9,954	10,202	23.
24.	Marketing	4,232	4,999	4,916	5,040	5,167	5,297	5,430	24.
25.	Administrative & General	69,631	84,074	86,167	85,521	86,768	90,163	90,559	25.
26.	Health Insurance	22,080	25,340	27,151	29,091	31,171	33,402	35,794	26
27	Environmental	-	792	1,059	2,862	1,012	972	993	27.
28.	Capitalized Fringe Benefits	(9,786)	(13,716)	(8,969)	(9,546)	(9,921)	(10,347)	(10,200)	28
29.	Capitalized Administrative Charges	(14,276)	(16,793)	(22,707)	(21,788)	(20,247)	(19,722)	(20,129)	29.
30.	Amortization of Restructuring Costs								30
31.	Pensions	30,268	29,844	23,577	25,808	30,287	28,655	27,429	31.
32.	Taxes	8,705	9,280	9,435	9,539	9,731	9,925	9,856	32.
33.	Other Post Employment Benefits	28,351	24,732	25,422	31,592	20,795	24,446	22,197	33.
34.	Proposed Bond Refunding Savings	-	(1,437)	(589)	(588)	(590)	(588)	(220)	34.
35.	Cost / Labor Savings	-	144	(164)	-	-	-	-	35.
36.	Sub-Total Other Operating & Maintenance	267,046	283,796	282,876	299,165	298,144	309,848	313,097	36.
37.	Depreciation	63,686	65,602	67,934	73,264	76,516	71,157	71,142	37.
38.	Cost of Removal	4,500	4,500	4,500	4,500	4,500	4,500	4,500	38.
39.	To Clearing Accounts	-	-	-	-	-	-	-	39.
40.	Net Depreciation	68,186	70,102	72,434	77,764	81,016	75,657	75,642	40.
41	**Sub-Total Other Operating Expenses**	335,232	353,898	355,310	376,929	379,160	385,505	388,739	41.
42.	**TOTAL OPERATING EXPENSES**	542,057	549,305	546,868	566,483	570,210	579,784	584,864	42.
43	OPERATING INCOME	142,671	109,981	176,171	157,493	157,034	151,856	149,279	43.
44	**Interest Gain / (Loss) and Other Income**	10,787	4,369	7,400	6,706	5,897	7,473	7,098	44.
45.	INCOME BEFORE INTEREST	153,458	114,350	183,571	164,200	162,932	159,328	156,377	45
46	**INTEREST**								46.
47.	Long-Term Debt	46,136	50,520	54,442	51,549	48,512	57,937	54,824	47
48.	Other	(10,523)	(11,337)	(9,612)	(6,980)	(1,543)	(5,690)	(5,280)	48.
49.	AFUDC	(1,295)	(1,718)	(2,212)	(2,504)	(2,091)	(1,922)	(1,956)	49
50.	Loss From Extinguishment of Debt	5,278	4,845	4,460	4,047	3,615	3,348	2,972	50.
51.	**Total Interest**	39,596	42,310	47,078	46,112	48,493	53,673	50,560	51.
52.	**NET INCOME**	**113,862**	**72,040**	**136,493**	**118,088**	**114,439**	**105,655**	**105,816**	52.
53.	City Payment	18,000	18,000	18,000	18,000	18,000	18,000	18,000	53
54.	**NET EARNINGS**	**$ 95,862**	**$ 54,040**	**$ 118,493**	**$ 100,088**	**$ 96,439**	**$ 87,655**	**$ 87,816**	54.

PHILADELPHIA GAS WORKS
CASH FLOW STATEMENT
(Dollars in Thousands)

LINE NO.		HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	SOURCES								
1	Net Income	$ 113,862	$ 72,040	$ 136,493	$ 118,088	$ 114,439	$ 105,655	$ 105,816	1.
2	Depreciation & Amortization	57,048	60,396	63,079	68,808	72,473	67,400	67,558	2
3.	Earnings on Restricted Funds Withdrawal/(No Withdrawal)	(5,102)	(3,491)	(4,708)	(3,988)	(3,159)	(4,715)	(4,320)	3.
	Elimination of Accrued Interest on Refunded Debt	-	-	-	-	-	-	-	.
	Equity Bond / Debt Reduction	-	-	-	-	-	-	-	.
4	Proceeds from Bond Refunding to Pay Cost of Issuance	-	2,600	-	-	-	2,350	-	4.
5.	Increased/(Decreased) Other Assets/Liabilities	(20,376)	(27,609)	(37,907)	(26,891)	(21,985)	(35,039)	(39,027)	5
6	Available From Operations	145,431	103,935	156,956	156,016	161,768	135,651	130,027	6.
7	Drawdown of Bond Proceeds	45,000	65,009	78,084	88,177	74,039	66,418	67,892	7.
	Grant Income	-	-	-	-	-	-	-	.
	Lease Funds Debt Service	-	-	-	-	-	-	-	.
	Capitalized Interest	-	-	-	-	-	-	-	
8.	Release of Restricted Fund Asset	-	-	-	-	-	-	-	8.
9	Release of Bond Proceeds to Pay Temporary Financing	-	-	-	-	-	-	-	9.
10.	Temporary Financing	-	-	-	-	-	-	-	10.
11.	TOTAL SOURCES	**$ 190,431**	**$ 168,944**	**$ 235,040**	**$ 244,193**	**$ 235,807**	**$ 202,069**	**$ 197,919**	11.
	USES								
12.	Net Construction Expenditures	$ 110,523	$ 119,673	$ 154,084	$ 174,477	$ 145,691	$ 133,918	$ 136,292	12.
13	Funded Debt Reduction	-	-	-	-	-	-	-	13.
13.	Revenue Bonds	51,820	52,870	54,956	55,433	59,165	61,253	64,756	13.
	Revenue Bond Subordinate Debt	-	-	-	-	-	-	-	.
	Capital Lease	-	-	-	-	-	-	-	.
	Equity Bond Contribution/ Debt Reduction	-	-	-	-	-	-	-	.
14	Temporary Financing Repayment	-	-	-	-	-	-	-	14
15	Changes in City Equity	-	-	-	-	-	-	-	15.
16.	Distribution of Earnings	18,000	18,000	18,000	18,000	18,000	18,000	18,000	16
	Additions To (Reductions of)								
17.	Non-Cash Working Capital	16,994	742	(3,470)	983	(1,077)	3,357	19	17.
18	Cash Needs	197,337	191,285	223,570	248,893	221,779	216,528	219,067	18.
19	Cash Surplus (Shortfall)	(6,906)	(22,341)	11,471	(4,699)	14,028	(14,459)	(21,149)	19.
20.	TOTAL USES	**$ 190,431**	**$ 168,944**	**$ 235,040**	**$ 244,193**	**$ 235,807**	**$ 202,069**	**$ 197,919**	20
21	Cash - Beginning of Period	131,051	124,146	101,805	113,276	108,576	122,604	108,146	21.
22	Cash - Surplus (Shortfall)	(6,906)	(22,341)	11,471	(4,699)	14,028	(14,459)	(21,149)	22.
23.	**ENDING CASH**	**$ 124,146**	**$ 101,805**	**$ 113,276**	**$ 108,576**	**$ 122,604**	**$ 108,146**	**$ 86,997**	23
24	**Outstanding Commercial Paper**	-	-	-	-	-	-	-	24.
25.	**Outstanding Commercial Paper - Capital**	-	-	-	-	-	-	-	25
26.	**DSIC Spending**	35,641	33,000	35,000	37,000	37,000	37,000	37,000	26
27.	**Internally Generated Funds**	29,882	21,664	41,000	49,300	34,652	30,500	31,400	27.
28.	**TOTAL IGF + Incremental DSIC Spending**	65,523	54,664	76,000	86,300	71,652	67,500	68,400	28.

Exhibit JFG-2
Requested Rates

PHILADELPHIA GAS WORKS
DEBT SERVICE COVERAGE
(Dollars In Thousands)

LINE NO.		HTY Actual 2018-19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	LINE NO.
	FUNDS PROVIDED								
1.	Total Gas Revenues	$ 664,084	$ 640,112	$ 702,914	$ 703,770	$ 705,386	$ 709,193	$ 710,595	1
2.	Other Operating Revenues	20,644	19,174	20,125	20,206	21,859	22,446	23,547	2.
3.	Total Operating Revenues	684,728	659,286	723,039	723,976	727,245	731,640	734,143	3
4.	Other Income Incr / (Decr.) Restricted Funds	10,787	878	2,692	2,718	2,738	2,758	2,777	4.
5.	City Grant	-	-	-	-	-	-	-	5.
5.	AFUDC (Interest)	1,295	1,718	2,212	2,504	2,091	1,922	1,956	5.
6.	TOTAL FUNDS PROVIDED	696,810	661,882	727,942	729,198	732,074	736,319	738,876	6.
	FUNDS APPLIED								
7.	Fuel Costs	206,825	195,407	191,558	189,554	191,050	194,279	196,125	7
8.	Other Operating Costs	335,232	353,898	355,310	376,929	379,160	385,505	388,739	8
9.	Total Operating Expenses	542,057	549,305	546,868	566,483	570,210	579,784	584,864	9
10.	Less Non-Cash Expenses	74,552	73,083	69,157	76,765	84,545	77,603	76,412	10.
11.	TOTAL FUNDS APPLIED	467,505	476,222	477,711	489,718	485,666	502,181	508,452	11.
12.	Funds Available to Cover Debt Service	229,305	185,659	250,231	239,481	246,408	234,138	230,425	12.
13.	1975 Ordinance Bonds Debt Service	-	-	-	-	-	-	-	13
14	**Debt Service Coverage 1975 Bonds**	-	-	-	-	-	-	-	14.
13.	Net Available after Prior Debt Service	229,305	185,659	250,231	239,481	246,408	234,138	230,425	13
14.	Other Cash Requirements	-	-	-	-	-	-	-	14
15.	Net Available after Prior Capital Leases	229,305	185,659	250,231	239,481	246,408	234,138	230,425	15.
16.	1998 Ordinance Bonds Debt Service	98,417	100,784	106,790	107,718	108,452	113,799	120,191	16.
17.	1999 Ordinance Subordinate Bonds Debt Service - (TXCP)	-	-	-	-	-	-	-	17
18.	Total 1998 Ordinance Debt Service	98,417	100,784	106,790	107,718	108,452	113,799	120,191	18.
19.	**Debt Service Coverage 1998 Bonds**	**2.33**	**1.84**	**2.34**	**2.22**	**2.27**	**2.06**	**1.92**	19
20.	Net Available after 1998 Debt Service	130,888	84,875	143,441	131,763	137,956	120,339	110,234	20
	1998 Ordinance Subordinate Bond Debt Service	-	-	-	-	-	-	-	.
	Debt Service Coverage Subordinate Bonds	-	-	-	-	-	-	-	.
21.	Aggregate Debt Service	98,417	100,784	106,790	107,718	108,452	113,799	120,191	21.
22.	Debt Service Coverage (Combined liens)	2.33	1.84	2.34	2.22	2.27	2.06	1.92	22.
23.	Debt Service Coverage (Combined liens with $18.0 City Fee)	**2.15**	**1.66**	**2.17**	**2.06**	**2.11**	**1.90**	**1.77**	23.

PHILADELPHIA GAS WORKS
BALANCE SHEET
(Dollars in Thousands)

NO.		HTY ACTUAL 8/31/19	FTY ESTIMATE 2019-20	FPFTY BUDGET 2020-21	FORECAST 2021-22	FORECAST 2022-23	FORECAST 2023-24	FORECAST 2024-25	NO.
	ASSETS								
1.	Utility Plant Net	$ 1,451,470	$ 1,505,541	$ 1,591,691	$ 1,692,904	$ 1,762,079	$ 1,824,840	$ 1,889,990	1.
2.	Leasehold Asset	-	-	852	36,088	34,324	33,695	31,932	2.
3.	Sinking Fund Reserve	106,509	125,588	127,803	130,058	132,352	150,539	153,195	3.
4.	Capital Improvement Fund - Current	68,634	78,084	88,177	74,039	10,125	67,892	82,740	4.
5.	Capital Improvement Fund - Long-Term	-	167,333	81,621	9,288	-	94,965	13,861	5.
6.	Workers' Compensation Fund								6.
7.	& Health Insurance Escrow	2,711	2,731	2,759	2,786	2,814	2,843	2,871	7.
8	Cash	124,146	101,805	113,276	108,576	122,604	108,146	86,997	8.
9.	Accounts Receivable:								9.
10.	Gas	146,018	144,249	140,392	137,300	134,202	131,088	127,968	10.
11.	Other	1,775	1,800	1,825	1,850	1,875	1,900	1,925	11.
12.	Accrued Gas Revenues	4,947	5,564	5,528	5,503	5,517	5,530	5,568	12.
13.	Reserve for Uncollectible	(66,751)	(67,015)	(65,565)	(64,142)	(62,713)	(61,275)	(59,832)	13.
14.	Total Accounts Receivable	85,989	84,598	82,180	80,511	78,881	77,243	75,629	14.
15.	Materials & Supplies	51,691	51,546	50,851	51,308	52,191	53,267	54,028	15.
16.	Other Current Assets	3,258	3,000	3,160	3,165	3,170	3,175	3,180	16.
17.	Deferred Debits	14,885	12,867	12,940	12,525	12,502	12,481	12,452	17.
18.	Unamortized Bond Issuance Expense	258	232	209	189	173	159	146	18.
19.	Unamortized Loss on Reacquired Debt	36,776	31,931	27,471	23,424	19,808	16,461	13,489	19.
20.	Deferred Environmental	37,102	48,168	47,108	44,246	43,234	42,262	41,290	20.
21.	Deferred Pension Outflows	14,421	12,560	8,590	7,775.00	6,716.00	6,559.00	6,402.00	21.
22.	Deferred OPEB Outflows	91,175	71,633	52,091	32,548.00	25,282.00	25,282.00	25,282.00	22.
23.	Other Assets	16,387	29,174	28,934	31,610	33,319	33,057	35,797	23.
24.	**TOTAL ASSETS**	$ 2,105,410	$ 2,326,791	$ 2,319,711	$ 2,341,040	$ 2,339,574	$ 2,552,865	$ 2,529,280	24.
	EQUITY & LIABILITIES								
25.	City Equity	$ 207,562	$ 261,603	$ 380,096	$ 480,184	$ 576,622	$ 664,279	$ 752,093	25.
26.	Revenue Bonds	964,476	1,171,606	1,116,650	1,061,217	1,002,052	1,175,799	1,111,043	26.
27.	Unamortized Discount	(56)	(52)	(48)	(44)	(40)	(36)	(32)	27.
28.	Unamortized Premium	98,000	87,919	78,577	70,050	62,371	55,247	48,675	28.
29.	Long Term Debt	1,062,420	1,259,473	1,195,179	1,131,223	1,064,383	1,231,010	1,159,686	29.
30.	Lease Obligations	-	-	852	36,088	34,324	33,695	31,932	30.
31.	Notes Payable	-	-	-	-	-	-	-	31.
32.	City Loan	-	-	-	-	-	-	-	32.
32.	Accounts Payable	67,530	68,782	68,769	68,676	68,537	68,292	68,068	32.
33.	Customer Deposits	3,090	2,956	2,828	2,707	2,592	2,482	2,378	33.
34.	Other Current Liabilities	4,207	3,733	4,647	3,208	2,869	4,501	3,134	34.
35.	Pension Liability	247,246	244,136	244,675	244,919	244,177	242,469	235,033	35.
36.	OPEB Liability	336,079	316,130	293,105	266,991	237,796	205,133	169,348	36.
37.	Deferred Credits	8,284	3,848	4,013	2,154	2,105	2,096	2,090	37.
38.	Deferred Pension Inflows	18,230	18,166	6,344	693	664	1,260	6,719	38.
39.	Deferred OPEB Inflows	69,874	45,987	22,099	5,942	6,979	6,979	6,979	39.
40.	Accrued Interest	8,326	7,601	7,073	7,809	8,584	3,194	3,805	40.
41.	Accrued Taxes & Wages	4,080	4,042	4,222	4,394	4,573	4,760	4,954	41.
42.	Accrued Distribution to City	3,000	3,000	3,000	3,000	3,000	3,000	3,000	42.
43.	Other Liabilities	65,482	87,334	82,810	83,053	82,369	79,714	80,062	43.
44.	**TOTAL EQUITY & LIABILITIES**	$ 2,105,410	$ 2,326,791	$ 2,319,711	$ 2,341,040	$ 2,339,574	$ 2,552,865	$ 2,529,280	44.
	CAPITALIZATION								
45.	Total Capitalization	1,253,628	1,521,076	1,575,275	1,611,406	1,641,005	1,895,289	1,911,779	45.
46.	Total Long Term Debt	1,062,772	1,259,473	1,195,179	1,131,223	1,064,383	1,231,010	1,159,686	46.
47.	Debt to Equity Ratio	84.78%	82.80%	75.87%	70.20%	64.86%	64.95%	60.66%	47.
48.	Capitalization Ratio	5.57	4.81	3.14	2.36	1.85	1.85	1.54	48.

Exhibit JFG-3 (Part 1 of 3)

MOODY'S
INVESTORS SERVICE

CREDIT OPINION
10 June 2019

Rate this Research

Philadelphia (City of) PA Gas Works

Update to Credit Analysis

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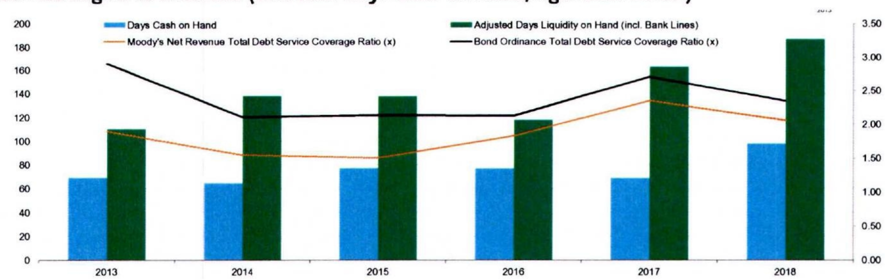
Summary

Philadelphia Gas Works' ("PGW", A3, stable) credit profile reflects its credit supportive regulatory environment that has increased the utility's asset base and supported its main replacement program; a stable and predictable leverage, financial and operating profile that is expected to be maintained; a sizeable low income and modestly growing customer base; and the utility's position as a supplier of last resort, which yields consistently above average retail rates. The rating also incorporates the utility's sound management that has enhanced PGW's operating efficiencies resulting in recurring cost savings. PGW's state rate regulation constrains its cost recovery framework in comparison to the majority of municipally owned gas utilities in the US, which benefit from local unregulated rate setting. Thus, our credit view heavily considers the constructive relationship PGW has with the Pennsylvania Public Utility Commission (PUC) and the fact that the PUC must approve rates sufficient for PGW to satisfy its indenture required 1.5x debt service coverage ratio (DSCR) rate covenant.

Exhibit 1
Liquidity and coverage ratios have improved in recent years but will moderate when new debt service begins to amortize (Left axis: Days Cash on Hand, right axis: DSCR)



Source: PGW Audited Financial Statements, and Moody's Investors Service

Credit strengths

- » Credit supportive rate regulatory environment and history of an effective working relationship with the PUC and the City of Philadelphia (A2, Stable)
- » Strong 1.5x DSCR indenture required rate covenant and The Public Utility Code requires Pennsylvania's PUC to establish rates that meet bond ordinance requirements
- » Ongoing operating improvements contain costs and support PGW's financial improvement
- » Low natural gas prices, strategic location of its LNG assets, and significant storage capacity allow for effective gas cost management and opportunities
- » Aggressive strategy for collections of receivables has yielded strong and stable collection rates above 95% on average, supported in recent years by lower natural gas prices
- » City can only increase the $18 million city payment by 10% or $1.8 million without PUC approval, anything over 10% requires PUC approval

Credit challenges

- » Sizable low income residential population contributes to delinquencies that may grow if federal assistance programs are cut and low income residents face higher monthly bills
- » Customer base growth to remain modest, especially as the city's economic growth moderates
- » Above average retail rates compared to peers
- » High system leverage has been stable and predictable, but is forecast to decline over time given increased cash funded capital expenditures
- » Maintaining sufficient available liquidity to balance exposures to gas prices, variable rate debt liquidity risks, high receivable levels and other general liquidity needs

Rating outlook

The stable outlook reflects Moody's view that PGW's sound fiscal management and credit supportive regulatory environment will continue to yield stable and relatively predictable financial and operating results.

Factors that could lead to an upgrade

- » Material reduction in outstanding debt.
- » Notable expansion of the customer base.
- » Notable growth in the revenue base due to PUC support of capital program.

Factors that could lead to a downgrade

- » A less credit supportive rate regulatory environment, including any notable changes to the recently announced base rate settlement by the PUC.
- » Financial metrics narrow due to higher than expected costs and/or weaker revenue collections.
- » Increased leverage without sufficient cost recovery or a material decline in liquidity.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the ratings tab on the issuer/entity page on www.moodys.com for the most updated credit rating action information and rating history.

Key indicators

Exhibit 2
Key Financial Metrics for Philadelphia Gas Works

	2014	2015	2016	2017	2018
Operating Revenues ($'000)	759,136	697,247	591,237	636,203	678,325
Debt Outstanding ($'000)	1,015,920	915,175	837,830	1,054,725	1,016,300
Debt to Operating Revenue (x)	1.34	1.31	1.42	1.66	1.50
Days Cash on Hand	65	77	77	69	98
Adjusted Days Liquidity on Hand (incl. Bank Lines)	138	138	118	163	187
Moody's Net Revenue Total Debt Service Coverage Ratio (x)	1.55	1.51	1.83	2.35	2.06
Bond Ordinance Total Debt Service Coverage Ratio (x)	2.11	2.14	2.13	2.71	2.35

Source: PGW Audited Financial Statements and Moody's Investors Service

Profile

PGW is a municipally owned regulated gas distribution utility that supplies and transports natural gas to 515,000 primarily residential customers within the City of Philadelphia. PGW has a distribution monopoly in the City and serves as the supplier of last resort given there is gas supplier choice in Pennsylvania. If customers use another gas supplier, PGW is paid a transportation fee for the use of its lines. PGW's gas distribution system consists of approximately 3,042 miles of gas mains, 476,938 service lines, and 192 regulator stations. Approximately 44% (by length) of the gas mains are cast iron, 33% are steel, 4% are ductile iron and 19% are plastic. Of the steel lines, 52% are wrapped, coated and cathodically protected. About 26% of the service lines are steel and 74% are plastic. PGW also operates two LNG facilities for liquefaction, storage, and regasification of natural gas, which is used during the winter in addition to the utility's firm take from two interstate pipelines. The utility has laddered firm gas supply contracts and has a relatively balanced gas supply mix with half coming from the Spectra pipeline and the other half coming from the Transco-Williams pipeline.

Detailed credit considerations

LNG Expansion would expand PGW capacity and provide a stable revenue source

After a public Request for Proposal (RFP) for LNG plant optimization, PGW entered into a Memorandum of Understanding with two RFP respondents in regard to the development of new LNG facilities at PGW's Richmond and Passyunk plants. The approval for development at the Passyunk Plant has been approved by the PFMC board, Philadelphia Gas Commission, and the City Council Transportation and Utilities Committee. A final vote, and approval from the full City Council is expected this summer (2019). Negotiations for the Richmond plant are on-going with the proposal respondent. To establish rates for LNG sales and ancillary services at the plants, PGW has filed for approval of an LNG Gas Service Tariff with the PUC.

Revenue Generating Base

PGW serves approximately 515,000 customers in the Philadelphia area by supplying, storing and transporting natural gas. As the largest municipally owned regulated gas distribution utility in the US, PGW has a distribution monopoly, yet their residents have the ability to choose their gas supplier. If customers use another gas supplier, PGW is paid a transportation fee for the use of its lines. PGW is also the regional supplier of last resort.

Per moodyseconomy.com, Philadelphia's economy had a strong performance in 2018, with job growth at near record levels and payrolls expanding at 2.6% from a year earlier, helping push the unemployment rate down to the lowest levels for the first time in over 15 years. The city's economy is expected to continue to grow at a modest pace in the near term, but job growth is expected to slow and weak demographics among other factors will constrain the city to a below average socio-economic profile.

Philadelphia is the economic center of a large, multi-state region, and the tax base has begun to grow after decades of decline. With a population of roughly 1.6 million, Philadelphia is the sixth-largest city in the US by population, and is at the center of the sixth-largest metropolitan area. The city's socioeconomic profile is below average: poverty is among the highest of any large US city at 26%, the median family income is equal to 71% of the US median, and unemployment, at 5.2% as of January 2019, was higher than the US rate of 4.4% for the same period.

However, the past half-decade has shown more positive economic trends. The population is growing and becoming better-educated, and personal income has increased 21% since 2009. We attribute the city's growth to national demographic trends, as well as the appeal of the city's substantial mix of universities, hospitals, and other employers. The city's strong nonprofit sector provides some underlying strength to the economy that is not reflected in tax base valuation or socioeconomic statistics.

CREDIT SUPPORTIVE REGULATORY ENVIRONMENT SOLIDIFIED RATE STRUCTURE OVER SEVERAL YEARS

The PUC has historically supported the multi-year improvement in PGW's rate structure that is a key driver of PGW's credit profile and evidenced by the approved increase to base rates in December 2017 of about $42 million per year with the PUC also approving surcharges increasing Gas Cost Rates ("GCR") varying with Heating Degree Days ("HDD"). This support is expected to continue as PGW's five year forecast includes filing for an increase to base rates of about $45 million in February 2020 for December 2020 implementation.

PGW's credit supportive rate regulatory history and PGW's current rate structure is considered to be satisfactory, enabling full cost recovery and cash flow generation to fund capital reinvestment. The improved rate structure will also help PGW fund future capital investments with approximately 45% debt and 55% from internally generated cash, which will help reduce the utility's leverage profile over time while also benefiting from additions to its asset base.

Favorably, PGW's weather normalization adjustment (WNA) mechanism has helped keep margins stable. The weather normalization adjustment is key to the utility's financial stability. While the WNA tempers PGW's revenue upside during cold periods, it also limits the downside risk during warm years. For FY 2018, the adjustment resulted in a decrease in billings of $3.8 million, a notable change from the increase in billings of $29.6 million for FY 2017. We view the WNA as a favorable driver of credit stability for it provides sound downside protection due to weather fluctuations.

The PUC's support of PGW increased after 2000 when the PUC and PGW settled an appeal and the PUC adopted a new provision when setting PGW's rates. The provision requires the PUC to allow PGW to charge sufficient rates to satisfy its bond covenants, including the 1.5x DSCR rate covenant. Moody's calculation of net revenue debt service coverage treats the $18 million annual payment to the city as an operating expense, which results in a lower DSCR than the bond ordinance calculation.

Operational and Financial Performance

FY 2018 (ended August 31, 2018) operating revenues increased 6.6% compared to FY 2017 as a result of the increase to base rates implemented in December 2017 and a higher natural gas send out which was approximately 9% higher in FY 2018 compared to FY 2017. Combined, net revenues only increased by about 14% year-over-year, resulting in a Moody's calculated DSCR of 2.06x, a slight decline from the FY 2017 DCSR of 2.35x given the 30% increase in debt service for the year, but higher than the FY 2016 DSCR of 1.83x. Moody's expects the FY 2019 DSCR to be in a similar range as both revenues and debt service rise in step. Moody's calculated DSCR includes the $18 million payment to the city as an operating expense, which lowers Moody's DSCR compared to the bond ordinance DSCR of 2.35x in FY 2018, 2.71x in FY 2017, and 2.13x in FY 2016.

PGW's five year collective bargaining agreement (CBA) expires in 2020 and includes a key modification to allow PGW to hire outside contractors to perform work to replace the steel and cast iron mains. Outside contractors may also be used to perform service abandonment projects regulated by the PUC. This change coupled with the PUC's approval of the Distribution System Improvement Charge (DSIC) at the higher 7.5% has enabled PGW to accelerate its cast iron main line replacement program. Cost saving measures referenced above plus the future consolidation of operations into fewer locations will enable PGW to manage expense growth. However, rising pension costs offset some of these positive expense reductions in other areas.

LIQUIDITY

Days cash on hand increased in FY 2018 to 98 days from 69 days in FY 2017, as a result of an increase in the unrestricted cash balance. The unrestricted cash balance for FY 2018 was $131 million a modest increase of 48% compared to FY 2017 which had an unrestricted cash balance of $88 million. Days cash on hand is forecast to remain in the 70-100 days range for the next several years.

Moody's adjusted days liquidity on hand, which includes available commercial paper backed by an undrawn credit facility, is a stronger 187 days cash on hand for FY 2018 and 163 days cash on hands for FY 2017. As of FY 2018, PGW does not have any commercial paper outstanding. PGW expects to issue commercial paper in the future to partially fund its capital expenditures.

The commercial paper program is currently supported by a $120 million line of credit with TD Bank, N.A. (A1 (cr), stable) that expires on December 1, 2021. There are no material conditions to fund, so Moody's includes any available amounts in our calculations of adjusted days liquidity on hand.

Debt and Other Liabilities

Outstanding debt declined slightly in FY 2018 as PGW did not issue any new debt or commercial paper as it continues to have funds from its 2017 debt issuance with about $61 million forecast to be available for capital projects in FY 2020. PGW expects to issue long term debt in FY 2022 of approximately $320 million to finance multiple years of capital projects, which is manageable as PGW's debt is fully amortizing and is forecast to decline over time with more cash funded capital expenditures. Over the next several years, PGW is expected to use a combination of internal funds, debt, and commercial paper to fund its capital expenditure program.

The majority of PGW's $840 million capital plan from FY 2020 to FY 2025 is dedicated to the distribution system, which is primarily the cast iron main replacement program. Less than half of the current capital plan will be financed with debt while the balance will be directly funded from internally generated funds provided in large part by the collection of the DSIC in rates.

DEBT STRUCTURE

The majority of PGW's outstanding debt is fully amortizing and fixed rate with variable rate demand bonds accounting for about 15% of outstanding debt. PGW's debt service repayment schedule is declining overall with a final maturity in FY 2047. This amortization profile provides PGW with the flexibility to layer in new debt service payments for new debt without notably raising annual debt service costs that would require a rate increase.

As of the end of FY 2018, PGW had about $152.8 million of variable rate demand obligation bonds outstanding, or 15% of total debt outstanding, a notable decline from FY 2015 when 26% of outstanding debt was variable rate. PGW's variable rate debt consists of $122.8 million of Series 8B, 8C, 8D and 8E bonds that are fully swapped to fixed and $30 million of Series 5A-2 bonds that are not swapped and expose PGW to modest interest rate risk.

DEBT-RELATED DERIVATIVES

PGW currently has one outstanding floating-to-fixed rate swap with JP Morgan Chase Bank, N.A. (Aa2(cr), stable) for a $122.8 million notional amount that synthetically fixes the variable interest rate on $122.8 million of outstanding variable rate demand bonds. Under the swap agreement, PGW pays JP Morgan semiannual fixed rate payments of 3.6745% and receives floating payments based on 70% of 1-month LIBOR. The mark-to-market value on the swap was a negative $14.8 million as of August 31, 2018. PGW has no collateral posting requirement and the swap is insured by Assured Guaranty Municipal Corp (A2, stable), whose rating is considered under the swap's additional termination events should the insurer's rating fall below A2/A and PGW's rating would also have to fall below Baa2/BBB.

PENSIONS AND OPEB

Moody's adjusted net pension liability (ANPL) in FY 2018 for PGW was about $593 million, compared to its reported net pension liability of $261 million. However, unfunded pension liabilities have a modest incremental negative impact on PGW's financial metrics given PGW's sizeable total debt outstanding of over $1 billion and a strong revenue base. Moody's adjusts the reported pension liabilities of entities that report under governmental accounting standards, to enhance comparability across rated issuers. Under governmental pension accounting, liabilities are discounted using an assumed rate of investment return on plan assets. Under our adjustments, we value liabilities using a market discount rate for high quality taxable bonds, a proxy for the risk of pension benefits. PGW continues to pay its annual actuarial required contribution (ARC).

The City of Philadelphia sponsors PGW's single employer defined-benefit pension plan, the Philadelphia Gas Works Pension plan. In December 2011, the City passed an ordinance to offer all new PGW employees a one-time option of entering into a deferred compensation plan with an employer contribution equal to 5.5% of applicable wages or the defined-benefit pension plan with an employee contribution of 6% of applicable wages.

PGW continues to annually improve the funding of its outstanding OPEB liabilities with both the PUC approved OPEB rate surcharge and cash on hand. We expect the OPEB funding levels to continue to annually improve given the PUC's approval to extend the OPEB surcharge, which would correspondingly lower the annual OPEB costs to the utility. PGW's OPEB plan includes healthcare and life insurance benefits in accordance with their retiree medical program.

Management and Governance

PGW is municipally owned by the City of Philadelphia, but unlike other municipally owned utilities, PGW's rates are regulated by the state's PUC. PGW has a monopoly over gas distribution in its 134 square mile service territory.

PGW is responsible for the day-to-day operation, management and maintenance of the gas system, yet several other entities have oversight over PGW's operations, including budgetary and rate approval.

The state's PUC regulates PGW's rates, services and safety, while the seven member board of the Philadelphia Facilities Management Corporation (PFMC) is the executive management and operational director of PGW.

The Philadelphia Gas Commission (PGC) is a five member oversight board who approves PGW's operating budget and some PFMC personnel, as well as reviewing the capital budget, real estate transactions and gas supply contracts for approval by the City Council. The five member PGC board is made up of the City Controller, two mayoral appointees, and two city council appointees.

The City Council enacts legislation to approve PGW's capital budget and gas supply contracts, as well as other material operating changes, real estate transactions and capital investments.

Exhibit 3
PGW's key counterparty relationships and general responsibilities

Organization	Function
City of Philadelphia	• The City owns PGW property. • The City Administrator reviews certain transactions and processes (chiefly through the Director of Finance). • City Council enacts legislation for the functioning of PGW (e.g., the capital budget, real estate transactions, pension modifications and certain gas supply contracts).
Philadelphia Gas Commission	• The Commission consists of the City Controller, two members appointed by the City Council and two members appointed by the Mayor. • Responsibilities include: • Approval of certain executive personnel provided by PFMC. • Review of gas supply contracts for approval by City Council. • Approval of PGW's operating budget. • Review of PGW's capital budgets for approval by City Council. • Review of real estate transactions for approval by City Council.
PFMC	• Incorporated by the City in 1972 for the specific purpose of operating PGW. • Is governed by a seven member board of directors. • Provides executive management for PGW. • Directs operation of PGW facilities and operations.
PGW	• Manages construction, operation and maintenance of the gas system on a day-to-day basis. • PGW executive management is responsible for hiring PGW staff.
PUC	• Regulates rates, customer service and safety.

Source: PGW Fifteenths Series Preliminary Offering Statement

Rating methodology and scorecard factors

The principal methodology used in this rating was US Municipal Utility Revenue Debt published in October 2017. Please see the Rating Methodologies page on www.moodys.com for a copy of this methodology.

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REPORT NUMBER 1179015

Exhibit JFG-3 (Part 2 of 3)

S&P Global
Ratings

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Philadelphia; Gas; Joint Criteria

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Philadelphia; Gas; Joint Criteria

Credit Profile		
Philadelphia gas wks (1998 Gen Ordinance)		
Long Term Rating	A/Stable	Affirmed
Philadelphia gas wks (1998 General Ordinance)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed

Rationale

S&P Global Ratings affirmed its 'A' long-term rating and underlying rating (SPUR) on Philadelphia's gas works (PGW) revenue bonds outstanding, issued under its 1998 general ordinance. The outlook is stable.

S&P Global Ratings also affirmed the following ratings on issues rated under our joint support criteria (low correlation):

- 'AA+/A-1' rating on the 1998 ordinance, eighth series B bonds, jointly supported by a letter of credit (LOC) from Wells Fargo Bank N.A.;
- 'AA/A-1' rating on the 1998 ordinance, eighth series C bonds, jointly supported by a LOC from Barclays Bank PLC;
- 'AA+/A-1+' rating on the 1998 ordinance, eighth series D bonds, jointly supported by a LOC from Royal Bank of Canada; and
- 'AA/A-1' rating on the 1998 ordinance eighth series E bonds, jointly supported by a LOC from PNC Bank N.A.

We understand that PGW intends to replace both of the existing LOCs supporting the eighth series B and E bonds with LOCs provided by TD Bank N.A. later this month. A report will follow to reflect that substitution, once effective.

The bonds are secured by gas works revenue net of operating expenses. At fiscal year-end Aug. 31, 2018, PGW had $1 billion in debt outstanding (exclusive of premiums and discounts).

The rating also reflects the application of our "U.S. Municipal Retail Electric And Gas Utilities: Methodology And Assumptions" criteria, published Sept. 27, 2018 on RatingsDirect.

The rating reflects our opinion of PGW's strong enterprise risk profile and very strong financial risk profile. The strong enterprise risk profile reflects our view of PGW's strong operational management assessment and very strong economic fundamentals, offset by our view of PGW's vulnerable market position. The very strong financial risk profile reflects our view of PGW's extremely strong coverage partly offset by its very high debt and liabilities position. We have applied a one-notch holistic negative adjustment from the initial indicative rating to arrive at the final rating based on our view that PGW's debt burden is extremely high, and that, given its very large capital plan, above-average rates, and below-average income levels, its financial flexibility is constrained.

The strong enterprise risk profile reflects our view of PGW's:

- Strong operational and management assessment, highlighted by strong operational assets, environmental regulation and compliance, very strong management, policies and planning, and strong rate setting practices

- Very strong service area economic fundamentals, reflecting the stability provided by a broad and mostly residential revenue base of almost 500,000 customer accounts with minimal customer concentration, partly offset by low income levels
- Vulnerable market position, as a result of very high rates versus those of other regional providers and PGW's dependence on the Pennsylvania Public Utility Commission (PAPUC) for approval for base-rate increases, with a mixed history of support for filings, although this has improved recently. Although PGW is subject to rate regulation and does not benefit from the flexibility we typically associate with municipal utilities that have autonomous rate setting authority, recent years' regulatory decisions provided rate relief that supports extremely strong debt service coverage metrics. Moreover, the regulator has authorized the utility's use of several surcharges that support capital improvements and postemployment benefits. Also available to the utility are a weather normalization adjustment that insulates margins from weather variability and a gas cost rate adjustor that automatically passes on gas costs to ratepayers on a quarterly basis
- Extremely strong industry risk relative to other industries and sectors

The very strong financial risk profile reflects our view of the PGW's:

- Extremely strong coverage, evidenced by very robust coverage of fixed costs (debt service payments after the annual transfer to the City of Philadelphia's general fund) averaging 1.9x over fiscal years 2014 through 2018, reaching 2.1x in fiscal 2018 (management estimates fixed-cost coverage in fiscal years 2019 to 2024 in a range of 1.9x to 2.4x under what we view as reasonable assumptions);
- Very strong liquidity and reserves, reflecting $131 million in unrestricted cash as of audited fiscal 2018, (measuring a strong 106 days of operating expenses), which management projects will remain near current levels (in addition, a $120 million commercial paper (CP) program that the utility can use to provide working capital, as well as use for capital purposes, bolsters liquidity); and
- Highly vulnerable debt and liabilities position, suggested by a very high debt-to-capitalization ratio of 91% as of fiscal 2018, although the ratio is projected to decline to 54% by fiscal 2025, and with a large capital plan of $830 million over the next six years as PGW addresses its main replacement program.

The 1998 ordinance bonds, although rated as working-lien bonds, were subordinate to the closed senior-lien 1975 ordinance debt. They are now effectively senior-lien obligations because the 1975 ordinance bonds have been refunded and the lien extinguished.

PGW is the nation's largest municipally owned gas utility, serving approximately 500,000 customers in Philadelphia.

Outlook

The stable outlook reflects our view of PGW's extremely strong coverage over the past several years and projections that this trend will continue, mainly as a result of PGW's several cost adjustment mechanisms in place, its desire to generate significant internal funds for capital needs, and its need to maintain liquidity targets.

Upside scenario

Over the next two years, rating upside is unlikely given limitations of the service area economy (highlighted by low income levels and above-average unemployment), high rates, substantial capital needs, and heavy debt burden.

Downside scenario

Given PGW's very robust coverage and myriad of available pass-through mechanisms, in our view rating pressure is limited.

Enterprise Risk Profile: Strong

Operational Management Assessment: Strong

In our opinion, operational management is strong, highlighted by strong operational assets, strong environmental regulation and compliance, very strong management, policies and planning, and strong rate setting practices.

PGW's overall operational assets are strong, in our view. The system purchases its gas under a variety of contracts with about a dozen counterparties, including four prepaid gas contracts at a 30- to 40-cent discount to index. These prepaid gas contracts represent about 10% of total PGW supply and act as a hedge to natural gas cost spikes. PGW has access to multiple pipelines, providing the utility with flexibility to procure favorable pricing. The use of storage (and, to a lesser extent, liquefied natural gas, or LNG) gives PGW the ability to shave costs during peak demand periods. PGW obtains natural gas through nine city gates and two interstate natural gas pipeline companies. PGW purchases natural gas from suppliers at costs based on national index prices with PGW's total supply broken down as follows: 47% baseload/daily (with 10% from discount from index), 30% swing supply, 17% bundled offsite storage/LNG including transportation, and 6% LNG.

We view the district's positioning regarding environmental regulations and compliance as strong, as the district is not subject to any materially strenuous environmental regulations.

We view the management team as very strong, deep, and experienced, with policies in place that reduce operating and financial risk. We also view positively the district's policies and planning practices, which include a gas procurement strategy, annually updated long-term financial and capital plans, an internal debt service coverage target of 1.8x, a 60% debt-to-equity target, and a liquidity target of $100 million or more. Management has been relatively successful in recent years at improving communication and relations with the PAPUC, and this has resulted in a better understanding of PGW's not-for-profit model and a better record of gaining approval for rate and surcharge requests.

In our opinion, rate setting practices are strong. Base rates are regulated by the PAPUC, which is obligated to use the cash flow methodology to determine PGW's "just and reasonable" rates. Nevertheless, all gas cost rate adjustments (adjusted quarterly) have been received in full and on time. PGW has a credit-supportive rate structure that includes a number of dedicated surcharges that support capital improvements and other postemployment benefits, and a weather normalization adjustment that insulates margins from weather variability.

Economic fundamentals: Very strong

We view PGW's economic fundamentals as very strong, reflecting the stability provided by a broad and mostly residential revenue base (and no customer concentration), partly offset by low income levels with median household effective buying income at just 74% of the national level. PGW's broad customer base of almost half a million customer accounts, however, is credit positive, given the stability and economics of scale it provides. The city, with an estimated population of 1.6 million, is coterminous with Philadelphia County in southeastern Pennsylvania. It is the sixth-largest city in the U.S. in terms of population. Philadelphia's economy is comparatively diverse with strong health care and higher education sectors, with a historically more moderate employment growth base, and a higher unemployment rate when compared with state and national levels. The city's population has recently experienced growth, after declines through 2006.

Market position: Vulnerable

We consider PGW's market position to be vulnerable, reflecting very high rates versus other regional providers and PGW's dependence on the PAPUC for approval for base-rate increases, with a mixed history of support for filings, although this has improved recently. However, we view positively PGW's credit-supportive rate structure that includes a number of dedicated surcharges. In December 2017, the PAPUC approved a settlement agreement for a $42 million general rate increase, which was less than the $70 million that the filing sought. We believe that despite the lower settlement, PGW's financial metrics will continue to support the 'A' rating. An additional rate increase of a proposed $45 million is planned in fiscal 2021.

PGW's rates are much higher than those of other regional utilities. We believe this is a function of historically weak collections, sizable bad debt expense, and customer responsibility and senior citizen discount programs. Similar disparities exist among other customer classes as well. These disproportionate shifts in revenue-raising burden between customer classes or segments impair financial flexibility. Thus, much of the utility's growth is for unbundled service, with alternative sources supplying about 40% of load.

Industry risk: Extremely strong

Consistent with "Methodology: Industry Risk," published Nov. 19, 2013, we consider industry risk for municipal retail electric and gas utilities covered under these criteria very low, and therefore extremely strong as compared with that for other industries and sectors.

Financial Risk Profile: Very Strong

Coverage metrics: Extremely strong

We view PGW's coverage metrics as extremely strong, with fixed-charge coverage maintained at an average of 1.9x over the five years through fiscal 2018 and forecast to remain so through 2025, even after the annual $18 million city transfer. We believe the forecast relies on reasonable and conservative assumptions, evidenced by relatively flat gas sales, modest interest earnings at 2% annually, and a 96% collection rate. Coverage has improved steadily, and is at levels that we consider both supportive of the rating and sustainable. S&P Global Ratings evaluates PGW's financial metrics assuming the annual $18 million city payment is made, treating it as an operating expense. PGW estimates FCC at a range of 1.90x to 2.24x through 2025.

In our opinion, PGW has an interdependent relationship with Philadelphia. Historically, the city has received an $18 million annual payment from the utility, but with PGW facing cash flow problems, the city forgave the payment in 2004, and annually granted the payment back to the utility from 2005 through 2010. In fiscal years 2011 to 2018, Philadelphia retained the payment, partly in recognition of PGW's improved financial condition.

Low collection rates had plagued PGW for several years, although this has improved over the past decade. We believe the improvement resulted from lower customer bills and reduced delinquencies, both stemming from low natural gas prices and lower demand associated with generally warmer weather. We also believe that the general improvement in collection rates is partly the result of stricter enforcement on delinquent accounts.

Liquidity and reserves: Very strong

We consider PGW's liquidity and reserves very strong, reflecting about $131 million in unrestricted cash and investments, providing 106 days of operating expenses. A $120 million CP program that can fund working capital purposes supplements this. Management's projections suggest that liquidity should be fairly stable over the next five years.

Debt and liabilities: Highly vulnerable

In our opinion, PGW's debt and liabilities are highly vulnerable, suggested by a debt-to-capitalization ratio of 91% as of fiscal 2018 (although this is projected to decline to 54% by fiscal 2025) and a large capital plan of $830 million over the next six years as PGW accelerates its main replacement program. PGW plans to issue $320 million in bonds in 2022 to take out its CP draws that it expects to be outstanding that year. We understand that PGW is increasing its liquefaction capabilities at its existing LNG facilities. Previous plans contemplated about $120 million in capital costs, $110 million of which would be debt-financed and amortized over 25 to 30 years. However, we understand that management is planning to shift financing costs to another party. We believe the project would provide some operational benefits (creating redundancies and providing a possible replacement to its aging liquefier, for example), and that the shifting of financing to another party reduces risk.

Ratings Detail (As Of May 8, 2019)		
Philadelphia gas wks rev rfdg bnds (1998 Gen Ordiance) ser 8TH D due 08/01/2031		
Long Term Rating	AA+/A-1+	Affirmed
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia gas wks (AGM) (SEC MKT)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia gas wks (AGM) (SEC MKT)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia gas wks (AGM) (SEC MKT)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia gas (BAM) (SECMKT)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia gas (BAM) (SECMKT)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia JOINTCRIT		
Long Term Rating	AA+/A-1	Affirmed
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia JOINTCRIT		
Long Term Rating	AA/A-1	Affirmed

Ratings Detail (As Of May 8, 2019) (cont.)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Philadelphia (BAM)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
City of Philadelphia, Pennsylvania, Gas Works Revenue Refunding Bonds, Eighth Series C (1998 General Ordinance)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Long Term Rating	AA/A-1	Affirmed
City of Philadelphia, Pennsylvania, Gas Works Revenue Refunding Bonds, Eighth Series D (1998 General Ordinance)		
Unenhanced Rating	A(SPUR)/Stable	Affirmed
Long Term Rating	AA+/A-1+	Affirmed

Many issues are enhanced by bond insurance.

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Exhibit JFG-3 (Part 3 of 3)

FITCH AFFIRMS PHILADELPHIA PA'S GAS WORKS REV BONDS AT 'BBB+'; OUTLOOK STABLE

Fitch Ratings-New York-05 July 2018: Fitch Ratings has affirmed the 'BBB+' rating on approximately $1,041.8 million of outstanding revenue bonds issued by the city of Philadelphia on behalf of the Philadelphia Gas Works (PGW).

The Rating Outlook is Stable.

SECURITY

The 1998 general ordinance bonds are secured by net revenues of the gas works utility.

KEY RATING DRIVERS

LARGE GAS DISTRIBUTION SYSTEM: PGW is the largest municipally owned gas distribution utility in the nation, serving approximately 505,000 accounts located entirely within the city of Philadelphia (IDR A-/Stable). The system provides natural gas on a retail basis to a considerably diverse and largely residential customer base exhibiting no concentration among users.

STABLE FINANCIAL METRICS; HIGH LEVERAGE: Prior rate relief, greater cost recovery, historically low natural gas prices, and a healthier collection rate has led to stability in financial performance. The December 2017 base rate increase should further improve financial performance. Fitch calculated debt service coverage (including unamortized premium amounts) has averaged a solid 1.67x over the prior five years. Liquidity continued at an acceptable level in fiscal 2017, equal to 66 days of cash on hand. However, leverage remains high, with debt to funds available for debt service (FADs) of 8.05x.

RATE REGULATED UTILITY: PGW's ability to establish its rates is subject to oversight by the Pennsylvania Public Utility Commission (PUC), potentially limiting needed rate increases and overall financial flexibility. Positively, the utility's relationship with the PUC has remained constructive and supportive in recent years, evidenced by an approximate 6.8% base rate increase that was approved and became effective December 2017, in addition to the approval of various surcharges in the recent past.

WEAK BUT STABLE DEMOGRAPHICS: The city's economy continues to strengthen somewhat and is well anchored by several large healthcare and higher education institutions. However, wealth indicators throughout the service area remain weak, contributing to chronically weak collections and sizeable write-offs, and compounding PGW's high rates.

RATING SENSITIVITIES

LIMITED FINANCIAL FLEXIBILITY: Fitch expects Philadelphia Gas Works' high rates, the service area's low income levels and a regulatory environment that includes state and local oversight will continue to limit financial flexibility, despite the overall improvement in PGW's credit quality in recent years. A return to weaker collection rates, diminished cash flow and an inability to recover costs would exert downward pressure on the ratings.

SUCCESSFUL RATE RELIEF: Failure to secure appropriate rate relief to support capital investment and related borrowings would likely have negative rating ramifications.

REDUCED LEVERAGE: A significant reduction in PGW's leverage and an improved cost structure due in part to further rate increases and/or other revenue enhancements could lead to positive rating action.

CREDIT PROFILE

PGW is the largest municipally owned gas distribution utility in the nation, providing natural gas through a diverse mix of supply arrangements, as well as its own storage and natural gas liquefaction facilities. Ample storage capacity allows the system to procure and store a sizeable portion of its winter supply during the less expensive summer months.

The utility's operations and ability to establish rates are subject to oversight and regulation at both the state and local level, thereby limiting the utility's overall flexibility. However, operating performance remains much improved over the prior decade.

DIVERSE CUSTOMER BASE WITH A STABLE SERVICE AREA

PGW provides gas distribution to a diverse and stable service area consisting entirely of the city of Philadelphia (IDR A-/Stable), with the top 10 customers accounting for less than 3% of revenues. In 2017 there were a total of 505,000 customers and approximately 95% of customers were classified as residential.

Indicative of the weaker socioeconomic characteristics of the customers base, as of Aug. 31, 2017, there were approximately 49,000 customers participating in the Customer Responsibility Program, which assists low-income residential customers (those who are below 150% of the federal poverty level) with forgiving a portion of their bill.

Unemployment (for Philadelphia County) continues to trend downward but remains elevated relative to the state and nation. In 2017 the county unemployment rate was 6.2%, compared to the 6.8% registered in 2016. The county's poverty rate of 25.9% is significantly above the state and national averages, 13.3% and 15.1%, respectively.

SYSTEM ASSETS

PGW manages its gas supply through a combination of flowing pipeline supplies, off-system underground storage and two City-owned/PGW-operated liquefied natural gas (LNG) facilities used for the liquefaction, storage, and vaporization of natural gas.

Term contracts, spot market purchases and storage facilities are used to provide the vast majority of PGW's supply requirements, while LNG facilities provide the balance. The use of the PGW's off-system storage and LNG capability allow for the purchase of excess gas that can be stored during off-peak months, thereby reducing the amount of capacity needed to be reserved during higher cost winter months.

PGW is presently reviewing its LNG portfolio and researching various options in order to maximize LNG operations and the associated benefits to the utility.

RATE SETTING AND CHARGES

Per U.S. Energy Information Administration data, natural gas prices in the State of Pennsylvania are above the U.S. average, with the residential charge (as of March 2018) in the state at $10.41/ Mcf) versus the national average of $9.79/Mcf. The Philadelphia/Camden/Wilmington average was about 13% higher, shown at $11.80/Mcf.

These higher rates limit flexibility in Fitch's view, particularly when coupled with the PUC's oversight and the service area's income levels, historically weak collections, and sizeable write-offs. Favorably, though, the PUC has recently approved a base rate increase and accounts receivable level appears to be moderating.

Rates and charges are set by the PUC to ensure that all costs are recovered, bond covenants are satisfied and an $18 million below the line annual utility payment continues to be made to the city. PGW's rate structure incorporates a base rate, gas cost rate (GCR), distribution charge and numerous surcharges imposed to recover costs associated with social programs, capital projects, other post-employment benefits and efficiency programs. A weather normalization adjustment is also deployed to compensate for lower heating demand and to stabilize cash flow.

RECENT RATE ACTION

On Feb. 27, 2017, PGW filed for an increase in the distribution base rates with the PUC. The filing requested an increase that would produce $70 million (11.6%) in additional operating revenue based on a 10 year normal weather assumption. The filing also included a request to increase the fixed customer charge component, as well as the volumetric delivery charge component of the base rates. Subsequently, in July 2017, PGW filed a petition for partial settlement associated with the Feb. 27 filing. The settlement agreement provided PGW with a general rate increase of $42 million in annual operating revenues calculated using a 20 year normal weather assumption.

PGW determined the estimated pro forma revenue impact from the change from 10-year normal weather to 20, approximating an additional $17 million per year over the forecast period.

In November 2017 the PUC approved the Settlement Agreement and the new rates became effective on Dec. 1, 2017. In addition, PGW was granted a change in its heating degree day (HDD) average from a 30-year HDD average to a 20-year HDD average.

PGW anticipates filing for a base rate increase in February 2020 which will support the expected additional debt issuance. Preliminarily, management anticipates that the request will be in the $40 million-$60 million range, though a rough estimate. PGW assumes that a rate adjustment, if submitted in February 2020, would be approved in November 2020 and become effective in December 2020 (fiscal 2021).

Overall, Fitch views the approval of the rates favorably; however, the rate regulated environment does limit flexibility given the time it may take to implement necessary changes.

STABLE FINANCIAL PERFORMANCE

Over the past few years there has been greater stability in financial performance. Fitch calculated debt service coverage (including unamortized premium amounts) has averaged a solid 1.67x over the past five years, as compared against the average 1.1x achieved during 2006 through 2009 period.

PGW's liquidity is somewhat low but still adequate. In 2017, days cash on hand was about 66, and day liquidity was a stronger 155. However, leverage remains high, with debt to funds available for debt service at about 8.05x in 2017. Leverage is expected to remain somewhat elevated, as there are additional debt plans in addition to funding some projects on a pay go basis.

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A January 2018 district court ruling that dismissed claims regarding payment of Puerto Rico Highways and Transportation Authority debt has raised questions about the scope of protections provided by Chapter 9 of the U.S. bankruptcy code to bonds secured by pledged special revenues. Fitch's rating criteria treat special revenue obligations as independent from the related municipality's general credit quality. The outcome of the litigation could result in modifications to Fitch's approach. For more information, see "What Investors Want to Know: The Impact of the Puerto Rico Ruling on Special Revenue Debt" available at www.fitchratings.com.

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Applicable Criteria
Rating Criteria for Public-Sector, Revenue-Supported Debt (pub. 26 Feb 2018)
https://www.fitchratings.com/site/re/10020113
U.S. Public Power Rating Criteria (pub. 18 May 2015)
https://www.fitchratings.com/site/re/864007

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Exhibit JFG-4

PGW
Exhibit
JFG-4

PHILADELPHIA GAS WORKS
STATEMENT OF INCOME
(Dollars in Thousands)

LINE NO.		ACTUAL 2014-15	HTY 2015-16	30-YR HDD FTY 2016-17	10-YR HDD FPFTY 2017-18	ADJUST	REVISED 10-YR HDD FPFTY 2017-18	10-YR HDD FORECAST 2018-19	ADJUST	REVISED 10-YR HDD FORECAST 2018-19	10-YR HDD FORECAST 2019-20	ADJUST	REVISED 10-YR HDD FORECAST 2019-20	10-YR HDD FORECAST 2020-21	ADJUST	REVISED 10-YR HDD FORECAST 2020-21	10-YR HDD FORECAST 2021-22	ADJUST	REVISED 10-YR HDD FORECAST 2021-22	LINE NO.
	OPERATING REVENUES																			
1.	Non- Heating	$ 30,753	$ 21,873	$ 26,425	$ 26,230	$ -	$ 26,230	$ 25,378	$ -	$ 25,378	$ 24,494	$ -	$ 24,494	$ 23,651	$ -	$ 23,651	$ 22,873	$ -	$ 22,873	1.
2.	Gas Transport Service	39,962	38,550	45,674	44,614	-	44,614	46,222	-	46,222	47,594	-	47,594	48,853	-	48,853	50,055	-	50,055	2.
3.	Heating	618,164	472,275	524,234	534,832	-	534,832	543,666	-	543,666	552,484	-	552,484	561,520	-	561,520	571,396	-	571,396	3.
4.	Revenue Enhancement / Cost Reduction	-	-	-	70,000	-	70,000	70,000	-	70,000	70,000	-	70,000	70,000	-	70,000	70,000	-	70,000	4.
4-A	Health Escrow FundSurcharge	-	-	-	-	1,167	1,167		1,167	1,167		1,167	1,167		-	-		-		4-A
5.	Weather Normalization Adjustment	(10,747)	41,479	5,905	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.
6.	Unbilled Adjustment	(2,105)	(1,830)	1,673	315	-	315	104	-	104	83	-	83	119	-	119	109	-	109	6.
7.	Total Gas Revenues	676,027	572,347	603,911	675,991	1,167	677,158	685,370	1,167	686,537	694,655	1,167	695,822	704,143	-	704,143	714,433	-	714,433	7.
8.	Appliance Repair & Other Revenues	8,727	7,962	8,182	8,265	-	8,265	8,347	-	8,347	8,431	-	8,431	8,515	-	8,515	8,601	-	8,601	8.
9.	Other Operating Revenues	12,493	10,928	13,023	12,757	-	12,757	12,903	-	12,903	13,044	-	13,044	13,186	-	13,186	13,339	-	13,339	9.
10.	Total Other Operating Revenues	21,220	18,890	21,205	21,022	-	21,022	21,230	-	21,250	21,475	-	21,475	21,701	-	21,701	21,940	-	21,940	10.
11.	Total Operating Revenues	697,247	591,237	625,116	697,013	1,167	698,180	706,620	1,167	707,787	716,130	1,167	717,297	725,844	-	725,844	736,373	-	736,373	11.
	OPERATING EXPENSES																			
12.	Natural Gas	252,158	146,515	176,731	184,960	-	184,960	191,471	-	191,471	197,808	-	197,808	204,518	-	204,518	211,904	-	211,904	12.
13.	Other Raw Material	11	9	10	10	-	10	10	-	10	10	-	10	10	-	10	10	-	10	13.
14.	Sub-Total Fuel	252,169	146,524	176,741	184,970	-	184,970	191,481	-	191,481	197,818	-	197,818	204,528	-	204,528	211,914	-	211,914	14.
15.	CONTRIBUTION MARGINS	445,078	444,713	448,375	512,043	1,167	513,210	515,139	1,167	516,306	518,312	1,167	519,479	521,316	-	521,316	524,459	-	524,459	15.
16.	Gas Processing	18,180	17,948	17,666	17,521	-	17,521	17,837	-	17,837	18,216	-	18,216	18,457	-	18,457	18,857	-	18,857	16.
17.	Field Services	36,874	36,276	39,369	40,340	-	40,340	41,299	-	41,299	42,096	-	42,096	42,611	-	42,611	43,456	-	43,456	17.
18.	Distribution	38,629	37,173	41,690	42,562	-	42,562	43,528	-	43,528	44,358	-	44,358	44,925	-	44,925	45,824	-	45,824	18.
19.	Collection	3,457	3,341	4,354	4,420	-	4,420	4,519	-	4,519	4,609	-	4,609	4,651	-	4,651	4,695	-	4,695	19.
20.	Customer Service	12,262	12,432	13,503	13,807	-	13,807	14,126	-	14,126	14,408	-	14,408	14,627	-	14,627	14,919	-	14,919	20.
21.	Account Management	7,735	7,571	8,399	8,487	-	8,487	8,671	-	8,671	8,844	-	8,844	8,977	-	8,977	9,157	-	9,157	21.
22.	Bad Debt Expense	34,833	27,133	30,654	30,073	-	30,073	30,784	-	30,784	31,524	-	31,524	31,984	-	31,984	31,967	-	31,967	22.
23.	Marketing	6,956	3,671	4,355	4,439	-	4,439	4,538	-	4,538	4,625	-	4,625	4,694	-	4,694	4,785	-	4,785	23.
24.	Administrative &General	60,253	67,139	69,025	66,334	(365)	65,969	66,160	(115)	66,045	67,162	(115)	67,047	67,518	-	67,518	68,595	-	68,595	24.
25.	Health Insurance	51,051	53,370	58,305	30,811	-	30,811	33,641	-	33,641	36,627	-	36,627	39,880	-	39,880	43,424	-	43,424	25.
26.	Environmental	-	-	-	-	-	-	2,045	-	2,045	1,696	-	1,696	927	-	927	997	-	997	26.
27.	Capitalized Fringe Benefits	(8,860)	(10,077)	(11,537)	(11,620)	-	(11,620)	(12,238)	-	(12,238)	(12,937)	-	(12,937)	(13,744)	-	(13,744)	(14,613)	-	(14,613)	27.
28.	Capitalized Administrative Charges	(9,097)	(10,778)	(15,791)	(12,945)	-	(12,945)	(13,738)	-	(13,738)	(13,409)	-	(13,409)	(14,032)	-	(14,032)	(15,579)	-	(15,579)	28.
29.	Pensions	43,748	62,336	65,022	51,800	-	51,800	40,308	-	40,308	39,678	-	39,678	22,691	-	22,691	20,383	-	20,383	29.
30.	Taxes	7,823	7,521	8,232	8,437	-	8,437	8,647	-	8,647	8,821	-	8,821	8,997	-	8,997	9,177	-	9,177	30.
31.	Other Post Employment Benefits	6,726	9,929	6,632	31,028	-	31,028	29,663	-	29,663	28,023	-	28,023	26,045	-	26,045	23,683	-	23,683	31.
32.	Cost / Labor Savings	-	-	(2,073)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32.
33.	Sub-Total Other Operating & Maintenance	310,570	324,985	337,805	325,494	(365)	325,129	319,790	(115)	319,675	324,341	(115)	324,226	309,208	-	309,208	309,727	-	309,727	33.
34.	Depreciation	46,474	47,894	48,842	50,596	-	50,596	52,436	-	52,436	54,244	-	54,244	56,019	-	56,019	57,827	-	57,827	34.
35.	Cost of Removal	2,897	3,785	4,100	4,100	-	4,100	4,100	-	4,100	4,100	-	4,100	4,100	-	4,100	4,100	-	4,100	35.
36.	To Clearing Accounts	(5,584)	(6,231)	(6,771)	(7,516)	-	(7,516)	(7,562)	-	(7,562)	(7,516)	-	(7,579)	(7,219)	-	(7,219)	(7,186)	-	(7,186)	36.
37.	Net Depreciation	43,787	45,448	46,171	47,180	-	47,180	48,974	-	48,974	50,765	-	50,765	52,900	-	52,900	54,741	-	54,741	37.
38.	Sub-Total Other Operating Expenses	354,357	370,433	383,976	372,674	(365)	372,309	368,764	(115)	368,649	375,106	(115)	374,991	362,108	-	362,108	364,468	-	364,468	38.
39.	TOTAL OPERATING EXPENSES	606,526	516,957	560,717	557,644	(365)	557,279	560,245	(115)	560,130	572,924	(115)	572,809	566,636	-	566,636	576,382	-	576,382	39.
40.	OPERATING INCOME	90,721	74,280	64,399	139,369	1,532	140,901	146,375	1,282	147,657	143,206	1,282	144,488	159,208	-	159,208	159,991	-	159,991	40.
41.	Interest Gain / (Loss) and Other Income	3,784	1,393	2,898	3,031	-	3,031	2,684	-	2,684	2,879	-	2,879	3,291	-	3,291	2,890	-	2,890	41.
42.	INCOME BEFORE INTEREST	94,505	75,673	67,297	142,400	1,532	143,932	149,059	1,262	150,341	146,085	1,282	147,367	162,499	-	162,499	162,881	-	162,881	42.
	INTEREST																			
43.	Long-Term Debt	45,756	40,295	44,834	49,160	-	49,160	46,807	-	46,807	48,738	-	48,738	50,601	-	50,601	47,766	-	47,766	43.
44.	Other	7,448	3,966	(4,059)	(6,893)	-	(6,893)	(6,252)	-	(6,252)	(5,519)	-	(5,519)	(4,784)	-	(4,784)	(4,004)	-	(4,004)	44.
45.	AFUDC	(781)	(1,120)	(1,136)	(920)	-	(920)	(985)	-	(985)	(964)	-	(964)	(997)	-	(997)	(1,030)	-	(1,030)	45.
46.	Loss From Extinguishment of Debt	4,100	4,478	6,081	5,666	-	5,666	5,300	-	5,300	4,894	-	4,894	4,490	-	4,490	4,072	-	4,072	46.
47.	Total Interest	56,523	47,619	45,720	47,013	-	47,013	44,870	-	44,870	47,149	-	47,149	49,310	-	49,310	46,804	-	46,804	47.
48.	NET INCOME	37,982	28,034	21,577	95,387	1,532	96,919	104,189	1,282	105,471	98,936	1,282	100,218	113,189	-	113,189	116,077	-	116,077	48.
49.	City Payment	18,000	18,000	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	49.
50.	NET EARNINGS	$ 19,982	$ 10,054	$ 3,577	$ 77,387	$1,532	$ 78,919	$ 86,189	$1,282	$ 87,471	$ 80,936	$1,282	$ 82,218	$ 95,189	$ -	$ 95,189	$ 98,077	$ -	$ 98,077	50.

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JFG-4

PHILADELPHIA GAS WORKS
CASH FLOW STATEMENT
(Dollars in Thousands)

LINE NO.		ACTUAL 2014-15	HTY 2015-16	30-YR HDD FTY 2016-17	10-YR HDD FPFTY 2017-18	ADJUST	REVISED 10-YR HDD FPFTY 2017-18	10-YR HDD FORECAST 2018-19	ADJUST	REVISED 10-YR HDD FORECAST 2018-19	10-YR HDD FORECAST 2019-20	ADJUST	REVISED 10-YR HDD FORECAST 2019-20	10-YR HDD FORECAST 2020-21	ADJUST	REVISED 10-YR HDD FORECAST 2020-21	10-YR HDD FORECAST 2021-22	ADJUST	REVISED 10-YR HDD FORECAST 2021-22	LINE NO.
	SOURCES																			
1.	Net Income	$ 37,982	$ 28,054	$ 21,577	$ 95,387	$ 1,532	$ 96,919	$ 104,189	$1,282	$ 105,471	$ 98,936	$1,282	$ 100,218	$ 113,189	$ -	$ 113,189	$ 116,077	$ -	$ 116,077	1.
2.	Depreciation & Amortization	53,258	50,371	45,049	47,000	-	47,000	49,114	-	49,114	51,246	-	51,246	53,350	-	53,350	55,518	-	55,518	2.
3.	Earnings on Restricted Funds Withdrawal/(No Withdrawal)	7,051	23	(1,663)	(1,324)	-	(1,324)	(958)	-	(958)	(1,133)	-	(1,133)	(1,224)	-	(1,224)	(1,104)	-	(1,104)	3.
4.	Proceeds from Bond Refunding to Pay Cost of Issuance	-	-	2,700	-	-	-	-	-	-	500	-	500	-	-	-	-	-	-	4.
5.	Increased/(Decreased) Other Assets/Liabilities	23,696	28,209	29,078	(5,274)	-	(5,274)	(18,246)	-	(18,246)	(31,091)	-	(31,091)	(46,024)	-	(46,024)	(53,725)	-	(53,725)	5.
6.	Available From Operations	121,987	106,657	96,741	135,789	1,532	137,321	134,099	1,282	135,381	118,458	1,282	119,740	119,291	-	119,291	116,766	-	116,766	6.
7.	Drawdown of Bond Proceeds	-	-	65,000	52,000	-	52,000	57,000	-	57,000	55,000	-	55,000	57,000	-	57,000	59,000	-	59,000	7.
8.	Release of Restricted Fund Asset	8,562	6,673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8.
9.	Release of Bond Proceeds to Pay Temporary Financing	-	-	71,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9.
10.	Temporary Financing	30,000	41,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.
11.	TOTAL SOURCES	160,549	154,330	232,741	187,789	1,532	189,321	191,099	1,282	192,381	173,458	1,282	174,740	176,291	-	176,291	175,766	-	175,766	11.
	USES																			
12.	Net Construction Expenditures	85,499	100,333	132,632	109,010	-	109,010	115,628	-	115,628	113,149	-	113,149	117,009	-	117,009	120,996	-	120,996	12.
2-A	Deposit into Restricted Health Escrow Fund	-	-	-	-	1,167	1,167	-	1,167	1,167	-	1,167	1,167	-	-	-	-	-	-	12-A
13.	Funded Debt Reduction:	13,503	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13.
14.	Revenue Bonds	62,190	53,825	34,790	51,834	-	51,834	47,747	-	47,747	62,905	-	62,905	44,084	-	44,084	57,749	-	57,749	14.
15.	Temporary Financing Repayment	-	-	71,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.
						-			-			-			-			-		
16.	Distribution of Earnings	18,000	18,000	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	18,000	-	18,000	16.
	Additions To (Reductions of)					-			-			-			-			-		
17.	Non-Cash Working Capital	(27,236)	4,756	(37,738)	188	-	188	886	-	886	(3,078)	-	(3,078)	(862)	-	(862)	(76)	-	(76)	17.
18.	Cash Needs	151,956	176,914	218,684	179,032	1,167	180,199	182,261	1,167	183,428	190,976	1,167	192,143	178,231	-	178,231	196,669	-	196,669	18.
19.	Cash Surplus (Shortfall)	8,593	(22,584)	14,057	8,757	365	9,122	8,838	115	8,953	(17,518)	115	(17,403)	(1,940)	-	(1,940)	(20,903)	-	(20,903)	19.
20.	TOTAL USES	160,549	154,330	232,741	187,789	1,532	189,321	191,099	1,282	192,381	173,458	1,282	174,740	176,291	-	176,291	175,766	-	175,766	20.
21.	Cash - Beginning of Period	105,734	114,327	91,743	105,800	-	105,800	114,557	365	114,922	123,395	480	123,875	105,877	595	106,472	103,937	595	104,532	21.
22.	Cash - Surplus (Shortfall)	8,593	(22,584)	14,057	8,757	365	9,122	8,838	115	8,953	(17,518)	115	(17,403)	(1,940)	-	(1,940)	(20,903)	-	(20,903)	22.
23.	ENDING CASH	$ 114,327	$ 91,743	105,800	$ 114,557	$ 365	$ 114,922	$ 123,395	$ 480	$ 123,875	$ 105,877	$ 595	$ 106,472	$ 103,937	$ 595	$ 104,532	$ 83,035	$ 595	$ 83,630	23.
24.	**Outstanding Commercial Paper**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24.
25.	**Outstanding Commercial Paper - Capital**	30,000	71,000	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.
26.	**DSIC Revenue**	13,764	26,253	32,541	30,579	-	30,579	30,895	-	30,895	31,214	-	31,214	31,518	-	31,518	31,846	-	31,846	26.
27.	**Internally Generated Funds**	31,735	33,080	35,091	26,431	-	26,431	27,733	-	27,733	26,935	-	26,935	28,491	-	28,491	30,150	-	30,150	27.
28.	**TOTAL IGF + Incremental DSIC Revenue**	45,499	59,333	67,632	57,010	-	57,010	58,628	-	58,628	58,149	-	58,149	60,009	-	60,009	61,996	-	61,996	28.

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PHILADELPHIA GAS WORKS
DEBT SERVICE COVERAGE
(Dollars in Thousands)

LINE NO.		ACTUAL 2014-15	HTY 2015-16	30-YR HDD FTY 2016-17	10-YR HDD FPFTY 2017-18	ADJUST	REVISED 10-YR HDD FPFTY 2017-18	10-YR HDD FORECAST 2018-19	ADJUST	REVISED 10-YR HDD FORECAST 2018-19	10-YR HDD FORECAST 2019-20	ADJUST	REVISED 10-YR HDD FORECAST 2019-20	10-YR HDD FORECAST 2020-21	ADJUST	REVISED 10-YR HDD FORECAST 2020-21	10-YR HDD FORECAST 2021-22	ADJUST	REVISED 10-YR HDD FORECAST 2021-22	LINE NO.
	FUNDS PROVIDED																			
1.	Total Gas Revenues	$ 676,027	$ 572,347	$ 603,911	$ 675,991	$ 1,167	$ 677,158	$ 685,370	$1,167	$ 686,537	$ 694,655	$1,167	$ 695,822	$ 704,143	$ -	$ 704,143	$ 714,433	$ -	$ 714,433	1.
2.	Other Operating Revenues	21,220	18,890	21,205	21,022	-	21,022	21,250	-	21,250	21,475	-	21,475	21,701	-	21,701	21,940	-	21,940	2.
3.	Total Operating Revenues	697,247	591,237	625,116	697,013	1,167	698,180	706,620	1,167	707,787	716,130	1,167	717,297	725,844	-	725,844	736,373	-	736,373	3.
4.	Other Income Incr. / (Decr.) Restricted Funds	10,835	1,416	1,235	1,707	-	1,707	1,726	-	1,726	1,746	-	1,746	2,067	-	2,067	1,786	-	1,786	4.
5.	City Grant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.
6.	AFUDC (Interest)	781	1,120	1,136	920	-	920	985	-	985	964	-	964	997	-	997	1,030	-	1,030	6.
7.	TOTAL FUNDS PROVIDED	708,863	593,773	627,487	699,640	1,167	700,807	709,331	1,167	710,498	718,840	1,167	720,007	728,908	-	728,908	739,169	-	739,169	7.
	FUNDS APPLIED																			
8.	Fuel Costs	252,169	146,524	176,741	184,970	-	184,970	191,481	-	191,481	197,818	-	197,818	204,528	-	204,528	211,914	-	211,914	8.
9.	Other Operating Costs	354,357	370,433	383,976	372,674	(365)	372,309	368,764	(115)	368,649	375,106	(115)	374,991	362,108	-	362,108	364,468	-	364,468	9.
10.	Total Operating Expenses	606,526	516,957	560,717	557,644	(365)	557,279	560,245	(115)	560,130	572,924	(115)	572,809	566,636	-	566,636	576,382	-	576,382	10.
11.	Less: Non-Cash Expenses	74,535	89,059	92,630	78,214	1,971	80,185	68,463	1,554	70,017	69,770	1,141	70,911	55,503	613	56,116	55,924	97	56,021	11.
12.	TOTAL FUNDS APPLIED	531,991	427,898	468,087	479,430	(2,336)	477,094	491,782	(1,669)	490,113	503,154	(1,256)	501,898	511,133	(613)	510,520	520,458	(97)	520,361	12.
13.	Funds Available to Cover Debt Service	176,872	165,875	159,400	220,210	3,503	223,713	217,549	2,836	220,385	215,686	2,423	218,109	217,775	613	218,388	218,731	97	218,828	13.
14.	1975 Ordinance Bonds Debt Service	26,904	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14.
15.	**Debt Service Coverage 1975 Bonds**	**6.57**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15.
16.	Net Available after Prior Debt Service	149,968	165,875	159,400	220,210	3,503	223,713	217,549	2,836	220,385	215,686	2,423	218,109	217,775	613	218,388	218,731	97	218,828	16.
17.	Equipment Leasing Debt Service	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17.
18.	Net Available after Prior Capital Leases	149,968	165,875	159,400	220,210	3,503	223,713	217,549	2,836	220,385	215,686	2,423	218,109	217,775	613	218,388	218,731	97	218,828	18.
19.	1998 Ordinance Bonds Debt Service	70,139	77,867	66,868	101,720	-	101,720	95,276	-	95,276	97,858	-	97,858	95,459	-	95,459	106,342	-	106,342	19.
20.	1999 Ordinance Subordinate Bonds Debt Service - (TXCP)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20.
21.	Total 1998 Ordinance Debt Service	70,139	77,867	66,868	101,720	-	101,720	95,276	-	95,276	97,858	-	97,858	95,459	-	95,459	106,342	-	106,342	21.
22.	**Debt Service Coverage 1998 Bonds**	**2.14**	**2.13**	**2.38**	**2.16**	**0.03**	**2.20**	**2.28**	**0.03**	**2.31**	**2.20**	**0.02**	**2.23**	**2.28**	**0.01**	**2.29**	**2.06**	**0.00**	**2.06**	22.
23.	Net Available after 1998 Debt Service	79,829	88,008	92,532	118,490	3,503	121,993	122,273	2,836	125,109	117,828	2,423	120,251	122,316	613	122,929	112,389	97	112,486	23.
	1998 Ordinance Subordinate Bond Debt Service	-	-	-	-		-	-		-	-		-	-		-	-		-	
25.	Debt Service Coverage (Combined liens)	1.82	2.13	2.38	2.16	0.03	2.20	2.28	0.03	2.31	2.20	0.02	2.23	2.28	0.01	2.29	2.06	0.00	2.06	25.
26.	Debt Service Coverage (Combined liens with $18.0 City Fee	**1.64**	**1.90**	**2.11**	**1.99**	**0.03**	**2.02**	**2.09**	**0.03**	**2.12**	**2.02**	**0.02**	**2.04**	**2.09**	**0.01**	**2.10**	**1.89**	**0.00**	**1.89**	26.

Proposed Rates
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PHILADELPHIA GAS WORKS
BALANCE SHEET
(Dollars in Thousands)

LINE NO.		ACTUAL 8/31/15	HTY 8/31/16	30-YR HDD FTY 8/31/17	10-YR HDD FPFTY 8/31/18	ADJUST	REVISED 10-YR HDD FPFTY 8/31/18	10-YR HDD FORECAST 8/31/19	ADJUST	REVISED 10-YR HDD FORECAST 8/31/19
	ASSETS									
1.	Utility Plant Net	1,232,370	1,284,810	1,368,600	1,427,014		1,427,014	1,490,206		1,490,206
2.	Sinking Fund Reserve	90,141	86,652	105,196	106,253		106,253	107,320		107,320
3.	Capital Improvement Fund	-	-	113,603	61,864		61,864	4,742		4,742
	Workers' Compensation Fund									
4.	& Health Insurance Escrow	5,820	2,603	2,610	2,616	1,167	3,783	2,629	2,334	4,963
5.	Cash	114,327	91,743	105,800	114,557	365	114,922	123,395	480	123,875
	Accounts Receivable:									
6.	Gas	182,433	142,435	136,100	132,838		132,838	128,969		128,969
7.	Other	1,250	2,046	1,500	1,525		1,525	1,550		1,550
8.	Accrued Gas Revenues	5,199	3,368	5,041	5,356		5,356	5,460		5,460
9.	Reserve for Uncollectible	(102,029)	(74,286)	(71,890)	(70,389)		(70,389)	(68,586)		(68,586)
10.	Total Accounts Receivable:	86,853	73,563	70,751	69,330		69,330	67,393		67,393
11.	Materials & Supplies	50,908	47,891	47,005	49,220		49,220	50,734		50,734
12.	Other Current Assets	460	1,642	455	459		459	463		463
13.	Deferred Debits	13,135	29,376	4,782	4,987		4,987	4,489		4,489
14.	Unamortized Bond Issuance Expense	3,473	512	393	341		341	303		303
15.	Unamortized Loss on Reacquired Debt	30,953	53,946	47,865	42,199		42,199	36,899		36,899
16.	Deferred Environmental	29,609	28,425	28,767	28,767		28,767	26,722		26,722
17.	Deferred Pension Outflows	78,129	88,043	41,908	13,952		13,952	-		-
18.	Other Assets	35,503	24,357	39,720	40,604		40,604	42,007		42,007
19.	**TOTAL ASSETS**	1,771,681	1,813,563	1,977,455	1,962,163	1,532	1,963,695	1,957,302	2,814	1,960,116
	EQUITY & LIABILITIES									
20.	City Equity	277,984	268,038	30,427	107,814	1,532	109,346	194,003	2,814	196,817
21.	Revenue Bonds	915,175	837,830	1,073,041	1,021,208		1,021,208	973,460		973,460
22.	Unamortized Discount	(787)	(110)	(875)	(825)		(825)	(778)		(778)
23.	Unamortized Premium	43,360	88,703	78,667	69,303		69,303	60,595		60,595
24.	Long Term Debt	957,748	926,423	1,150,833	1,089,686		1,089,686	1,033,277		1,033,277
25.	Notes Payable	30,000	71,000	-	-		-	-		-
26.	Accounts Payable	56,027	56,870	56,084	57,221		57,221	57,434		57,434
27.	Customer Deposits	2,858	3,308	3,000	2,870		2,870	2,747		2,747
28.	Other Current Liabilities	6,196	7,792	4,930	4,932		4,932	4,936		4,936
29.	Pension Liability	239,869	296,093	291,253	285,870		285,870	280,051		280,051
30.	Deferred Credits	7,895	5,999	2,091	4,497		4,497	2,791		2,791
31.	Deferred Pension Inflows	11,653	-	-	-		-	2,813		2,813
32.	Accrued Interest	6,709	2,808	15,564	14,839		14,839	14,117		14,117
33.	Accrued Taxes & Wages	3,342	3,609	5,975	4,100		4,100	4,631		4,631
34.	Accrued Distribution to City	3,000	3,000	3,000	3,000		3,000	3,000		3,000
35.	Other Liabilities	168,400	149,623	414,298	387,334		387,334	357,502		357,502
36.	**TOTAL EQUITY & LIABILITIES**	1,771,681	1,813,563	1,977,455	1,962,163	1,532	1,963,695	1,957,302	2,814	1,960,116
	CAPITALIZATION									
37.	Total Capitalization	1,235,732	1,214,461	1,181,260	1,197,500	1,532	1,199,032	1,227,280	2,814	1,230,094
38.	Total Long Term Debt	957,748	926,423	1,150,833	1,089,686		1,089,686	1,033,277		1,033,277
39.	Debt to Equity Ratio	77.50%	76.28%	97.42%	91.00%	-0.12%	90.88%	84.19%	-0.19%	84.00%
40.	Capitalization Ratio	3.45	3.22	37.82	10.11	(0.14)	9.97	5.33	(0.06)	5.25

		10-YR HDD FORECAST 8/31/20	ADJUST	REVISED 10-YR HDD FORECAST 8/31/20	10-YR HDD FORECAST 8/31/21	ADJUST	REVISED 10-YR HDD FORECAST 8/31/21	10-YR HDD FORECAST 8/31/22	ADJUST	REVISED 10-YR HDD FORECAST 8/31/22	LINE NO.
	ASSETS										
1.	Utility Plant Net	1,549,111		1,549,111	1,610,101		1,610,101	1,673,270		1,673,270	1.
2.	Sinking Fund Reserve	120,248		120,248	121,456		121,456	122,676		122,676	2.
3.	Capital Improvement Fund	117,435		117,435	60,431		60,431	1,295		1,295	3.
	Workers' Compensation Fund										
4.	& Health Insurance Escrow	2,642	3,501	6,143	2,662	3,501	6,163	2,682	3,501	6,183	4.
5.	Cash	105,877	595	106,472	103,937	595	104,532	83,035	595	83,630	5.
	Accounts Receivable:										
6.	Gas	125,516		125,516	121,461		121,461	117,870		117,870	6.
7.	Other	1,575		1,575	1,600		1,600	1,625		1,625	7.
8.	Accrued Gas Revenues	5,543		5,543	5,662		5,662	5,771		5,771	8.
9.	Reserve for Uncollectible	(67,550)		(67,550)	(65,979)		(65,979)	(64,428)		(64,428)	9.
10.	Total Accounts Receivable:	65,084		65,084	62,744		62,744	60,838		60,838	10.
11.	Materials & Supplies	52,002		52,002	53,509		53,509	54,872		54,872	11.
12.	Other Current Assets	467		467	471		471	475		475	12.
13.	Deferred Debits	4,464		4,464	4,348		4,348	4,311		4,311	13.
14.	Unamortized Bond Issuance Expense	270		270	241		241	215		215	14.
15.	Unamortized Loss on Reacquired Debt	32,005		32,005	27,515		27,515	23,443		23,443	15.
16.	Deferred Environmental	25,026		25,026	24,099		24,099	23,102		23,102	16.
17.	Deferred Pension Outflows	-		-	-		-	-		-	17.
18.	Other Assets	43,378		43,378	44,799		44,799	46,216		46,216	18.
19.	**TOTAL ASSETS**	2,118,009	4,096	2,122,105	2,116,313	4,096	2,120,409	2,096,430	4,096	2,100,526	19.
	EQUITY & LIABILITIES										
20.	City Equity	274,939	4,096	279,035	370,128	4,096	374,224	468,205	4,096	472,301	20.
21.	Revenue Bonds	1,090,557		1,090,557	1,046,473		1,046,473	988,724		988,724	21.
22.	Unamortized Discount	(732)		(732)	(686)		(686)	(641)		(641)	22.
23.	Unamortized Premium	52,623		52,623	45,389		45,389	38,838		38,838	23.
24.	Long Term Debt	1,142,448		1,142,448	1,091,176		1,091,176	1,027,021		1,027,021	24.
25.	Notes Payable	-		-	-		-	-		-	25.
26.	Accounts Payable	56,011		56,011	56,216		56,216	56,144		56,144	26.
27.	Customer Deposits	2,630		2,630	2,519		2,519	2,413		2,413	27.
28.	Other Current Liabilities	4,941		4,941	4,946		4,946	4,922		4,922	28.
29.	Pension Liability	274,416		274,416	267,534		267,534	260,380		260,380	29.
30.	Deferred Credits	2,018		2,018	2,084		2,084	2,080		2,080	30.
31.	Deferred Pension Inflows	11,120		11,120	12,290		12,290	12,302		12,302	31.
32.	Accrued Interest	17,903		17,903	17,129		17,129	16,303		16,303	32.
33.	Accrued Taxes & Wages	5,170		5,170	5,696		5,696	6,228		6,228	33.
34.	Accrued Distribution to City	3,000		3,000	3,000		3,000	3,000		3,000	34.
35.	Other Liabilities	323,413		323,413	283,595		283,595	237,432		237,432	35.
36.	**TOTAL EQUITY & LIABILITIES**	2,118,009	4,096	2,122,105	2,116,313	4,096	2,120,409	2,096,430	4,096	2,100,526	36.
	CAPITALIZATION										
37.	Total Capitalization	1,417,387	4,096	1,421,483	1,461,304	4,096	1,465,400	1,495,226	4,096	1,499,322	37.
38.	Total Long Term Debt	1,142,448		1,142,448	1,091,176		1,091,176	1,027,021		1,027,021	38.
39.	Debt to Equity Ratio	80.60%	-0.23%	80.37%	74.67%	-0.21%	74.46%	68.69%	-0.19%	68.50%	39.
40.	Capitalization Ratio	4.16	(0.06)	4.09	2.95	(0.03)	2.92	2.19	(0.02)	2.17	40.

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

DANIEL J. HARTMAN

ON BEHALF OF

PHILADELPHIA GAS WORKS

DOCKET No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:

Performance in Municipal Markets

Financial Support for Revenue Requirement

February 28, 2020

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

A. Daniel J. Hartman, Managing Director, PFM Financial Advisors LLC, 4350 North Fairfax Road, Arlington, Virginia 22203, (703) 741-0175. I am a financial advisor to state and local governments and authorities.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by The PFM Group and work in its municipal advisory practice through its subsidiary PFM Financial Advisors LLC ("PFM"). I am a Managing Director and Head of the Financial Advisory Business, as well as a shareholder in the firm.

Q. SUMMARIZE YOUR PROFESSIONAL QUALIFICATIONS.

A. At PFM, I currently lead the entire financial advisory business and have previously led the national Public Utilities group, which assists our clients on all aspects of capital markets transactions – debt structuring, rating agency and investor communication, and transaction execution. PFM is the nation's largest independent financial advisor to state and local governments and a registered municipal advisor with the SEC and MSRB. PFM is the leading advisor to public utility clients (gas, power, water and sewer) and participates in a greater share of capital markets transactions for public utility clients than any other firm in the municipal capital markets. Prior to re-joining PFM in 2006, I was a Managing Director for Bear Stearns Capital Markets and Citigroup Global Markets, where I provided investment banking and advisory services to utility clients.

As the leader of PFM's public utilities group, I have been involved in over $65 billion of debt transactions, many of which are for the largest gas systems throughout the United States. These include advisory roles to the Philadelphia Gas Works (PGW), CPS Energy (San Antonio Electric and Gas), the Municipal Gas Authority of Georgia, Long

Beach (CA) Gas & Oil, and Colorado Springs Utilities. Several billion dollars of these financings have been undertaken to finance gas distribution system improvements and natural gas supply.

In addition to my general expertise on public utility capital markets transactions, I have extensive experience working on debt structuring, credit structuring and rating/investor issues for utility systems that have similar characteristics as the PGW's system. PFM has particular expertise in providing advisory services for capital markets transactions and routinely works on several billion dollars of municipal utility financings at any point in time that provide direct interface with rating analysts from the three major rating agencies as well as large institutional investors active in the municipal bond market.

Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND.

A. I have a Bachelor of Arts degree from the University of North Carolina – Chapel Hill in Economics. I also studied at the London School of Economics. As a municipal advisor, I also have certain professional qualifications through the Municipal Securities Rulemaking Board ("MSRB") – including the Series 50 (Municipal Advisor Representative) and Series 54 (Municipal Advisor Principal).

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

A. Yes, I submitted testimony in 2017 for PGW's last base rate application (R-2017-2586783), and some sections of this testimony draw substantially on my prior work. I have testified before the California Public Utilities Commission on certain matters relating to electric deregulation restructuring and its impact on municipal utilities, and I have also been an expert witness in certain public utility bankruptcy proceedings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose my testimony is four fold: 1) to provide an update on PGW's standing in the municipal capital markets and the critical importance of maintaining its financial standing with rating agencies, credit providers and investors; 2) to explain why it is critically important that the Pennsylvania Public Utility Commission (the "Commission") grant PGW's requested rate increase in order to maintain PGW's financial performance, such as debt service coverage and liquidity, at levels necessary to ensure reasonable access to the municipal capital markets; 3) to identify the financial impacts, both positive and negative, if the Commission approves or does not approve a substantial portion of the requested rate amount; and 4) to explain why it is crucial and necessary for the Commission to consider and approve the actions that PGW is undertaking to fund its future capital improvement program and existing debt obligations.

Q. PLEASE PROVIDE AN OVERVIEW OF KEY FINANCIAL EVENTS FOR PGW SINCE 2008, WHEN THE COMMISSION GRANTED PGW EXTRAORDINARY RATE RELIEF, THROUGH 2016.

A. PGW underwent a significant financial turnaround in the 2008-2016 timeframe, starting in November 2008 when PGW received extraordinary rate relief, which was subsequently made permanent by the PUC. At the point of the 2008-2009 recession and credit crisis in 2008, PGW's finances were near a disastrous position, with ratings teetering on the brink of "junk" status (below Baa3/BBB-) and PGW's access to capital markets all but gone. Only with the clear backing of the Commission in 2008 with the extraordinary rate relief did PGW stave off the potential for an event of default on its debt and the acceleration of certain financial obligations. The 2008 extraordinary rate relief effectively saved PGW financially by maintaining its access to the commercial paper market with its commercial paper program and to the fixed rate bond market, as well as the ability to procure credit facilities for its variable rate programs. This Commission action was critical to the stabilization of PGW's finances, allowing PGW to arrest and reverse the deterioration in its financial position.

Over the course of the next eight years after the extraordinary rate relief of $60 million was granted, the Commission objectively reviewed and supported a number of rate requests put forward by PGW. These measures have stabilized PGW's finances and afforded PGW the ability the regain its footing in the municipal market, both with respect to procuring necessary credit facilities and to maintaining access in the fixed rate bond market with lower borrowing costs.

Critical to the stabilization of PGW's finances were the prior Commission rate actions in July 2010 to make permanent the extraordinary rate relief of $60 million granted in 2008, the 2010 decision (and subsequent actions) that allowed PGW to start funding its significant other post-employment benefit (OPEB) liability, and the 2013 implementation of the Distribution System Improvement Charge (DSIC) and subsequent positive actions to increase the funding of its distribution system improvements. These stabilizing actions by the Commission allowed PGW to improve its financial performance and metrics consistent with its "A" rated municipal utility peers. This had simply not been the case in the period of 1995-2008, when as S&P noted only 42% of the requested rate increases were granted.

Q. WHAT WAS THE RESPONSE FROM THE CAPITAL MARKETS, PARTICULARLY BOND INVESTORS AND RATING AGENCIES?

A. Reflecting this stabilization of PGW's finances, the major bond rating agencies of Moody's Investor Service (Moody's), Standard & Poor's Ratings Group (S&P) and Fitch Investor Service (Fitch) improved their bond ratings from the precipice of junk status (below Baa3 or BBB-) to at least a couple of rating notches above that mark. In 2010, PGW had ratings of Baa2/BBB+/BBB for their senior lien rating, and those ratings stood at Baa1/A/BBB+ in 2016. While still at rating levels below most of their municipal utility peers, the improvement of PGW's bond ratings reflect both the constructive support of the Commission and management's ability to implement its financial plan. Specific to the rating criteria and the rating agency's actions with respect to PGW, the rating agencies each cited the stronger track record of regulatory approval of required rate increases in the 2008-2016 timeframe to meet required cost recovery and its bond ordinance rate covenant. Without any question, the improved investment grade ratings were predicated on the Commission's careful review of PGW's finances and its appropriate support of PGW rate increases necessary to comply with its legal covenants and to support the credit position of bondholders, thereby lowering the cost of borrowing that is passed on to PGW's customers.

Ratings for municipal utilities – which in turn provide access to the capital markets and determine the cost of those borrowed funds – are heavily weighted on the willingness and ability of the governing or regulatory body to permit the utility to charge rates that cover its costs and maintain its financial stability, particularly since all but a few municipal utilities set their own rates without regulatory oversight from a public utility commission. Thus, in the case of PGW, the application of the municipal utility rating methodology simply shifts this analysis of willingness and ability to raise rates to include the Commission. The rating agencies repeatedly stated in public reports that the very constructive relationship between PGW and the Commission, and the necessary rate support in the last few years, is the most critical factor that has allowed PGW's rating to stabilize and improve to its bond rating levels in the 2008-2016 timeframe.

Q. WHAT HAS HAPPENED IN THE TIME PERIOD OF 2017 TO TODAY RELATING TO PGW'S STATUS IN THE MUNICIPAL CAPITAL MARKETS?

A. In the 2017 base rate case, the Commission approved a settlement agreement in which the parties agreed to a base rate increase of $42 million, after an initial request of $70 million from PGW. The Commission also approved settlement provisions that changed the heating degree day average used to project *pro forma* revenues from 30 years to 20 years and increased all monthly customer charges. These additional actions further stabilized PGW's rate structure allowing for a more realistic degree day base to be utilized for rates. Also, by increasing the monthly charge, less of PGW's revenue was weather related and more of PGW's revenue was fixed. With the approved base rate increase, PGW has managed to maintain its financial metrics at similar levels to FY 2016, while investing in and rebuilding the system infrastructure through the issuance of revenue bonds in 2017 and ongoing use of "pay as you go financing" from rate based internally generated funds. Certain of the financial metrics – notably debt coverage – rose initially in FY 2018, but is now running at or below the debt coverage levels in FY 2017. This recent downward trend in the financial margins reflects the higher ongoing operating costs and increased debt service obligations for PGW, and a similar result for PGW's liquidity position results from the ongoing funding of its main replacement and other significant infrastructure through the use of "pay as you go" financing.

Q. HOW DID THE RATING AGENCIES REACT TO THE CONTINUED POSITIVE RELATIONSHIP WITH THE COMMISSION?

A. As a result of demonstrating an ongoing constructive relationship with the Commission, and the maintenance of improved financial metrics, PGW was upgraded to A3 from Baa1 by Moody's in late calendar year 2017. While PGW welcomed this development as a reflection of a stable financial outlook, no other rating actions have been taken by the rating agencies and the current ratings in early 2020 remain at A3/A/BBB+. As was demonstrated in 2017, PGW needed the $42 million in base rates to address rising system operating costs and an increased capital improvement program (CIP) without having its financial metrics deteriorate. The 2017 rate increase was not a windfall that built generous and unnecessary financial margins. Rather, it was an appropriate increase, driven by a need to maintain stable finances, and the Moody's sole upgrade reflected that basic level of enhanced stability, arising from the Commission's constructive relationship with PGW and the allowance of cost recovery.

Q. WHAT WOULD RESULT IF THE COMMISSION DID NOT CONTINUE TO EVIDENCE ITS SUPPORT FOR PGW?

A. While the Commission's rate support during 2008-2017 and since the last base rate increase in 2017 has been very constructive in stabilizing and maintaining PGW's finances, any wavering of the Commission's support for PGW's necessary rate increases will be met with a decisively negative reaction. Often in the area of municipal utility ratings, the minute that a regulatory body fails to objectively review and support a necessary rate increase, credit ratings and access to capital markets quickly deteriorate. As Fitch has already noted in its July 2018 rating report: "Failure to secure appropriate rate relief (moving forward) to support capital investment and related borrowings would likely have negative rating ramifications." Municipal credit ratings are often very slow to rise (as evidenced by the slow recovery of PGW's ratings after the crisis in 2008), but can go down precipitously. Thus, it is critical to assure rating agencies and investors of the long-term commitment to cost recovery and stability of PGW's finances, not just sufficiency for any given year.

Bond investors and credit facility providers also react similarly to any failure to support needed rate increases by a governing political or regulatory body. So while PGW has been able to maintain access to, and improve its borrowing costs for, long-term bond transactions since 2008, as well as maintain access to credit facilities for its variable rate and commercial paper programs, there is certainly no guarantee that the favorable support will continue. And the frequency with which PGW must access the bond market and/or renew its credit facilities emphasize the criticality of maintaining investor and credit provider confidence in the rate setting function of the utility.

Q. HOW HAVE THE PRIOR COMMISSION ACTIONS TRANSLATED TO PGW'S FINANCIAL METRICS AND CURRENT FINANCIAL POSITION?

A. As discussed considerably above, PGW maintains a significant amount of risk to its ongoing ability to obtain regulatory approval from the Commission for its requested rate increases. Failure to get approval of requested cost recovery certainly entails much greater scrutiny from investors and rating agencies that financial margins and liquidity will not be maintained. This is particularly true for PGW, as many of its financial metrics, such as days cash on hand, are already fairly modest to begin with, and debt to capitalization ratios are already at the high end of the spectrum. Without PGW's ability to secure necessary rate support, this significantly increases the chance of a credit downgrade.

Q. HOW DO PGW FINANCIAL METRICS COMPARE TO THOSE OF ITS PEERS?

A. As documented in the testimony of Mr. Walker, PGW's financial metrics remain below virtually all of its peers in the municipal gas utility sector. As shown in Mr. Walker's benchmarking testimony, PGW has less favorable credit than most other "A" rated or higher municipal gas utilities in the country. While PGW's financial metrics have stabilized in the last few years, they are not at levels that provide substantial cushion. Instead, a delay in appropriate cost recovery can quickly lead to highly problematic results.

Q. WHAT KEY FINANCIAL METRICS DO INVESTMENT RATING AGENCIES FOCUS ON WITH RESPECT TO A MUNICIPAL UTLITY SUCH AS PGW?

A. In my experience, the investment rating agencies look to debt service coverage, debt percentage and cash and liquidity in evaluating a municipal credit such as PGW.

Q. PLEASE EXPLAIN THE KEY METRIC: DEBT SERVICE COVERAGE AND HOW PGW FARES IN THIS AREA.

A. As noted, one of PGW's key metrics is the debt service coverage ratio, which is net revenues of PGW divided by debt service, a measure of protection that bondholders have to changes in net revenues. PGW's debt service coverage in the last few years has risen from slightly over 2.0x coverage in FY 2016 to 2.33x in FY 2019, with FY 2020 projections declining to 1.83x coverage (and only modestly above the minimum 1.50x legal requirement in PGW's bond ordinance), pushing up PGW's bond ratings and outlook along the way. However, the apparent strength of this credit metric is masked by PGW's financial obligation to transfer \$18 million of net revenue to the City of Philadelphia General Fund, the obligation to fund PGW's OPEB required annual contribution of \$18.5 million, and the \$33 million of cash funded annual capital improvement from the dedicated DSIC. These obligations, all of which have been approved by the Commission, effectively usurp much of the current financial margin in the 2.0x coverage ratio, let alone the minimum 1.50x in the legal covenants that the Commission methodology explicitly allows. That is, much of the apparent cushion between the minimum 1.50x coverage and the 2.0x coverage ratio is absorbed by the three continuing obligations listed above. PGW's financial forecast now requires at least $70 million to maintain the debt coverage levels that exist today at or just above the 2.0x coverage level. Without that rate support from the Commission, PGW's debt service coverage metric falls rapidly to bare minimum levels of 1.59x debt coverage in FY2022 and exposes PGW to significant financial difficulties in funding ongoing operations and its capital program, particularly the main replacement program approved by the Commission. Absent rate relief, by FY 2024, PGW will fall into technical default by having debt service coverage go below the 1.50x Ordinance requirement. If a substantial portion of the amount of the requested levels cannot be obtained, it clearly has negative implications for maintaining the same protections for investors moving forward and allowing PGW's bond rating to stay in the same rating category.

Q. PLEASE EXPLAIN PGW'S DEBT AS A PERCENTAGE OF TOTAL CAPITAL AND WHAT THAT METRIC INDICATES FOR THE COMPANY.

A. A second metric that has generally improved over the last several years is the amount of leverage (total debt as a percentage of total capital) that PGW maintains. PGW has intentionally tried to reduce its total debt in recent years, based on debt to equity ratios, with the ratio going down to 75% in FY 2016. The rating agencies have all cited the high debt burden as a limiting factor in the ratings, since a high debt burden minimizes the ability to fund necessary programs, if pay as you go funding (from current operations) is not viable moving forward. In other words, PGW cannot simply keep borrowing an ever-increasing amount of dollars if the corresponding rate support is not there. However, in order to minimize rate increases, PGW has continued to borrow to fund one half of its CIP, including $273 million in August 2017, and, in part, that borrowing (while balancing its intent to de-lever itself with the objective to keep rate increases reasonable and low) pushed the debt to equity ratio back to 91% in FY 2018.

Assuming PGW receives the requested rate increase, the Company's projections continue to show de-leveraging in the system – particularly with the Commission-approved cash funding for the distribution system repair and improvement program – and total debt to capitalization is projected to be lowered to 65% by FY 2023. In fact, during 2010-2019 PGW completed more than $850 million in capital projects, while overall debt will have decreased by $209 million in the same period. But to the extent that a material portion of PGW's requested rates are not received, it will force substantial additional leverage back on the system, quickly reversing the favorable trend and the flexibility that PGW would have obtained moving forward.

Q. PLEASE EXPLAIN THE FINAL METRIC THAT INVESTMENT RATING AGENCIES EXAMINE.

A. A third financial metric that has shown improvement for PGW, but remains financially susceptible if approved rates do not provide substantial cost recovery, is its liquidity and days cash on hand. Broadly speaking, days of cash on hand is actual, non-borrowed cash that a utility has available, measured at a certain point; PGW uses the end of its fiscal year as one measure, but also monitors its cash balances at other points in the year (like the middle of winter) when cash outlays are particularly large. Liquidity is cash plus PGW's short term borrowing capability. Short term borrowing capability is important to provide liquidity and a certain cushion to deal with unanticipated events that cause substantial drains on PGW's cash. But short-term borrowing is no substitute for having sufficient cash on hand, for the obvious reasons that ratepayers must pay for the availability of short term borrowing, and must pay still more when such lines are utilized.

In addition, short term lines of credit can be cancelled or go into default if PGW's other financial metrics are not maintained at acceptable levels. Therefore, short term borrowing capability is not a substitute for having adequate cash on hand available.

PGW ended FY2019 with actual days cash on hand of $124 million (96 days cash on hand), which is up from $91 million in FY 2016 (82 days cash[1]), but well below rating agency medians for "A" to "AAA" rated municipal gas utilities (at least 150 days cash on hand and significantly higher for AA and AAA rated utilities). However, for certain rating agency metrics calculations, PGW's authorized commercial paper program provides an additional $60-$120 million of liquidity (typically reserved for emergency needs), depending upon the amount drawn for other capital purposes. Because of the limited authorization and use of PGW's commercial paper program (CP Program), rating agencies don't value the CP Program at the same value as source of liquidity from non-borrowed cash.

Q. WILL PGW HAVE ADEQUATE CASH ON HAND OR LIQUIDITY IF ITS PROPOSED RATE INCREASE IS NOT APPROVED?

A. Not in my opinion. At current liquidity levels, there is very little margin of error in PGW's financing plan. Even while the Commission has approved cost recovery in prior rate cases, such as making the extraordinary rate relief permanent, PGW would exhaust its liquidity very quickly without the rate support requested. It is certainly my view that PGW needs to maintain 70-90 days of direct cash on hand to maintain its current bond rating and should maintain at least 100 days direct cash on hand, apart from any commercial paper capacity, to bolster its case to maintain or improve its current bond ratings. The 100 days cash on hand metric is a figure that rating agencies continue to

[1] Based on financial statements that were restated since the prior rate case filing.

cite, especially given that any rate case for PGW would almost certainly take several months to approve. Importantly, Mr. Golden shows that, at the end of the Fully Projected Future Test Year, PGW would have just 33.9 days of cash on hand; just as troubling, in the next year, it would experience a *negative* year end cash balance of ($27.6 million). It should be clear therefore that, to the extent that PGW does not get the rate recovery that it is seeking currently, it would immediately put significant pressure on liquidity to cover shortfalls in operations and the capital improvement program. While PGW could shift to additional debt funding to absorb some of the shortfalls, the immediate front line impact is on PGW's liquidity position. As noted, at its cash position in the *pro forma* test year, failure to get approved rates will cause PGW to effectively run out of cash, demonstrated by the negative cash position of PGW in the Forecast Period (the fiscal years FY 2022 through FY 2025), as shown in Exhibit JFG-1. To offset that negative cash flow would require substantial structural changes in PGW's financial plan, which are likely not to be feasible. Given these improving but still susceptible financial metrics, it is highly likely that any failure of the PUC to provide substantial rate support for needed cost recovery would generate troubling rating downgrades for PGW. Each of the rating agencies repeatedly cites the factors that would lead to downgrades, and all three of the rating agencies have identified a less supportive rate regulatory environment as the critical factor that could lead to a credit downgrade or change in credit profile. Further, associated with that less supportive rate regulatory environment are greater leverage, less debt coverage, and reduced liquidity, all of which are expected immediate by-products of a less supportive regulatory environment, as shown in the Forecast Period without the current requested rate increase.

Q. WHAT DO YOU EXPECT WOULD BE THE RATING AGENCY REACTION IF PGW WAS NOT AWARDED THE RATE INCREASE IT HAS REQUESTED?

A. It would be hard to imagine that PGW could keep the improvements in its bond ratings to A3/A/BBB+ that it has achieved, and would quickly fall back in the "BBB" category (i.e., near junk status) without Commission rate support. In fact, each of the three rating have specifically noted likely downgrades. Moody's most recent credit report clearly states that the factors that could lead to a downgrade are "a less supportive rate regulatory environment, financial metrics narrowing, and increased leverage without sufficient cost recovery or a material decline in liquidity."

Q. WHAT ARE THE POTENTIAL POSITIVE IMPACTS OF PGW'S ABILITY TO GAIN APPROVAL OF ITS FULL REQUESTED RATE INCREASE?

A. The full requested rate increase is needed for the day-to-day operational needs of PGW and to fund its ongoing capital improvement program, including the ongoing cast iron main replacement program and other needed infrastructure improvements. As such, the approval of the requested rate increase ensures funding for the safety and reliability of the system. However, if the rate increase did unexpectedly generate more net revenue for PGW or if PGW was able to capture greater operating efficiencies moving forward, any additional income would stay with the PGW system and be used for system purposes (because PGW does not have shareholders like an investor-owned utility). An unexpected increase in net revenue could also build cash balances, which, in turn, could reduce or delay future rate increases. Additionally, the continuation of Commission support for PGW's financial performance will also preserve the financial metric improvement of the last few years and may allow further improvement in PGW's bond ratings, particularly the Fitch rating at BBB+. A similar rating improvement was seen in 2017 after the

Commission approved the last base rate increase when Moody's raised its rating of PGW by one notch from Baa1 to A3.

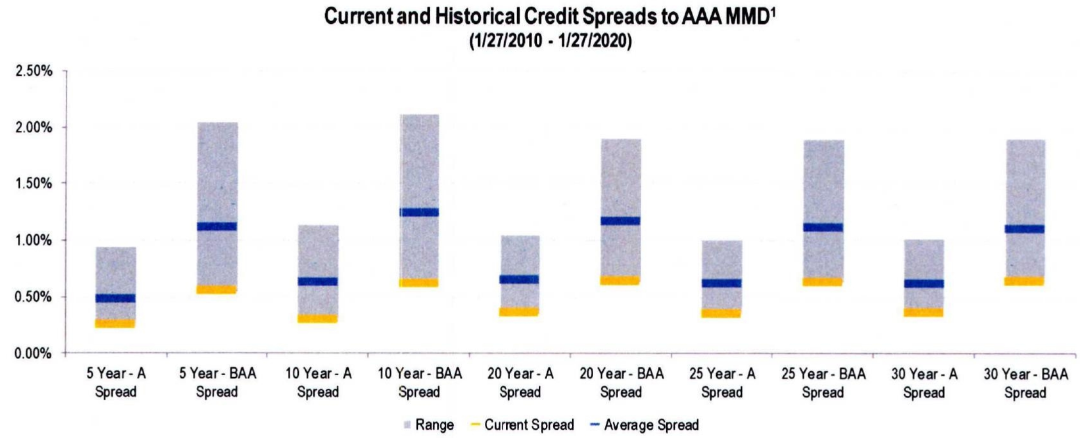
By demonstrating the ability to consistently achieve the current financial metrics through PGW's forecast period, PGW may push all of its bond ratings into the "A" rating category from the three rating agencies. Certainly, with such potential rating upgrades, PGW could access the municipal capital markets at lower costs for its financing and credit facility needs. Again, such improvements in reducing PGW's financing costs would inure to the full benefit of PGW's ratepayers and its system needs, not to a third party or outside investor, given the closed loop financing structure of PGW.

PGW will also have enhanced opportunities to refinance outstanding debt, both to reduce interest expense and to lower the risk profile of PGW. Stronger credit ratings will enhance the potential opportunity of refinancing the Ninth Series Bonds, in the amount of $52 million, for debt service savings. Additionally, PGW is exploring the option of converting the Series 8B through 8E debt to fixed rate, and terminating the associated interest rate swaps. The latter transaction may be achievable, with PGW's improving credit profile and a favorable bond market. It is important to note that PGW continues to lever its stronger financial position for future benefits or risk reduction to its ratepayers, thereby reducing its future base rate increase requests.

Q. WHAT ARE THE CONSEQUENCES OF A RATINGS DOWNGRADE ?

A. As I have already commented, without the supportive cost recovery that PGW is seeking in this rate case, I reasonably foresee such consequences as rating downgrades of PGW that would impose immediate financial costs to PGW in the form of substantially higher borrowing costs, limited opportunities for PGW to refinance its existing debt costs, and the imposition of higher credit facility fees.

The costs of rating downgrades are certain to ripple across all aspects of PGW's operations, but the most certain and immediate costs will be recognized in its planned revenue bond issuance to fund PGW's capital improvement program. PGW has identified bond transactions of approximately $375 million over the next four years - $240 million in late FY 2020 and $135 million in FY 2023 - for its capital improvement program. With the expectation that PGW's failure to get positive regulatory rate support now would lead to downgrades across the board into the "BBB" rating category by all agencies, it is expected that PGW's borrowing costs would rise substantially. The following table effectively shows the impact to the borrowing cost of PGW for its bond transaction with "BBB" category ratings from all agencies, with the assumption that they would average "BBB" for 1998 Bond Ordinance senior lien. Since PGW is expected to borrow at multiple times, it is not clear where interest rates will be at each borrowing, so the graphic effectively shows the expected additional costs based upon both current market and historical credit spreads for all "BBB" ratings vs the current "A3/A/BBB+" ratings:



Statistic	5 Year - A Spread	5 Year - BAA Spread	10 Year - A Spread	10 Year - BAA Spread	20 Year - A Spread	20 Year - BAA Spread	25 Year - A Spread	25 Year - BAA Spread	30 Year - A Spread	30 Year - BAA Spread
1/27/2020	0.27%	0.57%	0.31%	0.63%	0.37%	0.65%	0.36%	0.64%	0.37%	0.65%
Average	0.49%	1.12%	0.64%	1.25%	0.66%	1.17%	0.63%	1.12%	0.63%	1.11%
Spread to Avg.	-0.22%	-0.55%	-0.33%	-0.62%	-0.29%	-0.52%	-0.27%	-0.48%	-0.26%	-0.46%
Minimum	0.24%	0.54%	0.28%	0.60%	0.35%	0.63%	0.35%	0.63%	0.35%	0.63%
Spread to Min.	0.03%	0.03%	0.03%	0.03%	0.02%	0.02%	0.01%	0.01%	0.02%	0.02%
Maximum	0.94%	2.04%	1.13%	2.12%	1.05%	1.91%	1.01%	1.89%	1.02%	1.90%
Spread to Max.	-0.67%	-1.47%	-0.82%	-1.49%	-0.68%	-1.26%	-0.65%	-1.25%	-0.65%	-1.25%

1. MMD is the benchmark tax-exempt index for long-term debt with the AAA-rated GO MMD index as the key index against which credit spread are measured.

Based upon these current and historical increases in borrowing costs that PGW should expect to result from the inability to get substantial regulatory rate approval, the following table shows the range of gross and present value debt increases over the life of the $375 million planned borrowings.

Credit Spreads	PGW - Current Rating			PGW - Downgrade to BBB		
	Average (10-yr History)	Minimum (10-yr History)	Maximum (10-yr History)	Average (10-yr History)	Minimum (10-yr History)	Maximum (10-yr History)
Base Rates	10-yr Average MMD	10-yr Average MMD	10-yr Average MMD	10-yr Average MMD	10-yr Average MMD	10-yr Average MMD
Total Debt Service	$ 532,437,657	$ 518,207,650	$ 552,826,413	$ 554,239,253	$ 529,184,415	$ 589,086,615
PV of Debt Service to August 2020 (3.5%)	$ 367,153,841	$ 357,339,298	$ 381,215,023	$ 382,191,108	$ 364,910,263	$ 406,229,273
All-in TIC	3.60%	3.30%	4.01%	4.04%	3.53%	4.73%

Credit Spreads	Difference in Cost if PGW Downgraded		
	Average (10-yr History)	Minimum (10-yr History)	Maximum (10-yr History)
Base Rates	10-yr Average MMD	10-yr Average MMD	10-yr Average MMD
Total Debt Service	$ 21,801,596	$ 10,976,765	$ 36,260,203
PV of Debt Service to August 2020 (3.5%)	$ 15,037,267	$ 7,570,964	$ 25,014,249
All-in TIC	0.45%	0.23%	0.72%

Note: Assumes bond issues funding projects of $240,000,000 and $135,000,000, respectively, in August 2020 and February 2023. Cost of issuance assumed at $500,000 plus assumed $4/bond underwriter's discount. Assumes base MMD scale of 10-year average AAA MMD, plus credit spreads.

In summary, if PGW's credits were downgraded to BBB, ratepayer costs would increase by almost $22 million, on average and by a maximum of $36 million on a total cost basis. It should be noted that the charts above do NOT take into account the foregone debt service savings from potential refinancing transactions that may not be feasible if PGW's credit rating deteriorates. PGW already has some near-term refinancing opportunities (as the bonds approach their call dates for tax-exempt refinancing), and such savings would certainly be diminished, if not fully lost to a decline in credit ratings.

Q. PLEASE EXPLAIN HOW A DOWNGRADE WOULD AFFECT PGW'S OTHER CREDIT FACILITIES SUCH AS ITS COMMERCIAL PAPER PROGRAM.

A. As noted, PGW has also utilized a number of credit facilities historically, including various letters of credit on its variable rate bonds and its commercial paper program. These include the Series 5A-2, Series 8B, Series 8C, Series 8D, and Series 8E, which currently total $152.8 million outstanding. PGW has reduced the average cost of these facilities substantially over the past two years, benefiting directly from the supportive rate actions by the Commission. And as noted, PGW is hopeful that it will be able to reduce exposure to the bank facilities by converting the Series 8B through 8E to fixed rate and eliminating the associated interest rate swaps, but that is predicated upon market conditions and the maintenance or improvements in PGW's credit ratings. So at this point, PGW has procured three different banks to secure these letters of credit, with an average annual cost of approximately 0.30% on the total principal outstanding. PGW also maintains $120 million in letters of credit for its commercial paper program at a slightly higher cost. These credit facility costs have come down substantially over the past few years, representing both a robust bank market currently, but also the stability of PGW's credit. Yet certain of these facilities expire within the near term, and almost all of these agreements have termination clauses and cost escalation clauses should PGW's ratings fall below certain ratings thresholds.

To the extent that PGW's credit rating is downgraded to the "BBB" level as a result of the inability to get rate approvals, PGW could face a sizeable problem with these facilities. Not only would the cost go up substantially and exact annual cost increases of over $1 million annually to maintain these letters of credit, there is also the possibility that PGW may not be able to extend some or all of these letters of credit. In such a scenario (and noting that the agreements are slightly different), there is the potential for all of the outstanding principal amounts to be accelerated over two to five years in equal semi-annual installments. These "term out" options would force enormous accelerated debt costs of up to $50 million annually into the next two years, fully eroding PGW's liquidity position. While other financing options may exist to refinance the bonds, it underscores the importance of maintaining stronger investment grade ratings, and the potential for significant problems should PGW's bond ratings be downgraded only a few notches from their existing levels, and a signal given to the investor and bank community that appropriate rate support no longer is being maintained.

Any credit downgrade would also simply limit PGW's refinancing options moving forward. Whether for a simple refinancing of existing debt for debt service savings or related to unforeseen terminations and accelerated principal, the access to the municipal capital markets at a rating of "BBB" or below is considerably more difficult, particularly given the negative events for PGW that would be driving such a scenario. As noted several times before, investors' willingness to buy PGW long-term debt is predicated upon the ability of PGW to recover its just and reasonable costs through regulatory rate support, and any doubt cast on that central tenet quickly leads to investors and other credit providers being unwilling to lend more or charging considerably greater cost to do so. That effectively drives up borrowing costs for PGW's financial plan and puts even greater pressure on pay as you go funding from internally generated funds. As such, there is a very quick negative spiral that stems from a lack of regulatory rate support and lower municipal bond ratings.

The failure of Commission rate support for PGW ultimately results in greater increases in costs to PGW ratepayers over the long-term. Failure to get timely cost recovery through the regulatory process is likely to lead to bond credit downgrades that will cause investors and other credit providers to charge significantly higher costs starting immediately and extending over the next 5-10 years. These increased costs will almost certainly compound the issue of rate recovery and require even greater rate support moving forward. Thus, it remains extremely important to maintain the constructive relationship between PGW and the Commission that has existed in the past several years to avoid significant deterioration in PGW's ongoing path to financial stability.

Q. PLEASE SUMMARIZE YOUR TESTIMONY.

A. While PGW has made substantial financial progress in the last several years with appropriate rate support from the Commission, PGW still has limited financial flexibility and its projected financial results for FY 2020, the fully projected future test year (FPFTY), and the Forecast Period show that PGW requires the requested rate increase in order to maintain its financial metrics at the levels needed to hold on the rating upgrades and improved access and cost in the capital markets.

The inability of PGW to obtain necessary rate relief and cost recovery in the request base rate increase for its operating and capital requirements would cause immediate financial damage to PGW and breach the most critical component of municipal utility rating criteria in the current environment. The likely results of such a scenario with respect to PGW's rate case are substantially greater financing costs due to credit downgrades by the financial community, and the remedy of that is a substantial process that requires long-term positive performance (a by-product of which is larger and more frequent rate increases). The granting of a substantial portion of the requested amount will send a positive signal of support and could help to improve PGW's current bond rating, a move that would save customers tens of millions of dollars over time.

Ultimately, as the last ten years have already demonstrated, it is critical that PGW and the Commission maintain a constructive regulatory process in which appropriate cost recovery approval is maintained. Recent Commission-approved rate increases have simply given PGW appropriate backing to operate the system, support necessary and critical capital upgrades to the system, and maintain financial metrics consistent with "A" rated municipal utilities. That constructive course of action will result in continued improvement in PGW's credit, maintaining a capital structure that produces the lowest debt service cost to PGW, and minimizing future debt service costs to PGW. This, in turn, will mitigate the size and need of future rate requests, thus maintaining the fairest and most reasonable rates possible for PGW's customers and ratepayers.

Q. DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes.

VERIFICATION

I, Daniel J. Hartman, hereby state that: (1) I am Managing Director, PFM Financial Advisors LLC; (2) I have been retained by Philadelphia Gas Works ("PGW") for purposes of this proceeding; (3) the facts set forth in my testimony 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).

February 28, 2020
Dated

Daniel J. Hartman
Managing Director, PFM Financial Advisors LLC

{L0857884 1}

PGW St. No. 4

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

HAROLD WALKER, III

ON BEHALF OF
PHILADELPHIA GAS WORKS

DOCKET NO. R-2020-3017206

TOPIC:

Benchmarking

February 28, 2020

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC

Valley Forge, Pennsylvania

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INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Harold Walker, III. My business mailing address is P. O. Box 80794, Valley Forge, Pennsylvania 19484.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager, Financial Studies.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EMPLOYMENT EXPERIENCE?

A. My educational background, business experience and qualifications are provided in Appendix A.

SCOPE OF TESTIMONY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to measure the financial performance of Philadelphia Gas Works ("PGW" or "Company") from 2014 through 2018, via benchmarks, and compare those results to peer companies. The period reviewed includes the years since PGW's last rate case to the most recent year for which comparable financial data exists. My testimony is supported by Exhibit HW-1, which is composed of 5 Schedules.

SUMMARY OF RECOMMENDATION

Q. WHAT IS YOUR RECOMMENDATION?

A. My recommendation is based on the results of my benchmark study and my recommendation is that PGW be afforded a timely rate increase to cover its costs and at least maintain its financial stability. The benchmark study shows that PGW's financial performance generally improved each year since 2014 based on both average performance, over the 2014 to 2018 time period, and the trend from 2014 through 2018. I note however that the benchmarking study also shows that PGW lags its peers on some key benchmark, or metrics, such as days of cash on hand to cover operating expenses ("Days Cash") and debt to total capitalization ("Debt/Capitalization").

The benchmark study also reviews forecasted benchmarking metrics of PGW's financial performance that were estimated reflecting the proposed $70 million rate increase. The forecasted benchmark analysis shows that there is a continuing need to support PGW's financial stability with a timely rate increase in this amount to enable PGW to further strengthen its credit profile and to lessen the gap between itself and its peers.

Q. PLEASE EXPLAIN THE PURPOSE OF YOUR BENCHMARKING STUDY.

A. Yes. The price of service of PGW's gas rates is regulated by the Pennsylvania Public Utility Commission ("Commission" or "PUC"). The Commission employs the "cash flow" method of determining just and reasonable rates. Under the cash flow method the Commission establishes rates at levels that permits the cash flow regulated utility to have sufficient cash to pay all of its operating expenditures, debt service, debt service coverage generate appropriate levels of internally generated funds and maintain financial metrics that not only satisfy the utility's bond covenants but also are sufficient to maintain or improve the utility's credit rating so that it can access the credit markets at the lowest cost possible. In determining just and reasonable rate levels for PGW under the cash flow method, therefore, the Commission must consider, among other relevant factors: PGW's available short-term borrowing capacity and internal generation of funds to fund construction; the debt to equity ratios and financial performance of similarly situated utility enterprises; the level of operating and other expenses in comparison to similarly situated utility enterprises; and the level of financial performance needed to maintain or improve PGW's bond rating thereby permitting PGW to access the capital markets at the lowest reasonable costs to customers over time.[1]

The purpose of the financial benchmarking study is to compare PGW's key metrics to other businesses in the same general industry as PGW (i.e., peer groups). Specifically, the benchmarking study measures the financial performance of PGW and comparison companies, or peer company groups, from 2014 through 2018, via benchmarks. My study benchmarks specific information such as fiscal year end cash levels[2], days of cash, debt to equity ratios, credit ratings, non-gas operating expenses, and other financial performance metrics covering the most recent five-year period. The other financial performance metrics benchmarks include credit rating criteria measures, and various ratios calculated from information contained on PGW's and peer company groups' balance sheets, statements of revenues and expense and changes in net position (e.g., income statements), statement of cash flows, and operating statistics.

Q. PLEASE SUMMARIZE THE INFORMATION CONTAINED IN YOUR BENCHMARK STUDY.

A. Yes. The benchmark study is attached as Exhibit HW-1 and is composed of 5 Schedules. The benchmark study includes results for PGW and three peer company groups including: municipally owned utilities; Pennsylvania investor-owned utilities; and investor-owned utilities that operate outside of Pennsylvania. The peer company groups include the results of 23 utilities. The benchmark study compares PGW's benchmarked statistics against

1 Pennsylvania Public Utility Commission, "Application of PGW Cash Flow Ratemaking Method—Final Statement of Policy," § 69.2703, in Docket No. P-2009- 2136508.

2 It should be noted that PGW's fiscal year ends in August when cash needs are at their lowest compared to their needs during the heating season. Accordingly, PGW's August cash balance is rapidly "spent down" during the winter months.

those of the benchmark utilities. The benchmark study also reviews forecasted benchmarking metrics of PGW's financial performance that were estimated reflecting the proposed rate increase.

I believe that operating and financial benchmarks are useful but also recognize their limitations. When utilizing benchmarks, it must be recognized that no comparison group(s) or individual utility will have the exact operating and financial composition as the company being studied. For example, PGW is not exempt from PUC regulation as most other municipal ("MUNI") gas utilities are. Most MUNI gas utilities' rate requirements are established by the needed funds to run the system. Further, most MUNIs, including PGW, use a Government Accounting Standards Board ("GASB") process of accounting versus Financial Accounting Standards Board ("FASB") method of accounting used by investor-owned utilities ("IOU"). I explain some of the differences between GASB and FASB later in my testimony.

Therefore, an individual company's characteristics and operating requirements should be considered when viewing the results of a benchmark analysis to any peer group company(s). That is, a conclusion regarding any single benchmark data or ratio should only be reached after considering the individual company's characteristics and operating requirements. Moreover, individual benchmark results should also be viewed in the context of the range of the results for a peer group(s), not just an average for a peer group(s).

DESCRIPTION OF THE PHILADELPHIA GAS WORKS

Q. PLEASE GIVE A BRIEF DESCRIPTION OF PGW.

A. PGW is owned by the City of Philadelphia ("City") and is accounted for in the City's audited financial statements as a component unit of the City; however, PGW is legally separate from the City. PGW is the largest municipally-owned gas utility in the nation. The price of service of PGW's rates is regulated by the PUC. PGW sells natural gas within the City, its service territory, and is the exclusive distributor of natural gas within the limits of the City. PGW maintains a distribution system with approximately 3,046 miles of gas mains and approximately 476,938 service lines serving approximately 506,000 customers at year-end 2018. PGW's customer base is largest at the end of the peak heating season and decreases afterwards as customers terminate their service until the next heating season begins.

In addition to an extensive distribution system, PGW operates facilities for the liquefaction, storage, and vaporization of natural gas to supplement gas supply taken directly from interstate pipeline and storage companies chiefly for peak shaving purposes. PGW's service area consists of an urban area of 134 square miles, the limits of the City, located in southeast Pennsylvania along the Delaware River. According to the United States Census Bureau, as of July 1, 2016, Philadelphia had a population of approximately 1,567,872.

THE INDUSTRY

Q. PLEASE GIVE A BRIEF OVERVIEW OF THE INDUSTRY IN WHICH THE COMPANY OPERATES.

A. PGW operates in the natural gas industry in the gas distribution segment. The natural gas industry includes entities involved in the ownership and operation of industry segments consisting of production; gathering and processing; transmission; and distribution. The natural gas distribution industry segment, or local distributing companies ("LDCs"), includes businesses Standard Industrial Classification ("SIC") code of 4923 which are "engaged in both the transmission and distribution of natural gas for sale" and "engaged in the distribution of natural gas for sale" (SIC Code 4924).[3]

Approximately 1,400 LDCs distribute natural gas to end-use customers across the United States through over 1.2 million miles of distribution pipe. Each LDC has a unique combination of scale, load profile, and climatic attributes. IOUs dominate the gas distribution segment industry and MUNIs are also active LDCs. Investor-owned LDCs are subject to price regulation by state public utility commissions while most MUNIs are not. Uniquely, even though PGW is a MUNI, it is price regulated by the PUC. "PGW's state rate regulation constrains its cost recovery framework in comparison to the majority of municipally owned gas utilities in the United States, which benefit from local unregulated rate setting."[4] In setting rates, state public utility commissions typically attempt to balance the different interests of consumers, who want low rates, and company investors, who seek adequate returns on their investments.

The "demand for natural gas is driven by energy use, which in turn is influenced by overall economic activity. The profitability of LDCs "depends largely on the efficiency of their operations, because prices typically are fixed by public utility commissions. Companies that operate multiple distribution networks may enjoy economies of scale in purchasing. Small companies can compete effectively through a strong regional presence." The United States' LDC "industry is highly concentrated: the 50 largest companies account for about 90% of revenue."[5]

3 See https://siccode.com/sic-code/4923/natural-gas-transmission-distribution, 1/18/20 and https://siccode.com/sic-code/4924/natural-gas-distribution, 1/18/20.
4 *Moody's Investors Services*, Credit Opinion, "Philadelphia (City of) PA Gas Works," 6/10/19, pg 1.
5 D&B Hoovers, "Natural Gas Distribution & Marketing Industry Insights From D&B Hoovers," http://www.hoovers.com/industry-facts.natural-gas-distribution-marketing.1283.html , 1/18/2020.

INVESTMENT RISK

Q. PLEASE DEFINE THE TERM RISK.

A. Risk is the uncertainty associated with a particular action; the greater the uncertainty of a particular outcome, the greater the risk. Investors who invest in risky assets expose themselves to investment risk particular to that investment. Investment risk is the sum of business risk and financial risk. Business risk is the risk inherent in the operations of a business. Assuming that a business is financed with 100% common equity, business risk includes all operating factors that affect the probability of receiving expected future income such as: sales volatility, management actions, availability of product substitutes, technological obsolescence, regulation, raw materials, labor, size and growth of the market served, diversity of the customer base, economic activity of the area served, and other similar factors.

Q. WHAT IS FINANCIAL RISK?

A. Financial risk reflects the manner in which an enterprise is financed. Financial risk arises from the use of fixed cost capital (leverage) such as debt and/or preferred stock, because of the contractual obligations associated with the use of such capital. Because the fixed contractual obligations must be serviced before earnings are available for common stockholders (fund equity), the introduction of leverage increases the potential volatility of the earnings available for common shareholders (fund equity) and therefore increases common shareholder (fund equity) risks.

Although financial risk and business risk are separate and distinct, they are interrelated. In order for a business to maintain a given level of investment risk, business risk and financial risk should complement one another to the extent possible. For example, two firms may have similar investment risks while having different levels of business risk, if the business risk differences are compensated for by using more or less leverage (financial risk) thereby resulting in similar investment risk.

PEER GROUPS

Q. WHAT PROCESS DID YOU FOLLOW IN SELECTING THE PEER GROUP COMPANIES USED IN THE BENCHMARK STUDY?

A. Since no companies are perfectly identical to PGW, I considered the financial and operating statistics of PGW when I selected the companies used for comparison purposes. This process resulted in the selection of 23 "peer" utilities companies which operate in the same basic industry as PGW. The 23 "peer" utilities companies were separated into three peer groups including: municipally owned utilities; Pennsylvania investor-owned utilities; and investor-owned utilities that operate outside of Pennsylvania. It should be noted that the three peer groups are collectively referred to as the "Peer Groups". Further, the individual companies which comprise the Peer Groups are collectively referred to as "ALLCOS". After selecting the Peer Groups, I considered the investment risk differences between PGW and the Peer Groups when evaluating the benchmark metrics.

Q. WHAT CHARACTERISTICS OF PGW DID YOU CONSIDER IN SELECTING THE PEER GROUP COMPANIES USED IN THE BENCHMARK STUDY?

A. I believe that similar economic, industry and business risks affect PGW as other entities also operating in the natural gas distribution industry segment and accordingly, I attempted to consider only US natural gas LDCs for inclusion in the Peer Groups.[6] Next, I consider system density (customers per mile of main), amount of revenue and volume of throughput (MCF), type of infrastructure (percentage cast iron mains), location of operations,

6 The small number of municipal LDCs resulted in the inclusion of two municipal utilities with electric operations.

residential volumes as a percentage of total volumes (percentage of residential sendout), and ownership characteristics (IOU or MUNI).[7] Finally, the availability of five-years (2014 to 2018) of financial and operating statistics for the gas operations was required.[8]

Q. HOW DID YOU SELECT THE PEER GROUP COMPANIES USED IN THE BENCHMARK STUDY?

A. I selected the Peer Groups based on PGW's characteristics previously discussed. I believe that similar economic, industry and business risks have affected the Peer Groups as those faced by PGW. However, consideration must be given to the fact that no two companies are exactly alike. Accordingly, the Peer Groups were selected based on subsets of PGW's characteristics. This required a broadening of the range of characteristics to produce Peer Groups large enough to provide meaningful comparisons with PGW. This process resulted in the selection of the Peer Groups that operate in the same basic industry as PGW and share many of PGW's characteristics. The range of metrics (characteristics) used and relaxed to produce the Peer Groups were generally attributable to ownership, regulation (or lack thereof), and location of service.

I selected a group of municipally owned utilities ("MUNI Group") since PGW is a MUNI. The composition of the MUNI Group includes mainly LDCs from across the country. The composition reflects the fact that there are only a relatively small number of large MUNI LDCs existing in PGW's general region[9], coupled with consideration of

7 I relied primarily on information from the American Gas Association ("AGA") found at https://www.aga.org/research/data/annual-report-of-volumes-revenues-and-customers-by-company-2002-2016/ and https://www.aga.org/research/data/distribution-pipe-by-company-annual-data-1990--2016/ for screening.

8 Based on information available from S&P Capital IQ, PA PUC Annual Reports, Audited Annual Reports obtained from entities' websites, and AGA Statistics.

9 See "Top 100 Largest Municipal Gas Systems by Natural Gas Throughput Volume" (From EIA Form 176 data for calendar year 2017), at https://higherlogicdownload.s3.amazonaws.com/APGA/1151c1f6-49e1-4598-badd-127e33da42cd/UploadedImages/About/Top_100_by_Throughput_2017.pdf.

PGW's other characteristics. Some MUNI LDCs were found to have an abnormally low amount of debt, and/or negative net income, producing unusable metrics for comparison purposes. Additionally, only a limited number of large MUNI LDCs had financial information for just gas operations. As a result, I included two MUNIs with electric operations in the MUNI Group. The names of the entities that comprise the MUNI Group are:

- Citizens Energy Group - Gas Segment
- CPS Energy (Gas & Electric)
- Gainesville Regional Utilities - Gas Utility System
- Jackson Energy Authority - Gas Fund
- JEA Utilities - Electric Fund
- Knoxville Utilities Board - Gas Division
- Richmond - Gas Fund, City of

PGW is the only gas MUNI regulated by the PUC. Since PGW's service is price regulated by the PUC, a group comprised of investor-owned gas utilities operating in Pennsylvania ("IOUPA Group") was selected. In selecting the companies for the IOUPA Group, I considered all 15 natural gas distribution companies regulated by the PUC and then excluded those utilities that were not comparable due to size and/or lacked five-years of required financial and operating information.[10] The names of the LDCs that comprise the IOUPA Group are:

- Columbia Gas of Pennsylvania, Inc.
- National Fuel Gas Distribution Corp (PA Operation)

10 The following companies were eliminated due to their size; Chartiers Natural Gas Company, Inc., Leatherstocking Gas Company LLC, North East Heat & Light Company, Peoples Gas Company (Formerly Peoples TWP), Pike County Light & Power Company (Gas), and Valley Energy. Peoples Natural Gas Company LLC, and Peoples - Equitable Division (Formerly Equitable Gas) were eliminated due to lack of five-years of required financial and operating information as a result of their merger into UGI Utilities Inc. (Gas).

- PECO Gas (Exelon Corporation)
- Peoples Natural Gas Company LLC
- Peoples - Equitable Division
- UGI Utilities Inc. (Gas)

In forming a third peer group I selected investor-owned LDCs that operate outside of Pennsylvania ("IOU Group"). In selecting the companies for the IOU Group, I considered all IOU natural gas distribution companies that operate in the North Atlantic region from Maryland to Massachusetts, excluding Pennsylvania, after considering PGW's other characteristics. The names of the LDCs that comprise the IOU Group are:

- Boston Gas Co
- Brooklyn Union Gas Co
- Chesapeake Utilities Corp
- Colonial Gas Co
- Connecticut Natural Gas Corp
- Corning Natural Gas Corp
- New Jersey Natural Gas Co
- South Jersey Gas Co
- Southern Connecticut Gas Co
- Yankee Gas Services Co

DIFFERENCES BETWEEN MUNICIPAL AND INVESTOR-OWNED UTILITIES

Q. WHAT DIFFERENCES ARE THERE BETWEEN MUNICIPAL AND INVESTOR-OWNED UTILITIES?

A. The main differences between MUNIs and IOUs are financial in nature and involve a combination of accounting, regulation, ownership, and taxation. As explained previously, most MUNIs, including PGW, follow the standards of accounting and financial reporting established by GASB versus the standards established by FASB used by IOUs.

Differences in accounting practices exist between GASB and FASB because there are differences in their purpose. That is, the GASB's motivations are to make sure government entities are accountable for the money they receive from the public or taxpayers, while the FASB's focus is to help investors and creditors make decisions.

MUNIs are not typically focused with the return on and the return of their investments of their utility systems as IOUs since they (MUNIs) deem that they are providing a public service to their taxpayers and are more attentive to having adequate cash flow to service debt and satisfy financial obligations. Further, MUNIs typically expense some expenditures which are capitalized by IOUs and many MUNIs do not typically fully account for the replacement of all capital assets which are all typically capitalized (i.e., construction of capital assets, construction expenditures, etc.) and "booked" at original cost by IOUs. These differences in accounting objectives between GASB and FASB can present a problem when it comes to comparing the financial statements of IOUs with MUNIs, such as the PGW and the MUNI Group, and vice versa.

The majority of MUNIs are not price regulated by a utility commission but rather have rates approved locally by an unregulated rate setting board. The determination of reasonable gas rates for IOUs and PGW is subject to rate regulation. For IOUs, rate regulation serves as a substitute for competition in the marketplace since utility companies are precluded from exercising complete control over the price to be charged their customers. Under rate regulation, a cost of service formula is used to set the price for service charged to IOUs' customers. The cost of service formula equates the revenue requirement to the sum of annual operating expenses, taxes other than income, depreciation expense, income taxes, and the product of the rate base times a fair rate of return. PGW's ratemaking process is based on a Cash Flow Ratemaking Method where its revenue requirement includes, among other things, having adequate cash flow rather than using a rate base rate of return method used for IOUs.

IOUs pay local, state and federal taxes while MUNIs are exempt from these taxes.[11] Moreover, IOU investors pay income taxes on their dividends and interest payments while MUNI investors are exempt. Since the majority of MUNI bond interest is tax-exempt to the investor, it lowers MUNIs' cost of borrowing vis-à-vis IOUs. As a result, MUNI customers benefit from the tax-exemption of the interest paid to MUNI investors in the form of lower rates for service.

It is the responsibility of price regulated IOUs seeking changes in rates to present sufficient evidence, including a fair rate of return, to their regulators in support of their request. Historically, PGW and other MUNIs' rates have not considered a fair rate of return nor taxes. That is, PGW and other MUNIs' rates would have been higher and their financial results would have been improved if they included a provision for a fair rate of return and taxes.

Q. DO PGW AND THE PEER GROUPS HAVE SIMILAR OPERATING RISKS?

A. Yes. From an operations standpoint, PGW and the Peer Groups have similar risks and are indistinguishable. PGW and the Peer Groups are required to meet safety and environmental requirements and are also required to provide safe and reliable services to their customers and comply with utility commission regulations and/or federal and state safety and reliability requirements. Further, MUNIs and IOUs have similar investment risks as is evident by the fact that their bonds are often rated similarly. However, PGW is

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11 Some entities in the MUNI Group make a "payment in lieu of taxes."

unique when compared with a traditional MUNI utility because PGW is not able to increase rates for service at the discretion of municipal officials. Rather, PGW's rates fall under the jurisdiction of the PUC. Accordingly, PGW must comply with the same regulatory requirements for increasing rates as IOUs require. PGW experiences attrition and regulatory lag similar to an IOU but lacks the benefits that income taxes provide an IOU, for two reasons.

First, deferred income taxes provide IOUs a cash flow advantage that PGW does not enjoy. Second, current income taxes included in IOUs' revenue requirement provide a margin or cushion against an unanticipated drop in sales or increase in operating expenses. PGW and other MUNIs do not have this margin of protection nor the cash flow advantage which IOUs do.

CHARACTERISTICS

Q. HOW DO PGW'S CHARACTERISTICS COMPARE WITH THOSE OF THE PEER GROUPS?

A. Schedule 1 is a three-page schedule that provides a comparison between PGW's and the Peer Groups' characteristics. As discussed previously, the Peer Groups were selected based on subsets of PGW's characteristics. This required a broadening of the range of metrics or characteristics to produce Peer Groups large enough to provide meaningful comparisons with PGW.

As shown on page 1 of Schedule 1, PGW's system density (customers per mile of main) is considerably greater than the Peer Groups'. Only Boston and Brooklyn in the IOU Group have density approaching or exceeding PGW's. PGW's density is a function of servicing primarily an urban territory. PGW also has a much higher percentage of cast iron mains than the Peer Groups (Schedule 1, page 1), reflecting its older infrastructure.

State of operations, service being provided and ownership are also shown on page 1 of Schedule 1. As shown, PGW's operating revenues are generally similar to the Peer Groups' revenues (Schedule 1, page 1).

From comparing PGW's volume of throughput (MCF) to the Peer Groups' averages it is evident that PGW's throughput (MCF) is about four times higher than the MUNI Group, about 20% less than the IOUPA Group, and similar to the IOU Group (Schedule 1, page 2). PGW's has slightly more miles of mains than the MUNI Group, far less than the IOUPA Group, and slightly less than the IOU Group (Schedule 1, page 2). PGW's number of customers served is generally greater than the Peer Groups (Schedule 1, page 2). PGW's residential volume as a percentage of total volumes (percentage of residential sendout) is generally more than the Peer Groups (Schedule 1, page 2). PGW's average residential use (MCF) is more than the MUNI Group's but less than both the IOUPA Group's and the IOU Group's (Schedule 1, page 2).

Page 3 of Schedule 1 shows the periods (decades) when PGW and the Peer Groups mains where installed. As is evident from the information shown, PGW's system of mains is older than the Peer Groups. The Muni Group has the newest system, followed by the IOUPA group and then IOU Group. Age of the system is generally an indication of the need for more capital expenditures.

Table 1 summarized the PGW's general characteristics relative to the Peer Groups'.

	PGW's Characteristics Relative To:		
Characteristic	Muni Group	IOUPA Group	IOU Group
Density			Closest
% Cast Iron			Closest
State of Operation		Yes	
Service Provided	Mixed	Yes	Yes
Asset Ownership	Yes		
Operating Revenues	Yes	Close	Yes
Total Volume	Less	More	Yes
Miles of Main	Yes	More	Yes
Customers		Closest	Close
% Residential Sendout		Close	Closest
Avg Residential Use (MCF)	Less	More	More
Age of Installation	Newest	New	Closest

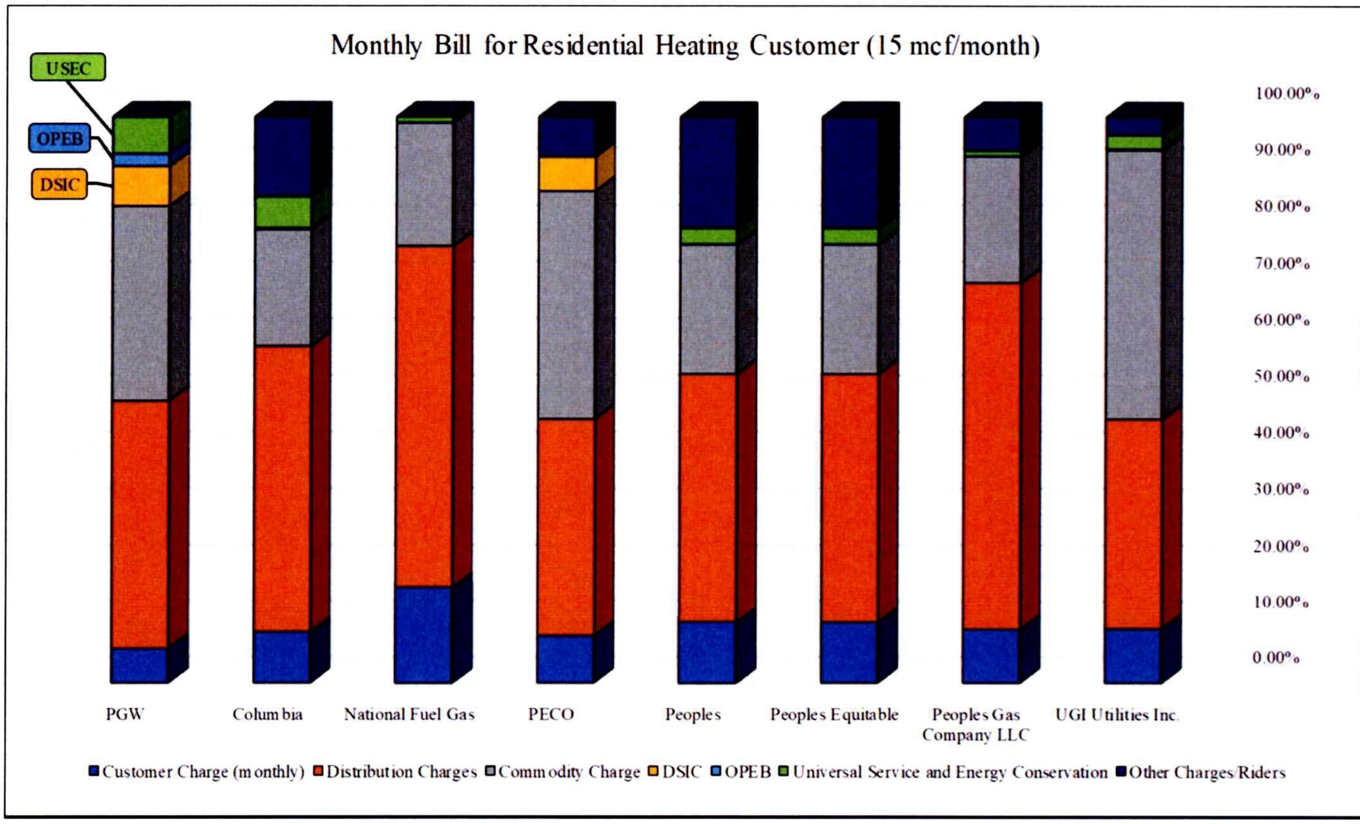
Table 1

Q. WHAT PGW CHARACTERISTICS DIFFERENTIATE IT FROM THE PEER GROUPS?

A. I previously discussed several characteristics that differentiate PGW from the Peer Groups. In addition to those, PGW's structure of rates is quite unique. Figure 1 shows a comparison between PGW's and the IOUPA Group's recent structure, or composite, of residential rates. As shown in Figure 1, PGW's rates have a much larger percentage, at 6.44%, devoted to the rate support of low income customers than the IOUPA Group as measured by the Universal Service and Energy Conservation charge ("USEC"). The IOUPA Group's USEC ranges from a low of 0.00% to a high of 5.68% and averages

2.27%.[12] PGW also has an OPEB component of 2.20% that the IOUPA Group does not. PGW's distribution system improvement charge, or DSIC, rate of 6.98% is also much larger on a percentage basis. The IOUPA Group's DSIC ranges from a low of 0.00% to a high of 6.00% and averages 0.91%. PGW's DSIC also differs from the IOUPA Group's in that it is a cash-basis DSIC, charged on a pay-as-you-go basis.

Figure 1



BOND RATINGS

Q. WHAT IS A BOND RATING AND WHY IS IT IMPORTANT?

A. A bond rating is a credit profile and provides an evaluation of credit risk. A bond rating is usually the most important factor affecting the interest cost on bonds other than the term

12 Figure 1 shows that PECO does not have a USEC charge because their USEC component is embedded in their variable distribution charge.

(life) of the bond issue. The major credit rating services such as S&P Global Ratings ("S&P"), Moody's Investors Service ("Moody's"), and Fitch Ratings Inc. ("Fitch") assess a bond issuer's financial strength[13] using letter grades. These credit rating agencies append modifiers, such as + or - for S&P and Fitch and 1, 2, and 3 for Moody's to each generic rating classification. For example, an "A" credit profile is comprised of three subsets such as A+, A, A- for S&P and Fitch or A1, A2 or A3 for Moody's. The modifier of either "+" or "1" indicates that the obligation ranks in the higher end of its generic rating category; the modifier "2" indicates a mid-range ranking; and the modifier of "-" or "3" indicates a ranking in the lower end of that generic rating category.

S&P, Moody's and Fitch publish financial benchmark criteria necessary to obtain a bond rating for different types of bonds and utilities. As a generalization, the higher the perceived business risk, the more stringent the financial criteria so the sum of the two, business risk and financial criteria, remains the same.

The debt rating process generally provides a good measure of investment risk for all types of investors because the factors considered in the debt rating process are usually relevant factors that other investors (common stock) would consider in assessing the risk of an investment. Credit rating agencies, such as S&P, assess the credit risk of both MUNI revenue bonds and IOU bonds by separating risk into two categories.

For MUNI revenue bonds, the risk of an investment is separated between enterprise and financial risk profiles. The enterprise risk profile includes the operating environment or industry factors, and organization-specific factors such as: economic fundamentals, industry risk, market position, and operational management. The financial profile assesses

13 Ability to pay principal and interest, in a timely fashion.

the financial strength with three factors: coverage metrics, liquidity and reserves, and debt and liabilities.[14]

For IOU bonds, the risk of an investment is separated between fundamental business analysis and financial analysis.[15] The business risk analysis includes assessing: Country risk; industry risk; competitive position; and profitability/peer group comparisons. The financial risk analysis includes assessing: accounting; financial governance and policies/risk tolerance; cash flow adequacy; capital structure/asset protection; and liquidity/short-term factors.

Q. WHAT IS THE BOND RATING OF PGW AND THE PEER GROUPS?

A. Page 1 of Schedule 2 shows the average bond/credit rating for PGW and the Peer Groups. PGW's bond rating is A by S&P, A3 by Moody's, and BBB+ by Fitch. Based on these ratings I calculated PGW's average credit profile to be A-. As shown, I calculated the average credit profile for the MUNI Group's as AA-, the IOUPA Group's as BBB+, and the IOU Group to be A. The weightings used to calculate the average credit profile are shown on page 2 of Schedule 2.

The bond/credit ratings (Schedule 2, page 1) shows that PGW and the Peer Groups have similar credit but PGW's credit profile is generally lower than the Peer Groups. Prospectively, based upon PGW's construction program and OPEB obligations, PGW's credit profile is likely to be strained and may result in a larger difference with Peer Groups'

14 *S&P Global Ratings*, Criteria - Governments - U.S. Public Finance: U.S. Municipal Retail Electric and Gas Utilities: Methodology and Assumptions, September 27, 2018.

15 *Standard & Poor's*, Corporate Ratings Criteria, General: Criteria Methodology: Business Risk/Financial Risk Matrix Expanded, May 27, 2009, and *Standard & Poor's*, Criteria Corporates General: Corporate Methodology, November 19, 2013 and *Standard & Poor's*, Criteria - Corporates - Utilities: Key Credit Factors for the Regulated Utilities Industry, November 19, 2013.

profile. Without regulatory support, PGW's credit profile will rapidly deteriorate. I will discuss the possibility of PGW's credit profile rapidly deteriorating later in my testimony.

Q. HAS PGW'S BOND RATING IMPROVED AS A RESULT OF THE REVENUE INCREASES GRANTED IN PRIOR RATE CASES?

A. Yes. Helpful regulatory support from PUC-authorized rate increases has enhanced revenues enabling PGW to present an improved credit profile as is evident from their improved bond rating. Table 2 shows PGW's improved bond/credit rating since their last two rate cases to date. As shown in Table 2, PGW's S&P and Moody's bond ratings have generally increased one to two levels during this time period. I believe regulatory support has played a key role in PGW being able to present a better credit profile resulting in improved bond ratings and ultimately lowering cost to customers as a result of having ability to finance at lower interest rates than otherwise would have been the case.

	PGW's Long-Term Debt Ratings				Weightings Assigned to Credit Ratings			
	S&P	Moody's	Fitch	Overall Average Credit	S&P	Moody's	Fitch	Overall Average Weighting
2010 Rate Case	BBB-	Baa2	N/A	BBB-	10.0	9.0	-	9.5
2017 Rate Case	A-	Baa1	BBB+	BBB+	7.0	8.0	8.0	7.7
Current Rating (2020)	A	A3	BBB+	A-	6.0	7.0	8.0	7.0

Table 2

Q. BESIDES THE FACT THAT PGW'S BOND RATING IMPROVED SINCE PRIOR RATE CASES, WHAT OTHER EVIDENCE DO YOU HAVE THAT PROVES PGW'S IMPROVED BOND RATING IS A RESULT OF REGULATORY SUPPORT?

A. S&P, Moody's, and Fitch have cited regulatory support in their recent assessments of PGW credit quality. For example, S&P stated,

> Although PGW is subject to rate regulation and does not benefit from the flexibility we typically associate with municipal utilities that have autonomous rate setting authority, **recent years' regulatory decisions provided rate relief that supports extremely strong debt service coverage metrics**. Moreover, **the regulator** has authorized the utility's use of several surcharges that **support** capital improvements and postemployment benefits. Also available to the utility are a weather normalization adjustment that insulates margins from weather variability and a gas cost rate adjustor that automatically passes on gas costs to ratepayers on a quarterly basis.[16] (Emphasis added.)

Moody's specified,

> Philadelphia Gas Works' ("PGW", A3, stable) **credit profile reflects its credit supportive regulatory environment** that has increased the utility's asset base and supported its main replacement program; a stable and predictable leverage, financial and operating profile that is expected to be maintained; a sizeable low income and modestly growing customer base; and the utility's position as a supplier of last resort, which yields consistently above average retail rates.[17] (Emphasis added.)

Further, Fitch detailed,

> PGW's ability to establish its rates is subject to oversight by the Pennsylvania Public Utility Commission (PUC), potentially limiting needed rate increases and overall financial flexibility. Positively, **the utility's relationship with the PUC has remained constructive and supportive in recent years**, evidenced by an approximate 6.8% base rate increase that was approved and became effective December 2017, in addition to the approval of various surcharges in the recent past.[18] (Emphasis added.)

Q. WHAT FACTORS HAVE THE MAJOR CREDIT RATING AGENCIES MENTIONED AS BEING POSITIVE CREDIT ATTRIBUTES AND AS BEING NEGATIVE CREDIT CONCERNS?

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16 *S&P Global Ratings*, Philadelphia; Gas; Joint Criteria, May 8, 2019.

17 *Moody's Investors Service,* Credit Opinion, Philadelphia (City of) PA Gas Works, June 10, 2019.

18 *Fitch Ratings*, Fitch Affirms Philadelphia Pa's Gas Works Rev Bonds At 'BBB+'; Outlook Stable July 5, 2018.

A. In the aforementioned credit review, S&P referenced the following positives which support PGW's credit ratings:[19]

- The rating reflects our opinion of PGW's strong enterprise risk profile and very strong financial risk profile. The strong enterprise risk profile reflects our view of PGW's strong operational management assessment and very strong economic fundamentals, offset by our view of PGW's vulnerable market position. The very strong financial risk profile reflects our view of PGW's extremely strong coverage partly offset by its very high debt and liabilities position.

- Extremely strong coverage, evidenced by very robust coverage of fixed costs (debt service payments after the annual transfer to the City of Philadelphia's general fund).

- Very strong liquidity and reserves, reflecting $131 million in unrestricted cash as of audited fiscal 2018, (measuring a strong 106 days of operating expenses), which management projects will remain near current levels.

- The stable outlook reflects our view of PGW's extremely strong coverage over the past several years and projections that this trend will continue, mainly as a result of PGW's several cost adjustment mechanisms in place, its desire to generate significant internal funds for capital needs, and its need to maintain liquidity targets.

S&P also stated the flowing negatives that could prospectively impact PGW's credit rating:[20]

- Vulnerable market position, as a result of very high rates versus those of other regional providers and PGW's dependence on the Pennsylvania Public Utility Commission (PAPUC) for approval for base-rate increases, with a mixed history of support for filings, although this has improved recently.

- Highly vulnerable debt and liabilities position, suggested by a very high debt-to-capitalization ratio of 91% as of fiscal 2018, although the ratio is projected to decline to 54% by fiscal 2025, and with a large capital plan of $830 million over the next six years as PGW addresses its main replacement program.

In the former cited credit review, Moody's referenced the following positives which support PGW's credit ratings:[21]

19 *S&P Global Ratings*, May 8, 2019.
20 Ibid.
21 *Moody's Investors Service*, June 10, 2019.

- Thus, our credit view heavily considers the constructive relationship PGW has with the Pennsylvania Public Utility Commission (PUC) and the fact that the PUC must approve rates sufficient for PGW to satisfy its indenture required 1.5x debt service coverage ratio (DSCR) rate covenant.

- The improved rate structure will also help PGW fund future capital investments with approximately 45% debt and 55% from internally generated cash, which will help reduce the utility's leverage profile over time while also benefiting from additions to its asset base.

- PGW continues to annually improve the funding of its outstanding OPEB liabilities with both the PUC approved OPEB rate surcharge and cash on hand. We expect the OPEB funding levels to continue to annually improve given the PUC's approval to extend the OPEB surcharge, which would correspondingly lower the annual OPEB costs to the utility.

Moody's identified the following possible negatives that could impact PGW's credit rating:[22]

- PGW's state rate regulation constrains its cost recovery framework in comparison to the majority of municipally owned gas utilities in the US, which benefit from local unregulated rate setting.

- A less credit supportive rate regulatory environment.

- Increased leverage without sufficient cost recovery or a material decline in liquidity.

Fitch referenced the following positives in the previously cited credit review which support PGW's credit ratings:[23]

- A significant reduction in PGW's leverage and an improved cost structure due in part to further rate increases and/or other revenue enhancements could lead to positive rating action.

- Overall, Fitch views the approval of the rates favorably; however, the rate regulated environment does limit flexibility given the time it may take to implement necessary changes.

22 Ibid.
23 *Fitch Ratings*, July 5, 2018.

Fitch acknowledged the following possible negatives that could impact PGW's credit rating:[24]

- A return to weaker collection rates, diminished cash flow and an inability to recover costs would exert downward pressure on the ratings.
- Failure to secure appropriate rate relief to support capital investment and related borrowings would likely have negative rating ramifications.

Q. ARE THERE OTHER ASPECTS OF PGW'S SERVICE AREA WHICH MAY CAUSE CONCERN TO THE MAJOR CREDIT RATING AGENCIES AND HAVE NEGATIVE CREDIT TRAITS?

A. Yes, the major credit rating agencies evaluate the economy of the area served as part of their credit assessment. In particular, the major credit rating agencies look at median household income ("MHI") and poverty rates of the service area as compared to the nation as a whole. The MHI of PGW's service area is about 74% (2018) of the national average and the poverty rate is about 208% (2018) of the national average according to the American Community Survey (ACS), the Census Bureau. Neither of these demographic statistics is supportive of credit quality and suggests PGW's other attributes must be higher than otherwise to counterbalance the negative demographic statistics.

BENCHMARK METRICS

Q. PLEASE EXPLAIN THE PURPOSE OF THE BENCHMARK METRICS.

A. Yes. In determining just and reasonable rate levels for PGW using the cash flow method, the Commission must consider, among other relevant factors: PGW's available short-term borrowing capacity and internal generation of funds to fund construction; the debt to equity ratios and financial performance of similarly situated utility enterprises; the level of operating and other expenses in comparison to similarly situated utility enterprises; and the

24 Ibid.

level of financial performance needed to maintain or improve PGW's bond rating thereby permitting PGW to access the capital markets at the lowest reasonable costs to customers over time.[25]

The purpose of the benchmark metrics is to compare PGW's key metrics to the Peer Groups'. The benchmark metrics measures the financial performance of PGW and the Peer Groups from 2014 through 2018.

Q. HOW DID YOU DETERMINE WHICH BENCHMARK METRICS TO MEASURE AND WHY DID YOU SELECT THEM?

A. I selected the benchmark metrics based on the needs of PGW to provide the Commission the measures necessary to satisfy the Commission's requirements in meeting the Commission's "Application of PGW Cash Flow Ratemaking Method—Final Statement of Policy" referenced previously. In addition to providing the specific metrics stated in the Commission's "Application of PGW Cash Flow Ratemaking Method--Final Statement of Policy" I calculated the financial performance metrics used by the major credit rating agencies' (S&P, Moody's and Fitch) and referenced in their credit rating criteria measures.

The benchmark metrics I used include metrics used to assess both MUNI and IOU debt. The three most important metrics the major rating agencies use for evaluating MUNI debt include debt to equity ratios, debt service coverage, and Days Cash, and each of these metrics is included in my analysis. As a generalization, the financial performance metrics used by the major credit rating agencies during their credit rating process of MUNI and IOU debt fall into four categories: Leverage & Risk; Liquidity; Solvency; and Efficiency.

25 Pennsylvania Public Utility Commission, "Application of PGW Cash Flow Ratemaking Method—Final Statement of Policy," § 69.2703, in Docket No. P-2009- 2136508.

In gathering the data required to calculate the benchmark metrics I found some entities lacked certain financial information (gross plant) required for a specific metric. As a result, I expanded the number of benchmark metrics to include similar data (net plant or total capitalization) to provide similar measures while also providing the original measure. That is, I did not substitute data; rather, I provided complementary metrics in addition to the original metric.

For consistency I used the same "generic" data reported on financial statements for all entities when I calculated the benchmark metrics, thus making the metrics comparable across all entities. As a result, the benchmark metrics I calculated for PGW may differ from benchmark metrics determined by other PGW witnesses who utilized more detailed information.

Q. WHAT BENCHMARK METRICS DID YOU USE IN YOUR ANALYSIS?

A. I used 22 benchmark metrics for comparative purposes. Schedule 3 defines the inputs used in calculating each benchmark metric. As stated, the metrics fall into four categories: Leverage & Risk; Liquidity; Solvency; and Efficiency. Of the 22 benchmark metrics, six metrics provide measures of Leverage & Risk, three metrics appraise Liquidity, five metrics assess Solvency, and eight metrics evaluate Efficiency.[26] The 22 benchmark metrics are shown on pages 1 through 22 of Schedule 4 and are listed in Table 3.

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26 It should be noted that the larger number of metrics devoted to gauging Efficiency, relative to the other three categories, is due to the repetitive nature of some metrics as a result of the lack of required data (gross plant) for some entities and the creation of substitute comparable metrics.

Category	Metric	Schedule 4 Page Number
Leverage & Risk	Debt/Capitalization	1
Leverage & Risk	Operating Margin	2
Leverage & Risk	Debt Service/Cash OpEx	3
Leverage & Risk	Debt/Customer	4
Leverage & Risk	Debt/Revenues	5
Leverage & Risk	Debt/Equity	6
Liquidity	IGF/Revenues	7
Liquidity	FFO/CapEx	8
Liquidity	Days Cash	9
Solvency	FFO/Avg Debt	10
Solvency	FFO Coverage	11
Solvency	EBIT Coverage	12
Solvency	Interest-Only Debt Service Coverage	13
Solvency	Debt Service Coverage (P & I)	14
Efficiency	CapEx/DA	15
Efficiency	Net Plant/Gross Plant	16
Efficiency	CapEx/Net Plant	17
Efficiency	CapEx/Gross Plant	18
Efficiency	CapEx/Capitalization	19
Efficiency	Net Plant/Capitalization	20
Efficiency	Gas Revenue/MCF	21
Efficiency	Non-Commodity Revenue/Revenue	22

As is evident by viewing the information shown on Schedule 4, each metric was measured annually over the five-year period (2014-2018), averaged across the five-year period, and then, at the bottom of each page of Schedule 4, PGW's metric was ranked within the range of each Peer Groups' metric for comparison purposes. That is, for comparative ranking purposes, PGW was arrayed within the result of each Peer Groups and within all 23 Peer Groups entities (ALLCOS). For example, the MUNI Group contains seven entities but after PGW's results were measured relative to the range of the seven entities, PGW's ranking is shown relative to eight MUNI Group entities since PGW became the eighth entity. A similar process was used for all Peer Groups and the ALLCOS.

For descriptive purposes, when describing the results of the rankings relative to the Peer Groups, the term "favorably" (denoted by a "+" on Schedule 4) is used for the lowest two ranks (i.e., a rank of 1 or 2), the term "neutral" (denoted by a "=" on Schedule 4) is used for the more central ranks, and the term "unfavorably" (denoted by a "–" on Schedule 4) is used for the highest two ranks. A similar process was used for ranking the ALLCOS except the lower (favorably) and upper (unfavorably) "tails" were expanded from two ranks to six ranks each because 24 entities were ranked as part of ALLCOS.

The numerical ranking of each metric is relative to the metric being measured and the metric's implication on credit quality. For example, a higher Debt/Capitalization metric is riskier, less favorable and should have a higher numerical rank while a higher Debt Service Coverage metric is less risky, more favorable and should have a lower numerical rank. This method enabled the least risky, most favorable metric to always be ranked 1 and vice versa. Table 4 illustrates the rankings and the descriptive terms.

Key to Ranking		
Symbol Used on Schedule 4		Term Used in Report
+	⟷	Favorable
=	⟷	Neutral
-	⟷	Unfavorably

Rankings Numbers and Descriptive Term Used in the Report

N=	8	7	11	24
Rank Number of	MUNI Group	IOUPA Group	IOU Group	ALLCOS
1	Favorable	Favorable	Favorable	Favorable
2	Favorable	Favorable	Favorable	Favorable
3	Neutral	Neutral	Neutral	Favorable
4	Neutral	Neutral	Neutral	Favorable
5	Neutral	Neutral	Neutral	Favorable
6	Neutral	Unfavorably	Neutral	Favorable
7	Unfavorably	Unfavorably	Neutral	Neutral
8	Unfavorably		Neutral	Neutral
9			Neutral	Neutral
10			Unfavorably	Neutral
11			Unfavorably	Neutral
12				Neutral
13				Neutral
14				Neutral
15				Neutral
16				Neutral
17				Neutral
18				Neutral
19				Unfavorably
20				Unfavorably
21				Unfavorably
22				Unfavorably
23				Unfavorably
24				Unfavorably

Table 4

Q. PLEASE DESCRIBE THE RESULTS OF THE LEVERAGE & RISK BENCHMARK METRICS SHOWN ON SCHEDULE 4.

A. Yes. I used six benchmark metrics to assess Leverage & Risk (Schedule 4, pages 1 through 6).

The Debt/Capitalization (page 1) - PGW's metric trended downward (improved) until 2017 when PGW's implementation of GASB 75 (reporting OPEB liabilities for OPEB plans) resulted in a substantial reduction of PGW's equity, which resulted in a large increase in this metric. Debt/Capitalization is the most common measure of leverage. Subsequent to 2017, PGW's metric continued its downward trend. PGW's Debt/Capitalization metric ranged from a low of 78% to a high of 96% from 2014 to 2018, averaged 85% during this period, and was 91% in 2018. The MUNI Group's metric ranged from a low of 21% to a high of 90% from 2014 to 2018, averaged 63% during this period, and was 59% in 2018. The IOUPA Group's metric was 45% in 2018 and averaged 45% from 2014 to 2018 while the IOU Group's metric was 45% in 2018 and averaged 41% from 2014 to 2018.

PGW's metric was positioned unfavorably relative to the five-year average and for 2018 when compared to the Peer Groups. The Debt/Capitalization metric was generally higher for MUNIs compared to IOUs since MUNI utilities regularly debt finance projects while IOUs can finance projects with both debt and equity. This fact commonly results in MUNIs carrying higher levels of debt than IOUs.

Figure 2

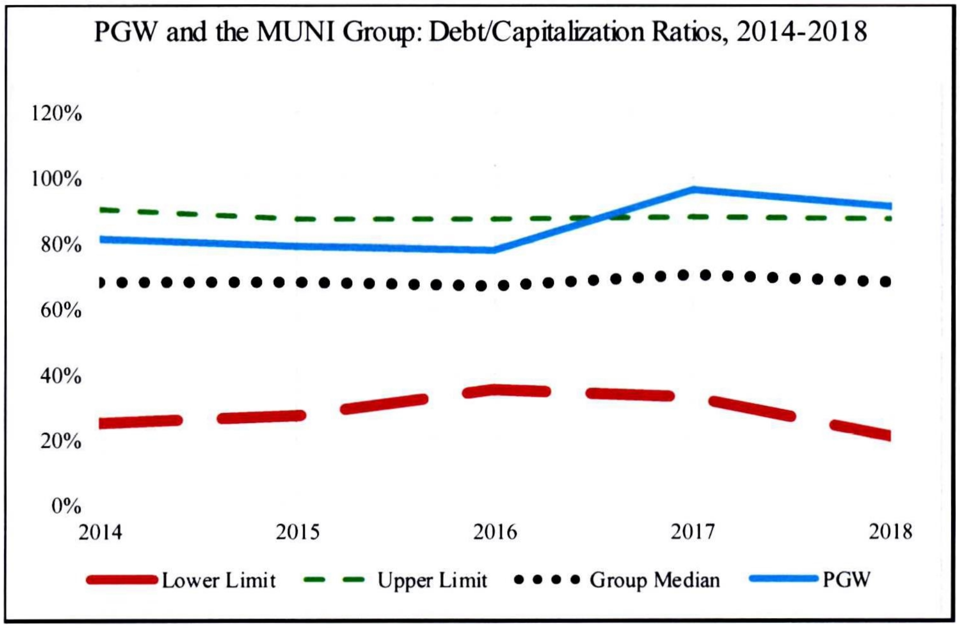


Figure 2 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been within the range of the MUNI Group's metric and trended in a similar direction.

The <u>Operating Margin</u> (page 2) – PGW's metric trended downward until after 2016 and then improved. A higher Operating Margin indicates more cash flow produced by revenues and hence, a lower risk profile. PGW's metric has largely been lower than both the MUNI Group's and IOUPA Group's metric but similar to the IOU Group's metric. PGW's metric was positioned unfavorably relative to the five-year average but positioned neutral for 2018 when compared to all Peer Groups.

Figure 3

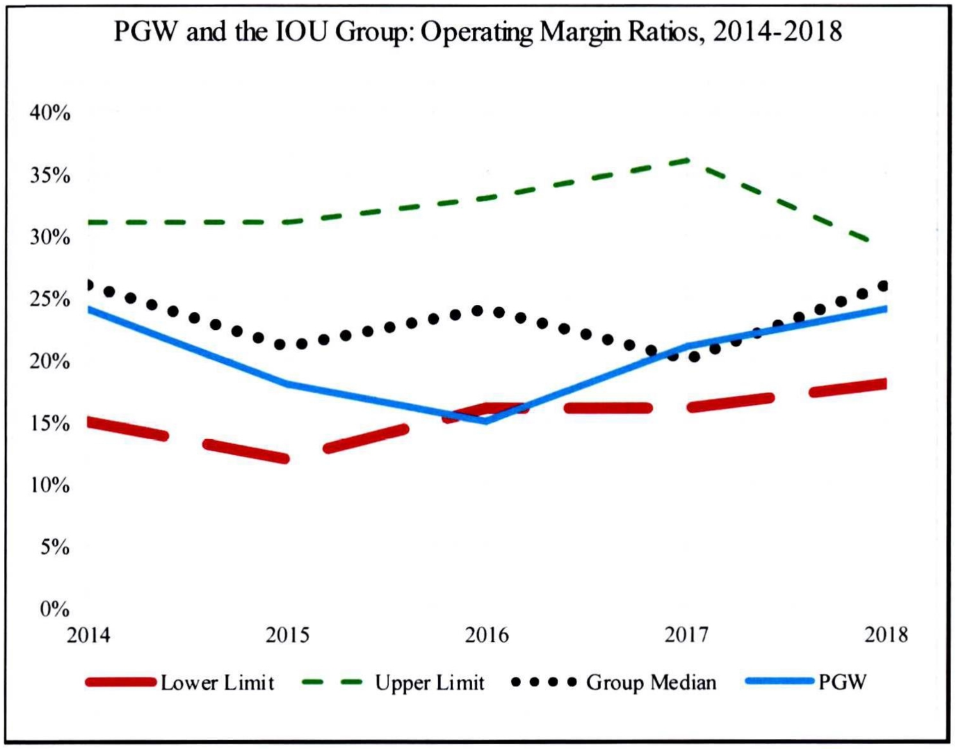


Figure 3 shows a comparison between PGW's metric and the IOU Group's metric. As shown, PGW's metric has generally been within the range of the IOU Group's metric and trended in a similar direction.

The Debt Service/Cash OpEx (page 3) - PGW's metric trended slightly downwards over the five-year period while Peer Groups' metric trended upwards. PGW's metric has been lower (better) than the MUNI Group's but similar to the IOUPA Group's metric and IOU Group's metric. PGW's metric was positioned neutral to favorably relative to both the five-year average and for 2018 when compared to all Peer Groups.

Figure 4

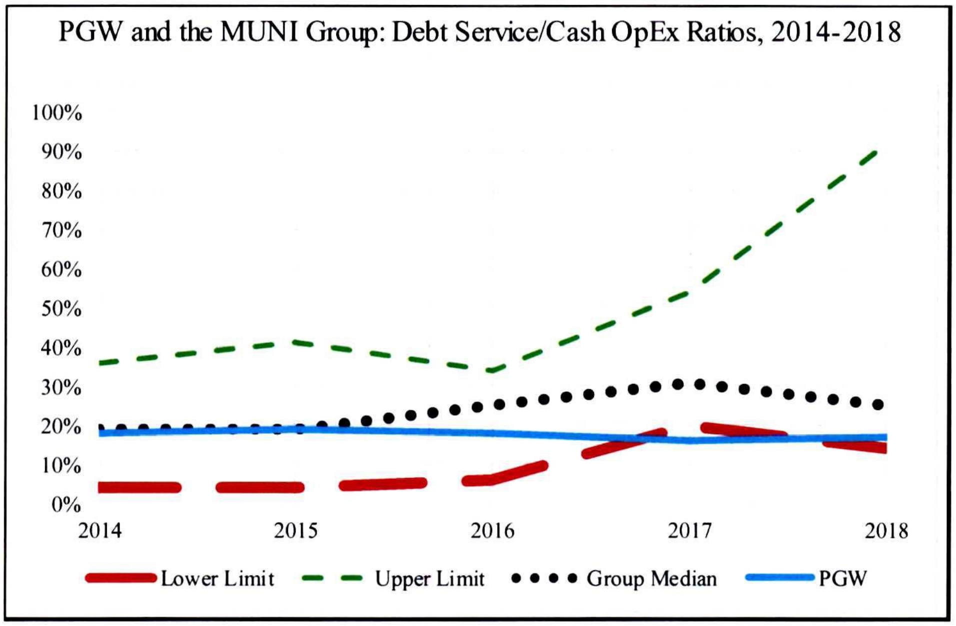


Figure 4 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been within middle to lower part of the range of the MUNI Group's metric and trended in an opposite direction.

The <u>Debt/Customer</u> (page 4) - PGW's metric trended slightly upwards over the five-year period as did the Peer Groups' metric. PGW's metric has generally been similar to the MUNI Group's but higher than the IOUPA Group's metric and IOU Group's metric. PGW's metric was positioned neutral relative to both the five-year average and for 2018 when compared to all Peer Groups.

The <u>Debt/Revenues</u> (page 5) - PGW's metric trended slightly upwards until 2017 and then dropped as did the Peer Groups' metric. PGW's metric has generally been similar to the MUNI Group's but higher than the IOUPA Group's metric and IOU Group's metric. PGW's metric was positioned neutral relative to both the five-year average and for 2018 when compared to the MUNI Group and the IOUPA Group and unfavorably compared to the IOU Group.

Figure 5

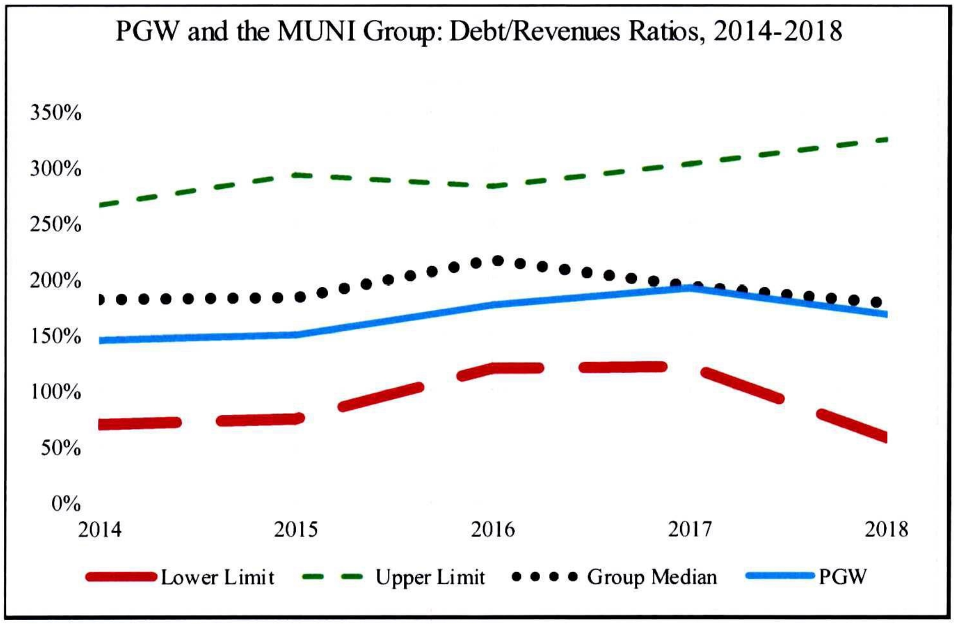


Figure 5 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been within middle to lower part of the range of the MUNI Group's metric and trended in a similar direction.

The <u>Debt/Equity</u> (page 6) - PGW's metric trended downward (improved) until 2017 when PGW's implementation of GASB 75 (reporting OPEB liabilities for OPEB plans) resulted in a substantial reduction of PGW's equity, which resulted in a large increase in this metric. Subsequent to 2017, PGW's metric continued its downward trend. PGW's metric was positioned unfavorably relative to the five-year average and for 2018 when compared to the Peer Groups. The Debt/Equity metric was higher for MUNIs compared to IOUs since MUNI utilities regularly debt finance projects while IOUs can finance projects with both debt and equity. This fact commonly results in MUNIs carrying higher levels of debt than IOUs.

Overall, PGW's Leverage & Risk metrics trended similar to the Peer Groups' metrics and were positioned neutral relative to both the five-year average and for 2018 when compared to all Peer Groups.

Q. PLEASE DESCRIBE THE RESULTS OF THE LIQUIDITY BENCHMARK METRICS SHOWN ON SCHEDULE 4.

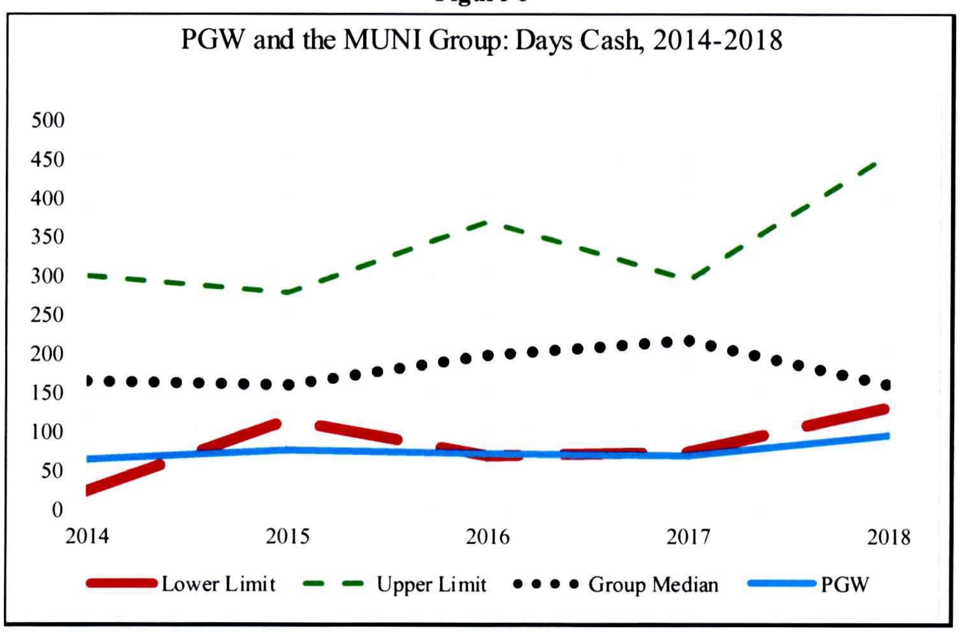
A. Yes. I used three benchmark metrics to assess Liquidity (Schedule 4, pages 7 through 9).

The IGF/Revenues (page 7) - PGW's metric trended downward (deteriorated) until after 2016 and then improved dramatically. A higher IGF/Revenues indicates more cash flow produced by revenues and hence, a lower risk profile. PGW's metric has been lower than both the MUNI Group's and IOUPA Group's metric but similar to the IOU Group's metric. PGW's metric was positioned unfavorably relative to the five-year average and 2018 relative to the MUNI Group's and IOUPA Group's metric but positioned neutral to the IOU Group's metric.

The FFO/CapEx (page 8) - PGW's metric trended downward (weakened) until after 2016 and then improved substantially. A higher FFO/CapEx indicates more cash flow available to finance construction and hence, a lower risk profile. PGW's metric has been lower than both the MUNI Group's and IOUPA Group's metric but better than the IOU Group's metric. PGW's metric was positioned unfavorably relative to the five-year average and 2018 relative to the MUNI Group's, positioned neutral to the IOUPA Group's metric, and positioned favorably to the IOU Group's metric.

The Days Cash (page 9) - PGW's metric generally trended upwards (improved) over the five-year period. A higher Days Cash indicates more cash available to pay for operating expenses, hence a lower risk profile. PGW's metric has been lower than the MUNI Group's metric.[27] PGW's Days Cash metric ranged from a low of 64 days to a high of 95 days from 2014 to 2018, averaged 74 days during this period, and was 95 days in 2018. The MUNI Group's Days Cash metric ranged from a low of 23 days to a high of 457 days from 2014 to 2018, averaged 197 days during this period, and was 238 days in 2018. The IOUPA Group's metric was 78 days in 2018 and averaged 52 days from 2014 to 2018 while the IOU Group's metric was 2 days in 2018 and averaged 5 days from 2014 to 2018. The Days Cash metric is not a useful metric to compare MUNIs and IOUs since IOUs usually have much different short-term borrowing arrangements than MUNIs. PGW's metric was positioned unfavorably for the five-year average and 2018 relative to the MUNI Group's metric.

Figure 6



27 As noted previously, PGW's fiscal year ends in August when cash needs are at their lowest compared to their needs during the heating season. Accordingly, PGW's August cash balance is rapidly "spent down" during the winter months.

Figure 6 displays a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been in the lower portion of the range of the MUNI Group's metric and trended in a similar direction.

Overall, PGW's Liquidity metrics trended similar to the Peer Groups' metrics and were positioned unfavorably relative to both the five-year average and for 2018 when compared to all Peer Groups.

Q. PLEASE DESCRIBE THE RESULTS OF THE SOLVENCY BENCHMARK METRICS SHOWN ON SCHEDULE 4.

A. Yes. I used five benchmark metrics to assess Solvency (Schedule 4, pages 10 through 14).

The <u>FFO/Avg Debt</u> (page 10) - PGW's metric trended downward (weakened) until after 2016 and then improved through 2018. A higher FFO/Avg Debt indicates more cash flow available to service debt and hence, a lower risk profile. PGW's metric has been lower than all Peer Groups' metric. PGW's metric was positioned unfavorably relative to the Peer Groups' five-year average but generally neutral for 2018 relative to the Peer Groups' metric.

Figure 7

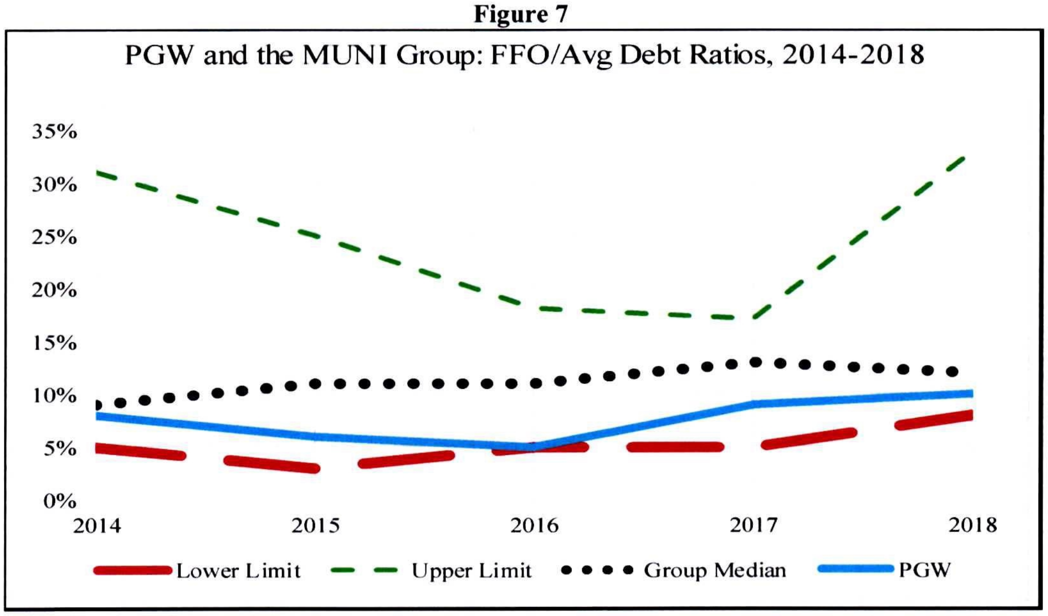


Figure 7 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been within the lower portion of the range of the MUNI Group's metric and trended in a similar direction.

The FFO Coverage (page 11) - PGW's metric trended downward (deteriorated) until after 2016 and then improved through 2018. A higher FFO Coverage indicates more cash flow available to pay interest and hence, a lower risk profile. PGW's metric has been lower than all Peer Groups' metric. PGW's metric was positioned unfavorably relative to the Peer Groups' five-year average. For 2018, PGW's metric was positioned neutral relative to the MUNI Group and unfavorably comparative to the IOU Group and the IOU Group.

The EBIT Coverage (page 12) - PGW's metric trended downward (weakened) until after 2016 and then improved through 2018. A higher EBIT Coverage indicates the ability of a company to pay the interest on its outstanding debt with pre-tax dollars and therefore, is a lower risk profile. PGW's metric has been lower than all Peer Groups' metric. However, since both the IOUPA Groups and the IOU Group pay income taxes, their metrics should be higher than MUNIs. PGW's metric was positioned neutral relative to the MUNI Group's metric for the five-year average and for 2018 and was positioned unfavorably relative to the IOUPA Group's and IOU Group's metric for the five-year average and for 2018.

Figure 8

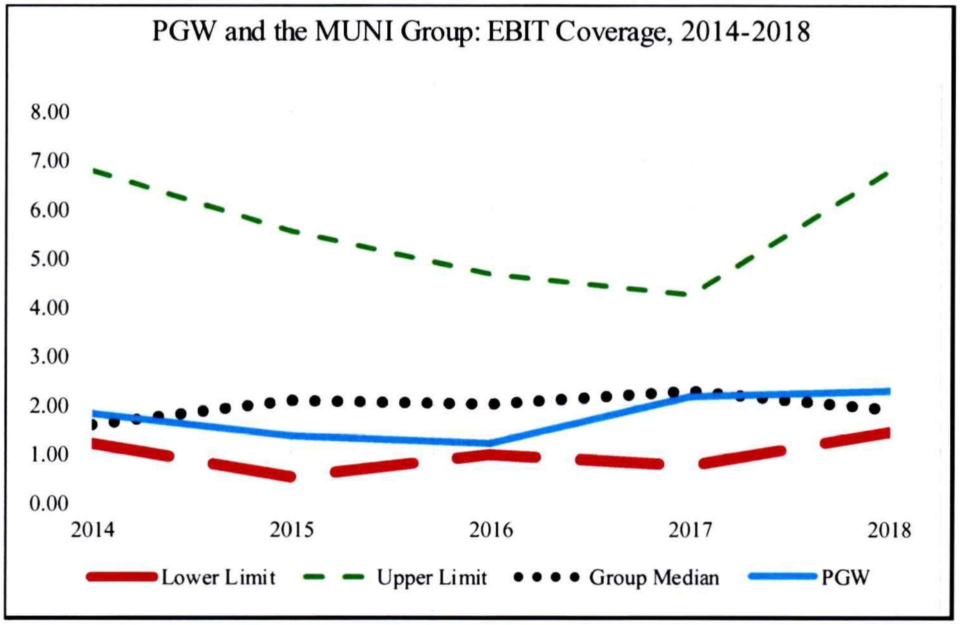


Figure 8 shows a comparison between PGW's metric and the MUNI Group's metric. As revealed, PGW's metric has generally been within the lower to middle portion of the range of the MUNI Group's metric and trended in a similar direction.

The <u>Interest-Only Debt Service Coverage</u> (page 13) - PGW's metric trended upwards (strengthened) over the five-year period. A higher Interest-Only Debt Service Coverage indicates the ability to pay the interest on its outstanding debt and consequently, is a lower risk profile. PGW's metric has been lower than all Peer Groups' metric. PGW's metric was generally positioned unfavorably relative to the Peer Groups' metric for the five-year average and for 2018.

The <u>Debt Service Coverage (P & I)</u> (page 14) - PGW's metric trended upwards (improved) over the five-year period. A higher Debt Service Coverage (P & I) indicates the ability to service or pay the interest and principal on outstanding debt and accordingly, is a lower risk profile. PGW's metric has generally been lower than all Peer Groups' metric. PGW's Debt Service Coverage (P & I) metric ranged from a low of 1.13-times to a high of 2.00-times from 2014 to 2018, averaged 1.52-times during this period, and was 2.00-times in 2018. The MUNI Group's metric ranged from a low of 0.45-times to a high of 9.41-times from 2014 to 2018, averaged 2.53-times during this period, and was 2.02-times in 2018. The IOUPA Group's metric was 5.26-times in 2018 and averaged 5.62-times from 2014 to 2018 while the IOU Group's metric was 2.82-times in 2018 and averaged 4.05-times from 2014 to 2018.

PGW's metric was positioned neutral for 2018 relative to the MUNI Group's metric and unfavorably compared with the IOUPA Group's and IOU Group's metric. PGW's metric was positioned unfavorably relative to all Peer Groups for the five-year average.

Figure 9

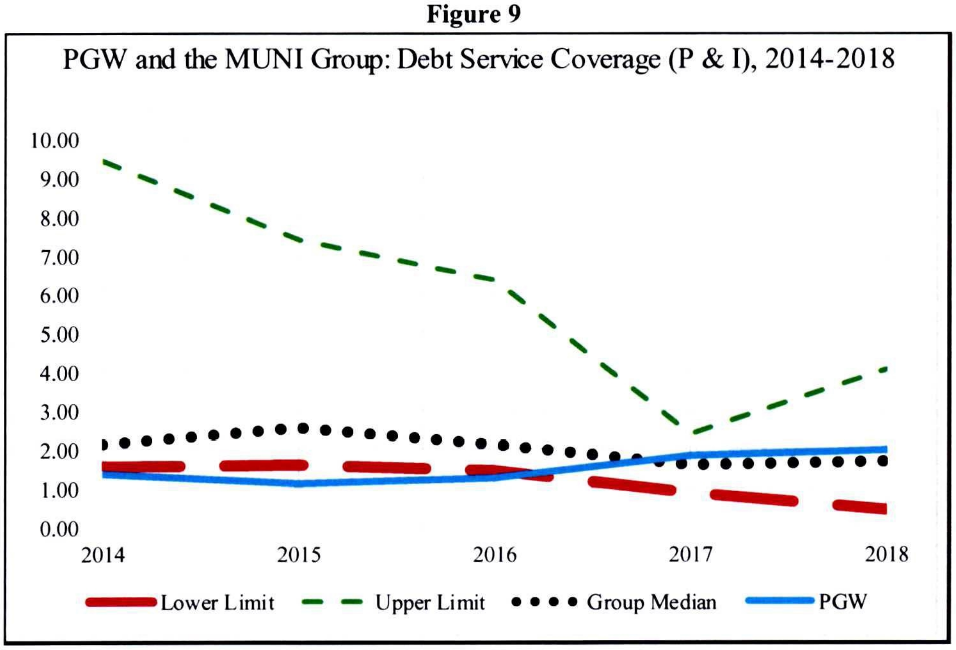


Figure 9 displays a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has improved and moved from below the range of the

MUNI Group's metric to above the middle portion of the range of the MUNI Group's metric.

Overall, PGW's Solvency metrics trended upwards while the Peer Groups' metrics trended downwards. PGW's Solvency metrics were generally positioned unfavorably to neutral relative to both the five-year average and for 2018 when compared to all Peer Groups.

Q. WERE THE DEBT SERVICE COVERAGES YOU JUST DISCUSSED CALCULATED CONSISTENT WITH EACH ENTITIES' BOND ORDINANCE?

A. No, each entities' bond ordinance is unique to a particular bond or seniority of bond. The debt service coverage ratios shown on Schedule 4 are generic measures of aggregated debt service coverage. Schedule 5 shows a comparison between the benchmark ratios (Schedule 4) and bond ordinance debt service coverages reported by PGW and the MUNI Group. As shown on Schedule 5, PGW's bond ordinance debt service coverages are between 30% to 50% higher than the aggregate debt service coverage shown on Schedule 4.

Q. PLEASE DESCRIBE THE RESULTS OF THE EFFICIENCY BENCHMARK METRICS SHOWN ON SCHEDULE 4.

A. Yes. I used eight benchmark metrics to assess Efficiency (Schedule 4, pages 15 through 22).

The <u>CapEx/DA</u> (page 15) – PGW's metric trended upwards (weakened) over the five-year period. A higher CapEx/DA indicates the need for more external financing and consequently, is a higher risk profile. PGW's metric has been higher than the MUNI Group's metric but lower than the IOUPA Group's and IOU Group's metrics. PGW's metric was positioned unfavorably relative to the MUNI Group's but favorably compared with the IOUPA Group's and IOU Group's metrics for the five-year average and for 2018.

The Net Plant/Gross Plant (page 16) – PGW's metric's trend was flat across the time period as was the Peer Groups' trend. A higher Net Plant/Gross Plant indicates the age of assets and the need for less capital expenditures and consequently, is a lower risk profile. PGW's metric has been similar to the MUNI Group's metric and lower than the IOUPA Group's and IOU Group's metrics. PGW's metric was positioned neutral relative to the MUNI Group's but unfavorably compared with both the IOUPA Group's and IOU Group's metrics for the five-year average and for 2018.

Figure 10

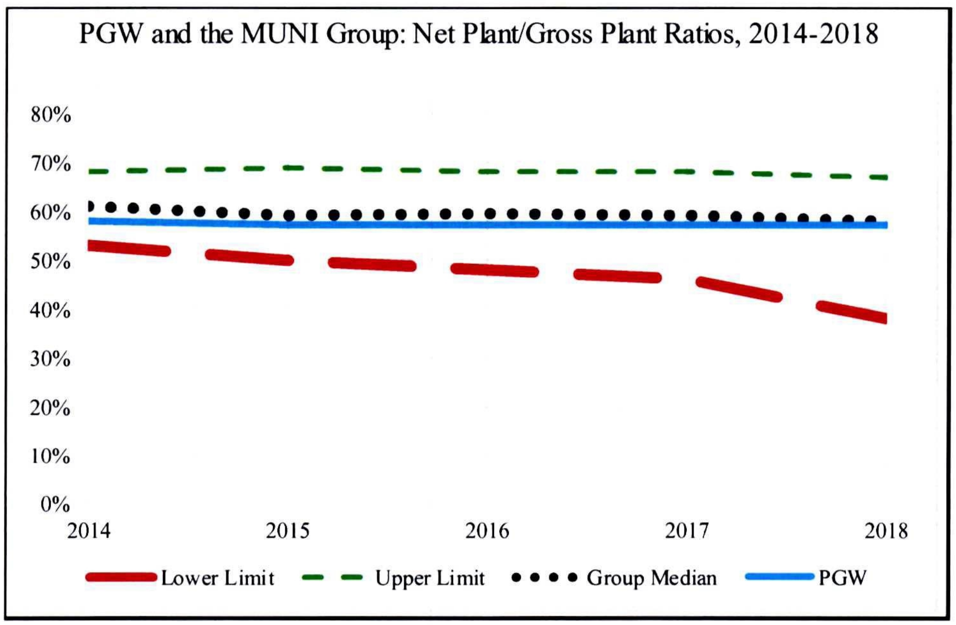


Figure 10 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been in the middle range of the MUNI Group's metric.

The CapEx/Net Plant (page 17) – PGW's metric trended upwards slightly over the five-year period. A higher CapEx/Net Plant indicates the reinvestment rate of plant and the possible need for more external financing; and consequently, is a higher risk profile.

PGW's metric has been slightly higher than the MUNI Group's metric but somewhat lower than the IOUPA Group's and IOU Group's metrics. PGW's metric was positioned neutral relative to the MUNI Group's, and favorably compared with both the IOUPA Group's and the IOU Group's metrics for the five-year average and for 2018.

The CapEx/Gross Plant (page 18) – PGW's metric's trend was flat across the time period as was the Peer Groups' trend. A higher CapEx/Gross Plant indicates the reinvestment rate of plant and the possible need for more external financing; and therefore, is a higher risk profile. PGW's metric has been about the same as the MUNI Group's metric but somewhat lower than the IOUPA Group's and IOU Group's metrics. PGW's metric was positioned neutral relative to the MUNI Group's, and favorably compared with both the IOUPA Group's and the IOU Group's metrics for the five-year average and for 2018.

Figure 11

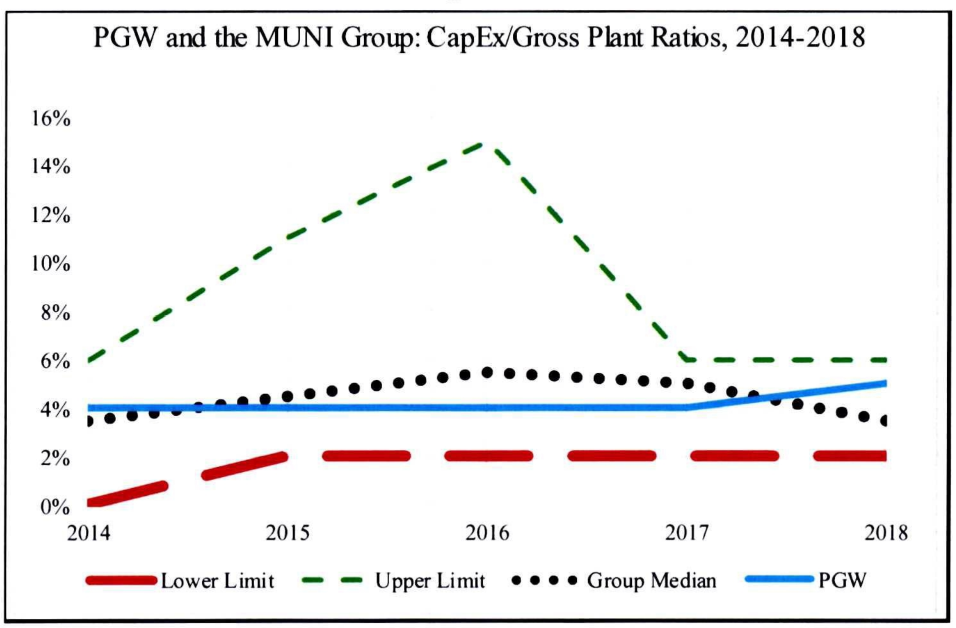


Figure 11 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has generally been in the middle range of the MUNI Group's metric.

The CapEx/Capitalization (page 19) – PGW's metric trended upwards slightly over the five-year period. A higher CapEx/Capitalization indicates the turnover rate of investor provided capital and the possible need for more external financing; and accordingly, is a higher risk profile. PGW's metric has been higher than the MUNI Group's metric but lower than both the IOUPA Group's and IOU Group's metrics. PGW's metric was positioned unfavorably relative to the MUNI Group's, and favorably compared with the IOUPA Group's and the IOU Group's metrics for the five-year average and for 2018.

The Net Plant/Capitalization (page 20) – PGW's metric trended upwards (strengthened) over the five year period. A higher Net Plant/Capitalization indicates the efficiency with which capital is raised and then invested and subsequently, is a lower risk profile. PGW's metric has been much higher than the MUNI Group's metric but lower than the IOUPA Group's and the IOU Group's metrics. PGW's metric was positioned favorably relative to the MUNI Group's, neutral to unfavorably compared with the IOUPA Group's, and neutral to the IOU Group's metrics for the five-year average and for 2018.

Figure 12

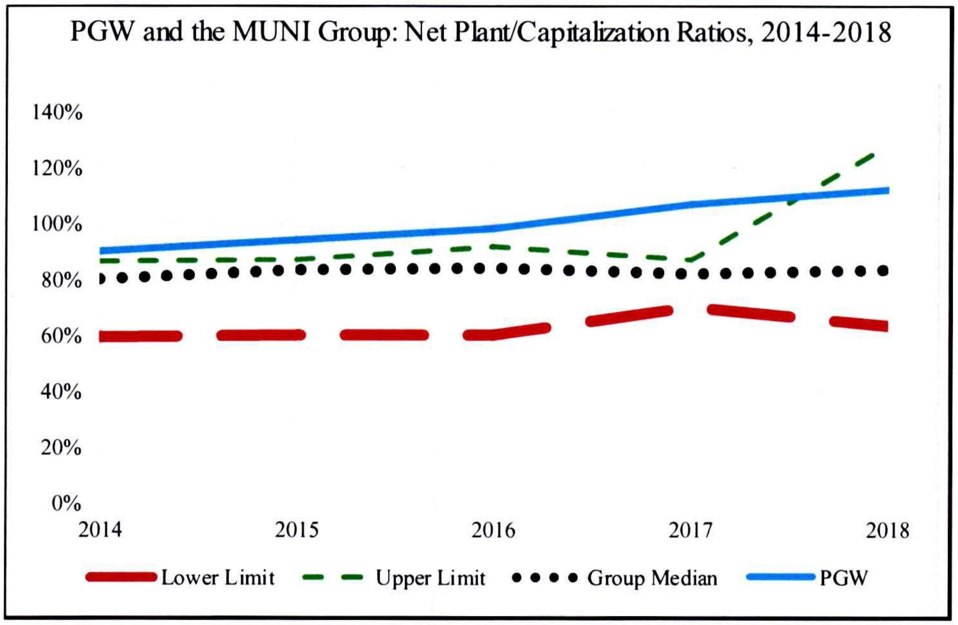


Figure 12 shows a comparison between PGW's metric and the MUNI Group's metric. As shown, PGW's metric has been above the range of the MUNI Group's metric in most years.

The Gas Revenue/MCF (page 21) – PGW's metric's trend was generally flat across the time period whereas the MUNI Group's trend was slightly down. A higher Gas Revenue/MCF invites possible load loss; and therefore, is a higher risk profile. However, this metric is impacted by customer mix (% residential) and the volume (MCF) of transport only customers. PGW's metric has been higher than the Peer Groups' metric. PGW's metric was positioned neutral relative to the MUNI Group's metrics, unfavorably relative to the IOUPA Group's metrics, and neutral compared to the IOU Group's for the five-year average and for 2018. The Peer Groups' lower percentage of residential customers impacts this metric.

The Non-Commodity Revenue/Revenue (page 22) – PGW's metric trended upwards (strengthened) over the five-year period. A higher Non-Commodity Revenue/Revenue measures efficiency; and therefore, is a lower risk profile. However, this metric can be impacted by commodity (gas) prices. PGW's metric has been higher than the Peer Groups' metric. PGW's metric was positioned favorably relative to the MUNI Group's metrics, favorably to neutral relative to the IOUPA Group's metrics, and favorably compared to the IOU Group's for the five-year average and for 2018.

Figure 13

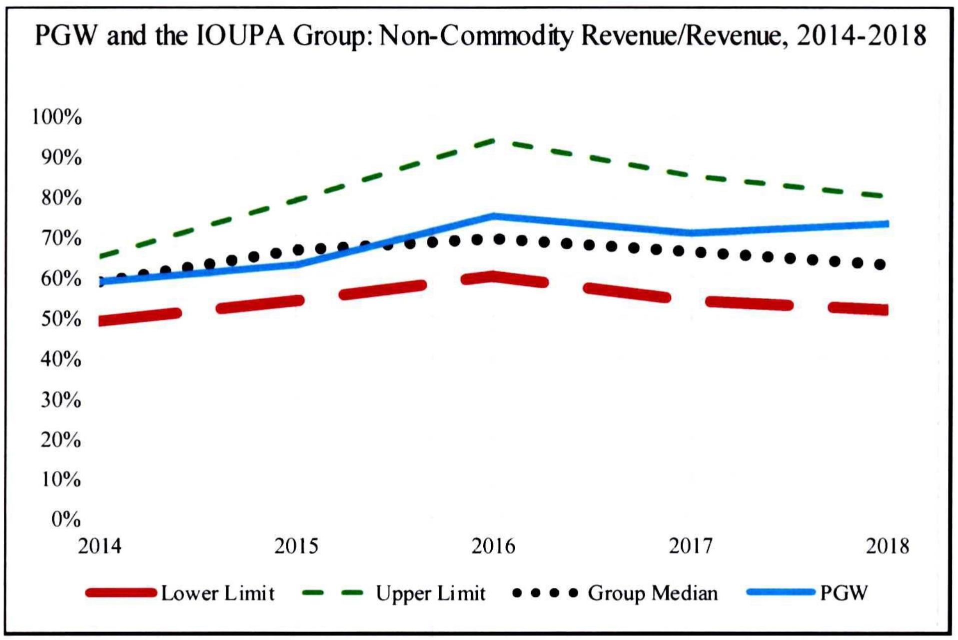


Figure 13 shows a comparison between PGW's metric and the IOUPA Group's metric. As shown, PGW's metric has generally been in the upper range of the IOUPA Group's metric in most years.

Overall, PGW's Efficiency metrics trended in a similar direction as the Peer Groups' metrics. PGW's Efficiency metrics were generally positioned favorably to neutral relative to both the five-year average and for 2018 when compared to all Peer Groups.

Based upon all the benchmark metrics (Schedule 4) reviewed, coupled with our review of PGW's operating requirements, we concluded the PGW's financial and operating results trended mostly in a similar direction as the Peer Groups and were positioned neutral to unfavorably when compared to the Peer Groups' metrics. Given the difference between PGW and the Peer Groups' credit quality (Schedule 2), I believe the benchmark metrics support the need for additional rate support.

RATE SUPPORT IMPACT ON BENCHMARK METRICS

Q. PREVIOUSLY WHEN DISCUSSING CREDIT RATINGS, YOU STATED, "I BELIEVE REGULATORY SUPPORT HAS PLAYED A KEY ROLE IN PGW BEING ABLE TO PRESENT A BETTER CREDIT PROFILE RESULTING IN IMPROVED BOND RATINGS". WHAT IS THE BASIS OF YOUR BELIEF?

A. To begin, I previously discussed Table 2 (see page 20 et seq.), which showed PGW's bond rating improved following each of the last two rate cases. To clarify, the regulatory support provided to PGW in their last two rate cases did not in itself result in bond rating increases. Rather, the regulatory support provided PGW the wherewithal, or the ability to present a better credit profile, which resulted in improved bond ratings.

The major credit rating agencies review a number of metrics as part of their credit assessment. However, there are three key metrics which the major credit rating agencies give strong consideration to: Debt/Capitalization; Days Cash; and Debt Service Coverage (P & I). Each metric measures a unique type of risk: Leverage & Risk (Debt/Capitalization); Liquidity (Days Cash); and Solvency (Debt Service Coverage (P & I)). Table 5 shows these three key metrics for PGW just prior to their last two rate cases and for the current rate case based upon the most recent financial information available when each rate case was filed (i.e. financial information for 2008, 2015 and 2018).[28] Table 5 also shows similar key metrics calculated for the fully projected future test year ("FPFTY") and the last year (2025) of PGW's forecast period; both with and without the requested rate increase granted.[29]

	Historical			Projected			
	Aug-31 2008	Aug-31 2015	Aug-31 2018	FPFTY Aug-31 2021	Aug-31 2025	FPFTY Aug-31 2021	Aug-31 2025
Rate Increase Granted				$0 MM	$0 MM	$70 MM	$70 MM
Debt/Capitalization	85%	79%	91%	79%	74%	76%	61%
Days Cash	24	74	95	35	-182	87	62
Debt Service Coverage (P & I)	0.91	1.13	2.00	1.65	1.31	2.27	1.88

Table 5

When viewing the three key metrics shown in Table 5 it is important to understand the metrics are not isolated metrics, rather they work in tandem with one another so that the sum of their implications (risk) must offset one another if investment risk is to remain unchanged. For example, if the risk of Leverage is high, then the risk measured for Liquidity and Solvency must offset Leverage's higher risk in order for the total risk (investment risk) to remain unchanged. It is also important to recall that PGW's three key metrics largely lag the Peer Groups' metrics as was discussed regarding Schedule 4.

Table 5 shows PGW's three key metrics (investment risk) generally improved following their most recent two rate cases, as did their credit rating (Table 2).[30] Table 5 also shows PGW's three key metrics are projected to rapidly deteriorate without rate relief

28 All metrics shown in the Tables 4 and 5 were calculated using the same methodologies used to calculate similar metrics shown on Schedule 4. Therefore, the metrics use "generic" formulas used for benchmarking that may vary from PGW's covenant calculations. PGW's covenant calculations require specific information that was not available for all entities used in the benchmarking analysis.
29 The financial information for the projected periods was taken from PGW's Schedules JFG-1 and JFG-2.
30 The lone exception regarding improved metrics was Debt/Capitalization which was impacted by PGW's implementation of GASB 75 (reporting OPEB liabilities for OPEB plans) in 2017 explained previously.

to levels, or risk implications not unlike 2008 and 2015. Conversely, with PGW's proposed rate increase, shown in the two right hand columns of Table 5, PGW's three key metrics are projected to be healthier and suggest a better risk profile or credit profile. I believe regulatory support has played a key role in PGW being able to present a better credit profile resulting in improved bond ratings and ultimately lowering cost to customers as a result of having ability to finance at lower interest rates than otherwise would have been the case. Table 5 demonstrates the need for continued regulatory support in order for PGW to improve, or a least maintain, their credit profile.

Q. HOW WOULD THE PROPOSED RATE INCREASE IMPACT PGW'S CREDIT PROFILE?

A. Table 6 shows the three key metrics for PGW calculated for the historic test year ("HTY"), future test year ("FTY"), FPFTY, and PGW's forecast period (2022 – 2025). The three key metrics shown in Table 6 were calculated both without and with the requested rate increase granted. As shown in Table 6, PGW's Debt/Capitalization will improve significantly as a result of the requested rate increase being granted. PGW's Days Cash will maintain close to the HTY level and Debt Service Coverage (P & I) will improve significantly as a result of the requested rate increase being granted. Table 6 also shows PGW's three key metrics will rapidly weaken without the proposed rate increase to levels which generally proceeded HTY.

Metric	Rate Increase ($MM)	HTY Aug-31 2019	FTY Aug-31 2020	FPFTY Aug-31 2021	Forecast Period Aug-31 2022	Aug-31 2023	Aug-31 2024	Aug-31 2025
Debt/Capitalization	0	84%	83%	79%	77%	75%	76%	74%
	70	84%	83%	76%	71%	66%	66%	61%
Days Cash	0	96	78	35	-21	-61	-119	-182
	70	95	78	87	81	91	78	62
Debt Service Coverage (P & I)	0	2.15	1.74	1.65	1.56	1.58	1.34	1.31
	70	2.01	1.74	2.27	2.20	2.21	1.91	1.88

Table 6

Regulatory support plays a key role in PGW being able to present a healthier credit profile, improves bond ratings and ultimately lowers the cost to customers as a result of PGW having the ability to finance at lower interest rates than otherwise would have been the case.

SUMMARY AND OVERALL RECOMMENDATION

Q. PLEASE SUMMARIZE YOUR ANALYSIS AND RECOMMENDATION.

A. Yes. My recommendation is based on the results of my benchmark study and my recommendation is that PGW be afforded a timely rate increase to cover its costs and at least maintain its financial stability. Authorizing the full rate increase requested would send a strong positive signal of support to credit rating agencies, enable PGW to at least maintain their credit profile, minimize borrowing costs and ultimately save customers money in the long run. The benchmark study shows that PGW's financial performance generally improved each year since 2014 based on both average performance, over the 2014 to 2018 time period, and also the trend from 2014 through 2018. The benchmarking study also shows that PGW lags its peers on some key benchmark, or metrics, such as Days Cash and Debt/Capitalization.

The benchmark study also reviewed forecasted benchmarking metrics of PGW's financial performance based on the proposed rate increase. The forecasted benchmark analysis shows that there is a continuing need to support PGW's financial stability with a timely rate increase to enable PGW to further strengthen its credit profile and to lessen the gap between itself and its peers.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

APPENDIX A

Professional Qualifications
of
Harold Walker, III
Manager, Financial Studies
Gannett Fleming Valuation and Rate Consultants, LLC.

EDUCATION

Mr. Walker graduated from Pennsylvania State University in 1984 with a Bachelor of Science Degree in Finance. His studies concentrated on securities analysis and portfolio management with an emphasis on economics and quantitative business analysis. He has also completed the regulation and the rate-making process courses presented by the College of Business Administration and Economics Center for Public Utilities at New Mexico State University. Additionally, he has attended programs presented by The Institute of Chartered Financial Analysts (CFA).

Mr. Walker was awarded the professional designation "Certified Rate of Return Analyst" (CRRA) by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. He is also a member of the Society of Utility and Regulatory Financial Analysts (SURFA) and has attended numerous financial forums sponsored by the Society. The SURFA forums are recognized by the Association for Investment Management and Research (AIMR) and the National Association of State Boards of Accountancy for continuing education credits.

Mr. Walker is also a licensed Municipal Advisor Representative (Series 50) by Municipal Securities Rulemaking Board (MSRB) and Financial Industry Regulatory Authority (FINRA).

BUSINESS EXPERIENCE

Prior to joining Gannett Fleming Valuation and Rate Consultants, LLC., Mr. Walker was employed by AUS Consultants - Utility Services. He held various positions during his eleven years with AUS, concluding his employment there as a Vice President. His duties included providing and supervising financial and economic studies on behalf of investor-owned and municipally owned water, wastewater, electric, natural gas distribution and transmission, oil pipeline and telephone utilities as well as resource recovery companies.

In 1996, Mr. Walker joined Gannett Fleming Valuation and Rate Consultants, LLC. In his capacity as Manager, Financial Studies and for the past twenty years, he has continuously studied rates of return requirements for regulated firms. In this regard, he supervised the preparation of rate of return studies in connection with his testimony and in the past, for other individuals. He also assisted and/or developed dividend policy studies, nuclear prudence studies, calculated fixed charge rates for avoided costs involving cogeneration projects, financial decision studies for capital budgeting purposes and developed financial models for determining future capital requirements and the effect of those requirements on investors and ratepayers, valued utility property and common stock for acquisition and divestiture, and assisted in the private placement of fixed capital securities for public utilities.

Head, Gannett Fleming GASB 34 Task Force responsible for developing Governmental Accounting Standards Board (GASB) 34 services, and educating Gannett Fleming personnel and Gannett Fleming clients on GASB 34 and how it may affect them. The GASB 34 related services include inventory of assets, valuation of assets, salvage estimation, annual depreciation rate determination, estimation of depreciation reserve, asset service life determination, asset condition assessment, condition assessment documentation, maintenance estimate for asset preservation, establishment of condition level index, geographic information system (GIS) and data management services, management discussion and analysis (MD&A) reporting, required supplemental information (RSI) reporting, auditor interface, and GASB 34 compliance review.

Mr. Walker was also the Publisher of C.A. Turner Utility Reports from 1988 to 1996. C.A. Turner Utility Reports is a financial publication which provides financial data and related ratios and forecasts covering the utility industry. From 1993 to 1994, he became a contributing author for the Fortnightly, a utility trade journal. His column was the Financial News column and focused mainly on the natural gas industry.

In 2004, Mr. Walker was elected to serve on the Board of Directors of SURFA. Previously, he served as an ex-officio directors as an advisor to SURFA's existing President. In 2000, Mr. Walker was elected President of SURFA for the 2001-2002 term. Prior to that, he was elected to serve on the Board of Directors of SURFA during the period 1997-1998 and 1999-2000. Currently, he also serves on the Pennsylvania Municipal Authorities Association, Electric Deregulation Committee.

EXPERT TESTIMONY

Mr. Walker has submitted testimony or been deposed on various topics before regulatory commissions and courts in 25 states including: Arizona, California, Colorado, Connecticut, Delaware, Hawaii, Illinois, Indiana, Kentucky, Maryland, Massachusetts, Michigan, Missouri, New Hampshire, Nevada, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia, and West Virginia. His testimonies covered various subjects including: fair market value, the taking of natural resources, appropriate capital structure and fixed capital cost rates, depreciation, fair rate of return, purchased water adjustments, synchronization of interest charges for income tax purposes, valuation, cash working capital, lead-lag studies, financial analyses of investment alternatives, and fair value. The following tabulation provides a listing of the electric power, natural gas distribution, telephone, wastewater, and water service utility cases in which he has been involved as a witness. Additionally, he has been involved in a number of rate proceedings involving small public utilities which were resolved by Option Orders and therefore, are not listed below.

Client	Docket No.
Alpena Power Company	U-10020
Armstrong Telephone Company - Northern Division	92-0884-T-42T
Armstrong Telephone Company - Northern Division	95-0571-T-42T
Artesian Water Company, Inc.	90 10
Artesian Water Company, Inc.	06 158
Aqua Illinois Consolidated Water Divisions and Consolidated Sewer Divisions	11-0436
Aqua Illinois Hawthorn Woods Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Hawthorn Woods Water Division	07 0620/07 0621/08 0067
Aqua Illinois Kankakee Water Division	10-0194
Aqua Illinois Kankakee Water Division	14-0419
Aqua Illinois Vermilion Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Wastewater Division	07 0620/07 0621/08 0067
Aqua Illinois Willowbrook Water Division	07 0620/07 0621/08 0067
Aqua Pennsylvania Wastewater Inc	A-2016-2580061
Aqua Pennsylvania Wastewater Inc	A-2017-2605434
Aqua Pennsylvania Wastewater Inc	A-2018-3001582
Aqua Pennsylvania Wastewater Inc	A-2019-3008491
Aqua Pennsylvania Wastewater Inc	A-2019-3009052
Aqua Pennsylvania Wastewater Inc	A-2019-3009052
Aqua Virginia - Alpha Water Corporation	Pue-2009-00059
Aqua Virginia - Blue Ridge Utility Company, Inc.	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Caroline Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Earlysville Forest Water Company	Pue-2009-00059
Aqua Virginia - Heritage Homes of Virginia	Pue-2009-00059
Aqua Virginia - Indian River Water Company	Pue-2009-00059

Aqua Virginia - James River Service Corp.	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Holiday Utilities, Inc. (Water)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Wastewater)	Pue-2009-00059
Aqua Virginia - Lake Monticello Services Co. (Water)	Pue-2009-00059
Aqua Virginia - Lake Shawnee	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Wastewater)	Pue-2009-00059
Aqua Virginia - Land'or Utility Company (Water)	Pue-2009-00059
Aqua Virginia - Mountainview Water Company, Inc.	Pue-2009-00059
Aqua Virginia - Powhatan Water Works, Inc.	Pue-2009-00059
Aqua Virginia - Rainbow Forest Water Corporation	Pue-2009-00059
Aqua Virginia - Shawnee Land	Pue-2009-00059
Aqua Virginia - Sydnor Water Corporation	Pue-2009-00059
Aqua Virginia - Water Distributors, Inc.	Pue-2009-00059
Berkshire Gas Company	18-40
Borough of Hanover	R-2009-2106908
Borough of Hanover	R-2012-2311725
Borough of Hanover	R-2014-242830
Chaparral City Water Company	W 02113a 04 0616
California-American Water Company	CIVCV156413
Connecticut-American Water Company	99-08-32
Connecticut Water Company	06 07 08
Citizens Utilities Company Colorado Gas Division	-
Citizens Utilities Company Vermont Electric Division	5426
Citizens Utilities Home Water Company	R 901664
Citizens Utilities Water Company of Pennsylvania	R 901663
City of Bethlehem - Bureau of Water	R-00984375
City of Bethlehem - Bureau of Water	R 00072492
City of Bethlehem - Bureau of Water	R-2013-2390244
City of Dubois – Bureau of Water	R-2013-2350509
City of Dubois – Bureau of Water	R-2016-2554150

City of Lancaster Sewer Fund	R-00005109
City of Lancaster Sewer Fund	R-00049862
City of Lancaster Sewer Fund	R-2012-2310366
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Sewer Fund	R-2019-3010955
City of Lancaster Water Fund	R-00984567
City of Lancaster Water Fund	R-00016114
City of Lancaster Water Fund	R 00051167
City of Lancaster Water Fund	R-2010-2179103
City of Lancaster Water Fund	R-2014-2418872
Coastland Corporation	15-cvs-216
Consumers Pennsylvania Water Company Roaring Creek Division	R-00973869
Consumers Pennsylvania Water Company Shenango Valley Division	R-00973972
Country Knolls Water Works, Inc.	90 W 0458
East Resources, Inc. - West Virginia Utility	06 0445 G 42T
Elizabethtown Water Company	WR06030257
Forest Park, Inc.	19-W-0168 & 19-W-0269
Hampton Water Works Company	DW 99-057
Hidden Valley Utility Services, LP	R-2018-3001306
Hidden Valley Utility Services, LP	R-2018-3001307
Illinois American Water Company	16-0093
Indian Rock Water Company	R-911971
Indiana Natural Gas Corporation	38891
Jamaica Water Supply Company	-
Kane Borough Authority	A-2019-3014248
Kentucky American Water Company, Inc.	2007 00134
Middlesex Water Company	WR 89030266J
Millcreek Township Water Authority	55 198 Y 00021 11
Missouri-American Water Company	WR 2000-281
Missouri-American Water Company	SR 2000-282
Mount Holly Water Company	WR06030257
New Jersey American Water Company	WR 89080702J
New Jersey American Water Company	WR 90090950J
New Jersey American Water Company	WR 03070511
New Jersey American Water Company	WR-06030257

New Jersey American Water Company	WR08010020
New Jersey American Water Company	WR10040260
New Jersey American Water Company	WR11070460
New Jersey American Water Company	WR15010035
New Jersey American Water Company	WR17090985
New Jersey American Water Company	WR19121516
New Jersey Natural Gas Company	GR19030420
Newtown Artesian Water Company	R-911977
Newtown Artesian Water Company	R-00943157
Newtown Artesian Water Company	R-2009-2117550
Newtown Artesian Water Company	R-2011-2230259
Newtown Artesian Water Company	R-2017-2624240
Newtown Artesian Water Company	R-2019-3006904
North Maine Utilities	14-0396
Northern Indiana Fuel & Light Company	38770
Oklahoma Natural Gas Company	PUD-940000477
Palmetto Wastewater Reclamation, LLC	2018-82-S
Pennichuck Water Works, Inc.	DW 04 048
Pennichuck Water Works, Inc.	DW 06 073
Pennichuck Water Works, Inc.	DW 08 073
Pennsylvania Gas & Water Company (Gas)	R-891261
Pennsylvania Gas & Water Co. (Water)	R 901726
Pennsylvania Gas & Water Co. (Water)	R-911966
Pennsylvania Gas & Water Co. (Water)	R-22404
Pennsylvania Gas & Water Co. (Water)	R-00922482
Pennsylvania Gas & Water Co. (Water)	R-00932667
Public Service Company of North Carolina, Inc.	G-5, Sub 565
Public Service Electric and Gas Company	ER181010029
Public Service Electric and Gas Company	GR18010030
Sierra Pacific Power Company d/b/a NV Energy	19-06002
Presque Isle Harbor Water Company	U-9702
St. Louis County Water Company	WR-2000-844
Suez Water Delaware, Inc.	19-0615
Suez Water New Jersey, Inc.	WR18050593
Suez Water Owego-Nichols, Inc.	17-W-0528
Suez Water Pennsylvania, Inc.	R-2018-3000834
Suez Water Pennsylvania, Inc.	A-2018-3003519

Suez Water Rhode Island, Inc.	Docket No. 4800
Suez Water Owego-Nichols, Inc.	19-W-0168 & 19-W-0269
Suez Water New York, Inc.	19-W-0168 & 19-W-0269
Suez Westchester, Inc.	19-W-0168 & 19-W-0269
Suez Water Pennsylvania, Inc.	A-2018-3003517
Town of North East Water Fund	9190
Township of Exeter	A-2018-3004933
United Water New Rochelle	W-95-W-1168
United Water Toms River	WR-95050219
Valley Water Systems, Inc.	06 10 07
Virginia American Water Company	PUR-2018-00175
West Virginia-American Water Company	15-0676-W-42T
West Virginia-American Water Company	15-0675-S-42T
Wilmington Suburban Water Corporation	94-149
York Water Company	R-901813
York Water Company	R-922168
York Water Company	R-943053
York Water Company	R-963619
York Water Company	R-994605
York Water Company	R-00016236
Young Brothers, LLC	2019-0117

VERIFICATION

I, Harold Walker, III, hereby state that: (1) I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Manager, Financial Studies; (2) I have been retained by Philadelphia Gas Works ("PGW") for purposes of this proceeding; (3) the facts set forth in my testimony 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).

February 28, 2020	
Dated	Harold Walker, III, Manager, Financial Studies Gannett Fleming Valuation and Rate Consultants, LLC

Exhibit HW-1

PHILADELPHIA GAS WORKS
PHILADELPHIA, PA

BENCHMARKING

EXHIBIT

TO ACCOMPANY THE

DIRECT TESTIMONY

FEBRUARY 2020

Prepared by:
GANNETT FLEMING
VALUATION AND RATE CONSULTANTS, LLC

Valley Forge, Pennsylvania

PHILADELPHIA GAS WORKS
COMPARATIVE STATISTICS AND BENCHMARK DATA
FOR THE 2018 FISCAL YEAR

	Customers to Main Miles	% Cast Iron	State of Operation	Service Provided	Asset Ownership	Operating Revenues (Millions $)
Philadelphia Gas Works	166	44%	PA	Natural Gas	Municipal	678 325
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	66	0%	IN	Natural Gas	Municipal	259 874
CPS Energy	6	0%	TX	Gas & Electric	Municipal	2,620 269
Gainesville Regional Utilities	38	0%	FL	Natural Gas	Municipal	20 557
Jackson Energy Authority	24	0%	TN	Natural Gas	Municipal	38 044
JEA Utilities	NA	NA	FL	Electric	Municipal	1,366 111
Knoxville Utilities Board	42	0%	TN	Natural Gas	Municipal	114 539
Richmond, City of	60	8%	VA	Natural Gas	Municipal	154 721
MUNI Average	40	1%				653 445
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	57	1%	PA	Natural Gas	Investor	590 241
National Fuel Gas Distribution Corp	44	3%	PA	Natural Gas	Investor	215 299
PECO Gas (Exelon Corporation)	76	8%	PA	Natural Gas	Investor	569 775
Peoples Natural Gas Company LLC	10	NA	PA	Natural Gas	Investor	421 054
Peoples - Equitable Division	14	NA	PA	Natural Gas	Investor	284 060
UGI Utilities Inc (Gas)	55	2%	PA	Natural Gas	Investor	1,001 978
IOUPA Average	43	4%				513 734
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	111	27%	MA	Natural Gas	Investor	1,251 739
Brooklyn Union Gas Co	302	31%	NY	Natural Gas	Investor	1,625 534
Chesapeake Utilities Corp	51	0%	DE/MD	Natural Gas	Investor	717 489
Colonial Gas Co	54	2%	MA	Natural Gas	Investor	303 762
Connecticut Natural Gas Corp	82	13%	CT	Natural Gas	Investor	380 671
Corning Natural Gas Corp	35	0%	NY	Natural Gas	Investor	34 277
New Jersey Natural Gas Co	75	0%	NJ	Natural Gas	Investor	731 865
South Jersey Gas Co	59	0%	NJ	Natural Gas	Investor	548 000
Southern Connecticut Gas Co	81	25%	CT	Natural Gas	Investor	390 498
Yankee Gas Services Co	69	9%	CT	Natural Gas	Investor	519 720
IOU Average	92	11%				650 356

Range of Results

		Customers to Main Miles	% Cast Iron	State of Operation	Service Provided	Asset Ownership	Operating Revenues (Millions $)
MUNI Group	High	66	8%	Nation Wide	Gas & Electric	Municipal	2,620 269
	Low	6	0%				20 557
IOUPA Group	High	76	8%	PA	Natural Gas	Investor	1,001 978
	Low	10	1%				215 299
IOU Group	High	302	31%	Northeast	Natural Gas	Investor	1,625 534
	Low	35	0%				34 277
ALLCOS	High	302	31%	Nation Wide	Natural Gas	Investor	2,620 269
	Low	6	0%				20 557

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE STATISTICS AND BENCHMARK DATA
FOR THE 2018 FISCAL YEAR

	Total Volume (MCF)	Gas Revenues (Millions $)	Miles of Main	Customers	% Residential Sendout	Avg Residential Use (MCF)
Philadelphia Gas Works	78,600,733	701 786	3,042	506,213	48%	79
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	64,456,593	253 691	4,110	273,134	32%	82
CPS Energy	NA	NA	5,578	1,157,252	NA	NA
Gainesville Regional Utilities	15,972,552	65 517	796	35 382	5%	24
Jackson Energy Authority	7,683,613	36 538	849	30,470	25%	70
JEA Utilities	12,732,236	NA	NA	466,411	43%	NA
Knoxville Utilities Board	12,632,449	114 695	2,444	102,217	42%	57
Richmond, City of	17,421,816	169 054	1,926	116,359	39%	65
MUNI Average	21,816,543	127 899	2,617	311,604	31%	60
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	82,271,939	582 112	7,622	433,187	42%	87
National Fuel Gas Distribution Corp	49,899,231	222 304	4,830	214,507	41%	105
PECO Gas (Exelon Corporation)	92,107,057	564 743	6,909	524,530	47%	91
Peoples Natural Gas Company LLC	73,354,231	421 054	34,988	363,993	44%	96
Peoples - Equitable Division	68,888,125	303 450	18,450	265,998	35%	96
UGI Utilities Inc (Gas)	273,340,209	909 222	12,022	655,278	19%	89
IOUPA Average	106,643,465	500 481	14,137	409,582	38%	94
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	124,723,597	1,331 778	6,370	709,288	43%	84
Brooklyn Union Gas Co	203,033,700	1,703 113	4,156	1,255,098	66%	110
Chesapeake Utilities Corp	12,347,881	96 071	1,376	69,598	30%	59
Colonial Gas Co	26,827,068	320 605	3,891	209 505	59%	83
Connecticut Natural Gas Corp	39,952,629	375 646	2,167	177,772	47%	116
Corning Natural Gas Corp	5,877,929	16 065	424	15,017	25%	105
New Jersey Natural Gas Co	105,089,747	661 413	7,271	543,756	44%	93
South Jersey Gas Co	57,050,313	517 435	6,551	387,222	45%	72
Southern Connecticut Gas Co	90,347,845	386 992	2,442	198,582	19%	97
Yankee Gas Services Co	57,780,596	511 475	3,402	233,810	28%	79
IOU Average	72,303,131	592 059	3,805	379,965	41%	90

Range of Results

	Total Volume (MCF)	Gas Revenues (Millions $)	Miles of Main	Customers	% Residential Sendout	Avg Residential Use (MCF)
MUNI Group						
High	64,456,593	253 691	5,578	1,157,252	43%	82
Low	7,683,613	36 538	796	30,470	5%	24
IOUPA Group						
High	273 340,209	909 222	34,988	655,278	47%	105
Low	49,899,231	222 304	4,830	214,507	19%	87
IOU Group						
High	203,033,700	1,703 113	7,271	1,255,098	66%	116
Low	5,877,929	16 065	424	15,017	19%	59
ALLCOS						
High	273,340,209	1,703 113	34,988	1,255,098	66%	116
Low	5,877,929	16 065	424	15,017	5%	24

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE STATISTICS AND BENCHMARK DATA
FOR THE 2018 FISCAL YEAR

			Period Mains Where Installed			
	Miles of Main	% Cast Iron	Pre-1940 or Unknown	1940-1969	1970-1999	2000s
Philadelphia Gas Works	3,042	44%	34%	34%	17%	15%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	4,110	0%	0%	30%	48%	22%
CPS Energy	5,578	0%	1%	31%	40%	28%
Gainesville Regional Utilities	796	0%	8%	11%	51%	30%
Jackson Energy Authority	849	0%	3%	15%	47%	35%
JEA Utilities	NA	NA	NA	NA	NA	NA
Knoxville Utilities Board	2,444	0%	0%	5%	57%	38%
Richmond City of	1,926	8%	3%	13%	39%	45%
MUNI Average	2,617	1%	3%	17%	47%	33%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	7,622	1%	10%	24%	34%	32%
National Fuel Gas Distribution Corp	4,830	3%	10%	23%	48%	18%
PECO Gas (Exelon Corporation)	6,909	8%	7%	27%	45%	20%
Peoples Natural Gas Company LLC	34,988	NA	NA	NA	NA	NA
Peoples - Equitable Division	18,450	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	12,022	2%	9%	21%	43%	27%
IOUPA Average	14,137	4%	9%	24%	43%	24%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	6,370	27%	31%	22%	18%	29%
Brooklyn Union Gas Co	4 156	31%	28%	21%	25%	26%
Chesapeake Utilities Corp	1 376	0%	0%	8%	31%	61%
Colonial Gas Co	3,891	2%	4%	17%	54%	25%
Connecticut Natural Gas Corp	2,167	13%	13%	26%	35%	26%
Corning Natural Gas Corp	424	0%	6%	30%	25%	39%
New Jersey Natural Gas Co	7,271	0%	0%	26%	43%	30%
South Jersey Gas Co	6,551	0%	3%	15%	36%	47%
Southern Connecticut Gas Co	2,442	25%	24%	22%	33%	22%
Yankee Gas Services Co	3,402	9%	17%	23%	36%	24%
IOU Average	3,805	11%	13%	21%	34%	33%
Range of Results						
MUNI Group						
High	5,578	8%	8%	31%	57%	45%
Low	796	0%	0%	5%	39%	22%
IOUPA Group						
High	34,988	8%	10%	27%	48%	32%
Low	4,830	1%	7%	21%	34%	18%
IOU Group						
High	7,271	31%	31%	30%	54%	61%
Low	424	0%	0%	8%	18%	22%
ALLCOS						
High	34,988	31%	31%	31%	57%	61%
Low	424	0%	0%	5%	18%	18%

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
CREDIT RATINGS
CURRENT LONG-TERM DEBT RATINGS

	Current Long-Term Debt Ratings				Weightings Assigned to Credit Ratings			
	S&P	Moody's	Fitch	Overall Average Credit	S&P	Moody's	Fitch	Overall Average Weighting
Philadelphia Gas Works	A	A3	BBB+	A-	6.0	7.0	8.0	7.0
Municipally Owned Natural Gas Utilities								
Citizens Energy Group	AA	A1	A+	AA-	3.0	5.0	5.0	4.3
CPS Energy	AA	Aa1	AA+	AA+	3.0	2.0	2.0	2.3
Gainesville Regional Utilities	AA-	Aa3	A+	AA-	4.0	4.0	5.0	4.3
Jackson Energy Authority	AA-	Aa2	N/A	AA-	4.0	3.0	-	3.5
JEA Utilities	A+	A2	AA	A+	5.0	6.0	3.0	4.7
Knoxville Utilities Board	AA	Aa2	N/A	AA	3.0	3.0	-	3.0
Richmond, City of	AA	Aa2	AA	AA	3.0	3.0	3.0	3.0
MUNI Average	AA-	AA-	AA-	AA-	3.6	3.7	3.6	3.6
PUC Jurisdictional Investor Owned Natural Gas Utilities								
Columbia Gas of Pennsylvania, Inc	BBB+	N/A	BBB	BBB	8.0	-	9.0	8.5
National Fuel Gas Distribution Corp	BBB	Baa3	BBB	BBB	9.0	10.0	9.0	9.3
PECO Gas (Exelon Corporation)	A	A2	A-	A	6.0	6.0	7.0	6.3
Peoples Natural Gas Company LLC	N/A	N/A	N/A		-	-	-	N/A
Peoples - Equitable Division	N/A	N/A	N/A		-	-	-	N/A
UGI Utilities Inc (Gas)	N/A	A2	A-	A-	-	6.0	7.0	6.5
IOUPA Average	BBB+	A-	BBB+	BBB+	7.7	7.3	8.0	7.7
Non-Jurisdictional Investor Owned Natural Gas Utilities								
Boston Gas Co	A-	A3	A-	A-	7.0	7.0	7.0	7.0
Brooklyn Union Gas Co	A-	A3	BBB+	A-	7.0	7.0	8.0	7.3
Chesapeake Utilities Corp	N/A	Caa3	N/A	CCC-	-	19.0	-	19.0
Colonial Gas Co	A	A3	A-	A-	6.0	7.0	7.0	6.7
Connecticut Natural Gas Corp	A-	A3	A-	A-	7.0	7.0	7.0	7.0
Corning Natural Gas Corp	N/A	N/A	N/A		-	-	-	N/A
New Jersey Natural Gas Co	N/A	Aa3	A-	A	-	4.0	7.0	5.5
South Jersey Gas Co	A-	A1	N/A	A	7.0	5.0	-	6.0
Southern Connecticut Gas Co	A	A1	A-	A	6.0	5.0	7.0	6.0
Yankee Gas Services Co	A-	Baa1	N/A	BBB	7.0	8.0	-	7.5
IOU Average	A-	A	A-	A	6.8	5.8	7.0	6.4
Range of Results								
MUNI Group								
Lowest Bond Rating	A+	A2	A+	A+	5.0	6.0	5.0	4.7
Highest Bond Rating	AA	Aa1	AA+	AA+	3.0	2.0	2.0	2.3
IOUPA Group								
Lowest Bond Rating	BBB	Baa3	BBB	BBB	9.0	10.0	9.0	9.3
Highest Bond Rating	A	A2	A-	A	6.0	6.0	7.0	6.3
IOU Group								
Lowest Bond Rating	A-	Caa3	BBB+	CCC-	7.0	19.0	8.0	19.0
Highest Bond Rating	A	Aa3	A-	A	6.0	4.0	7.0	5.5
ALLCOS								
Lowest Bond Rating	BBB	Caa3	BBB	CCC-	9.0	19.0	9.0	19.0
Highest Bond Rating	AA	Aa1	AA+	AA	3.0	2.0	2.0	2.3

Source of Information S&P, Moody's and Fitch

PHILADELPHIA GAS WORKS
CREDIT RATINGS
CURRENT LONG-TERM DEBT RATINGS

Weightings Assigned to Credit Ratings			
S&P	Moody's	Fitch	Assigned Weighting
AAA	Aaa	AAA	1
AA+	Aa1	AA+	2
AA	Aa2	AA	3
AA-	Aa3	AA-	4
A+	A1	A+	5
A	A2	A	6
A-	A3	A-	7
BBB+	Baa1	BBB+	8
BBB	Baa2	BBB	9
BBB-	Baa3	BBB-	10
BB+	Ba1	BB	11
BB	Ba2	BB	12
BB-	Ba3	BB-	13
B+	B1	B+	14
B	B2	B	15
B-	B3	B-	16
CCC+	Caa1	CCC	17
CCC	Caa2	CCC	18
CCC-	Caa3	CCC-	19
WD	WD	WD	-
N/A	N/A	N/A	-

Source of Information S&P, Moody's and Fitch

PHILADELPHIA GAS WORKS
DEFINITIONS OF BENCHMARK METRICS

Leverage & Risk

1. Debt/Capitalization - Total debt divided by total capital (sum of total debt and equity capital).

2. Operating Margin - Operating Income divided by operating revenues minus purchased gas/power expense.

3. Debt Service/Cash OpEx - The sum of principal paid on long-term debt plus interest, divided by operating expenses minus depreciation and amortization expenses.

4. Debt/Customer - Total debt divided by total year-end number of gas customers.

5. Debt/Revenues - Total debt divided by operating revenues.

6. Debt/Equity - Total debt divided by fund equity (common equity).

Liquidity

7. IGF/Revenues - Operating revenues plus depreciation and amortization expenses, divided by operating revenues.

8. FFO/CapEx - Net income plus depreciation and amortization expenses, divided by capital expenditures.

9. Days Cash - Cash and cash equivalents divided by [(operating expenses minus depreciation and amortization expenses) divided by 365]

Solvency

10. FFO/Avg Debt - Net income plus depreciation and amortization expenses, divided by average total debt.

11. FFO Coverage – Net income plus depreciation and amortization expenses plus interest, divided by interest.

12. EBIT Coverage – Net income plus interest plus income taxes, divided by interest.

13. Interest-Only Debt Service Coverage - Operating Income plus depreciation and amortization expenses, divided by interest.

14. Debt Service Coverage (P & I) - Operating Income plus depreciation and amortization expenses, divided by the sum of principal paid on long-term debt plus interest.

PHILADELPHIA GAS WORKS
DEFINITIONS OF BENCHMARK METRICS

Efficiency

15. CapEx/DA - Capital expenditures divided by depreciation and amortization expenses.
16. Net Plant/Gross Plant - Net plant divided by gross plant.
17. CapEx/Net Plant - Capital expenditures divided by net plant.
18. CapEx/Gross Plant - Capital expenditures divided by gross plant.
19. CapEx/Capitalization - Capital expenditures divided by total capital (sum of total debt and equity capital).
20. Net Plant/Capitalization - Net plant divided by total capital (sum of total debt and equity capital).
21. Gas Revenue/MCF – Total gas revenues divided by total gas (volumes) throughput.
22. Non-Commodity Revenue/Revenue - Operating revenues minus purchased gas/power expenses, divided by operating revenues.

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt/Capitalization					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	81%	79%	78%	96%	91%	85%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	90%	85%	84%	77%	72%	82%
CPS Energy	63%	62%	65%	64%	63%	63%
Gainesville Regional Utilities	85%	87%	87%	88%	87%	87%
Jackson Energy Authority	25%	27%	35%	33%	21%	28%
JEA Utilities	79%	79%	78%	71%	68%	75%
Knoxville Utilities Board	39%	37%	35%	36%	35%	36%
Richmond, City of	68%	68%	67%	70%	68%	68%
MUNI Average	64%	64%	64%	63%	59%	63%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	44%	46%	45%	46%	44%	45%
National Fuel Gas Distribution Corp	35%	33%	35%	34%	35%	34%
PECO Gas (Exelon Corporation)	44%	46%	45%	46%	46%	45%
Peoples Natural Gas Company LLC	52%	52%	47%	51%	47%	50%
Peoples - Equitable Division	52%	50%	50%	51%	47%	50%
UGI Utilities Inc (Gas)	33%	54%	49%	52%	53%	48%
IOUPA Average	43%	47%	45%	47%	45%	45%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	38%	41%	41%	46%	42%	42%
Brooklyn Union Gas Co	34%	34%	41%	32%	37%	36%
Chesapeake Utilities Corp	46%	48%	45%	48%	55%	48%
Colonial Gas Co	25%	24%	23%	23%	41%	27%
Connecticut Natural Gas Corp	29%	29%	29%	35%	36%	32%
Corning Natural Gas Corp	45%	45%	60%	60%	61%	54%
New Jersey Natural Gas Co	45%	44%	47%	45%	43%	45%
South Jersey Gas Co	49%	51%	47%	49%	50%	49%
Southern Connecticut Gas Co	36%	37%	37%	39%	43%	38%
Yankee Gas Services Co	40%	38%	36%	38%	43%	39%
IOU Average	39%	39%	41%	42%	45%	41%

PGW's Ranking Within the						
MUNI Group (n=8)	6	5	5	8	8	7
IOUPA Group (n=7)	7	7	7	7	7	7
IOU Group (n=11)	11	11	11	11	11	11
ALLCOS (n=24)	22	21	21	24	24	23

Interpretation of Rankings						
MUNI Group	=	=	=	-	-	-
IOUPA Group	-	-	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Operating Margin					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	24%	18%	15%	21%	24%	20%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	35%	33%	24%	35%	39%	33%
CPS Energy	31%	35%	34%	30%	32%	32%
Gainesville Regional Utilities	36%	21%	26%	21%	17%	24%
Jackson Energy Authority	39%	32%	22%	26%	32%	30%
JEA Utilities	32%	36%	38%	38%	32%	35%
Knoxville Utilities Board	45%	46%	40%	37%	50%	44%
Richmond, City of	29%	27%	19%	16%	23%	23%
MUNI Average	35%	33%	29%	29%	32%	32%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	38%	37%	37%	34%	40%	37%
National Fuel Gas Distribution Corp	33%	28%	28%	23%	23%	27%
PECO Gas (Exelon Corporation)	49%	45%	42%	40%	42%	44%
Peoples Natural Gas Company LLC	29%	24%	23%	24%	24%	25%
Peoples - Equitable Division	43%	42%	53%	56%	39%	47%
UGI Utilities Inc (Gas)	46%	42%	49%	47%	40%	45%
IOUPA Average	40%	36%	39%	37%	35%	37%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	15%	14%	20%	20%	20%	18%
Brooklyn Union Gas Co	25%	22%	16%	16%	18%	19%
Chesapeake Utilities Corp	NA	NA	NA	NA	NA	NA
Colonial Gas Co	28%	21%	27%	29%	27%	26%
Connecticut Natural Gas Corp	25%	12%	23%	17%	19%	19%
Corning Natural Gas Corp	27%	24%	24%	20%	27%	24%
New Jersey Natural Gas Co	31%	31%	33%	36%	26%	31%
South Jersey Gas Co	NA	NA	NA	NA	NA	NA
Southern Connecticut Gas Co	26%	21%	30%	25%	29%	26%
Yankee Gas Services Co	NA	NA	NA	NA	NA	NA
IOU Average	25%	21%	25%	23%	24%	24%

PGW's Ranking Within the						
MUNI Group (n=8)	8	8	8	6	6	8
IOUPA Group (n=7)	7	7	7	7	5	7
IOU Group (n=11)	7	6	8	4	5	5
ALLCOS (n=24)	20	19	21	15	14	18

Interpretation of Rankings						
MUNI Group	-	-	-	=	=	-
IOUPA Group	-	-	-	-	=	-
IOU Group	=	=	=	=	=	=
ALLCOS	-	-	-	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt Service/Cash OpEx					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	18%	19%	18%	16%	17%	18%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	11%	13%	17%	54%	21%	23%
CPS Energy	27%	24%	25%	26%	25%	25%
Gainesville Regional Utilities	26%	22%	29%	32%	28%	27%
Jackson Energy Authority	4%	4%	6%	20%	92%	25%
JEA Utilities	36%	41%	34%	31%	32%	35%
Knoxville Utilities Board	11%	12%	16%	31%	14%	17%
Richmond, City of	19%	19%	25%	34%	22%	24%
MUNI Average	19%	19%	22%	33%	33%	25%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	6%	7%	9%	9%	10%	8%
National Fuel Gas Distribution Corp	4%	6%	7%	5%	5%	5%
PECO Gas (Exelon Corporation)	26%	32%	44%	41%	36%	36%
Peoples Natural Gas Company LLC	7%	6%	9%	7%	7%	7%
Peoples - Equitable Division	7%	93%	13%	9%	10%	26%
UGI Utilities Inc (Gas)	5%	6%	7%	6%	6%	6%
IOUPA Average	9%	25%	15%	13%	12%	15%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	4%	4%	6%	5%	5%	5%
Brooklyn Union Gas Co	4%	4%	5%	75%	21%	22%
Chesapeake Utilities Corp	5%	6%	5%	5%	9%	6%
Colonial Gas Co	4%	4%	6%	5%	6%	5%
Connecticut Natural Gas Corp	7%	4%	8%	9%	3%	6%
Corning Natural Gas Corp	25%	21%	12%	34%	168%	52%
New Jersey Natural Gas Co	15%	5%	8%	15%	28%	14%
South Jersey Gas Co	11%	8%	16%	74%	75%	37%
Southern Connecticut Gas Co	5%	6%	6%	6%	22%	9%
Yankee Gas Services Co	25%	7%	8%	7%	32%	16%
IOU Average	11%	7%	8%	24%	37%	17%

PGW's Ranking Within the						
MUNI Group (n=8)	4	4	4	1	2	2
IOUPA Group (n=7)	6	5	6	6	6	5
IOU Group (n=11)	9	10	11	8	5	8
ALLCOS (n=24)	17	17	19	13	11	13

Interpretation of Rankings						
MUNI Group	=	=	=	+	+	+
IOUPA Group	-	=	-	-	-	=
IOU Group	=	-	-	=	=	=
ALLCOS	=	=	-	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt/Customer					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	$2,153	$2,054	$2,052	$2,368	$2,253	$2,176
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	$1,259	$1,205	$1,147	$1,080	$979	$1,134
CPS Energy	$5,294	$5,249	$5,429	$5,097	$5,210	$5,256
Gainesville Regional Utilities	$1,988	$1,976	$1,912	$1,834	$1,887	$1,919
Jackson Energy Authority	$1,101	$975	$1,499	$1,390	$709	$1,135
JEA Utilities	$7,884	$7,021	$6,564	$5,910	$5,211	$6,518
Knoxville Utilities Board	$1,147	$1,127	$1,057	$1,095	$1,152	$1,116
Richmond, City of	$2,784	$2,671	$2,539	$2,828	$2,688	$2,702
MUNI Average	$3,065	$2,889	$2,878	$2,748	$2,548	$2,826
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	$990	$1,215	$1,268	$1,444	$1,629	$1,309
National Fuel Gas Distribution Corp	$498	$472	$566	$590	$592	$544
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	$1,186	$1,304	$1,323	$985	$1,930	$1,346
IOUPA Average	$891	$997	$1,052	$1,006	$1,384	$1,066
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	$1,111	$1,293	$1,354	$1,689	$1,782	$1,446
Brooklyn Union Gas Co	$1,130	$1 135	$1,607	$1,266	$1,626	$1,353
Chesapeake Utilities Corp	$4,413	$5,531	$5,747	$6,578	$8,924	$6,239
Colonial Gas Co	$619	$612	$599	$590	$1 305	$745
Connecticut Natural Gas Corp	$849	$826	$869	$1,117	$1,225	$977
Corning Natural Gas Corp	$1,474	$1,651	$3,218	$3,237	$3,480	$2,612
New Jersey Natural Gas Co	$1,150	$1,189	$1,457	$1,333	$1,408	$1,307
South Jersey Gas Co	$1,790	$2,022	$2,000	$2,275	$2,600	$2,137
Southern Connecticut Gas Co	$1,226	$1,197	$1,263	$1,318	$1,558	$1,312
Yankee Gas Services Co	$2,176	$2,107	$2,037	$2,218	$2,736	$2,255
IOU Average	$1,594	$1,756	$2,015	$2,162	$2,664	$2,038

PGW's Ranking Within the						
MUNI Group (n=8)	5	5	5	5	5	5
IOUPA Group (n=7)	4	4	4	4	4	4
IOU Group (n=11)	9	9	9	9	7	8
ALLCOS (n=24)	16	16	16	16	14	15

Interpretation of Rankings						
MUNI Group	=	=	=	=	=	=
IOUPA Group	=	=	=	=	=	=
IOU Group	=	=	=	=	=	=
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt/Revenues					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	144%	150%	177%	191%	168%	166%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	105%	109%	136%	126%	103%	116%
CPS Energy	236%	219%	243%	239%	230%	233%
Gainesville Regional Utilities	266%	293%	283%	303%	325%	294%
Jackson Energy Authority	69%	74%	149%	134%	57%	97%
JEA Utilities	232%	227%	217%	193%	178%	209%
Knoxville Utilities Board	96%	98%	119%	122%	103%	108%
Richmond, City of	181%	184%	224%	243%	202%	207%
MUNI Average	169%	172%	196%	194%	171%	181%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	75%	96%	109%	111%	120%	102%
National Fuel Gas Distribution Corp	43%	51%	69%	62%	59%	57%
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	85%	108%	125%	129%	126%	115%
IOUPA Average	68%	85%	101%	101%	102%	91%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	59%	67%	95%	112%	101%	87%
Brooklyn Union Gas Co	88%	97%	159%	112%	126%	116%
Chesapeake Utilities Corp	51%	72%	72%	74%	87%	71%
Colonial Gas Co	43%	40%	53%	49%	90%	55%
Connecticut Natural Gas Corp	39%	46%	47%	55%	57%	49%
Corning Natural Gas Corp	86%	109%	241%	162%	152%	150%
New Jersey Natural Gas Co	71%	79%	129%	104%	105%	98%
South Jersey Gas Co	130%	140%	163%	170%	184%	157%
Southern Connecticut Gas Co	61%	72%	73%	72%	79%	71%
Yankee Gas Services Co	91%	98%	104%	103%	123%	104%
IOU Average	72%	82%	114%	101%	110%	96%

PGW's Ranking Within the						
MUNI Group (n=8)	4	4	4	4	4	4
IOUPA Group (n=7)	4	4	4	4	4	4
IOU Group (n=11)	11	11	10	11	10	11
ALLCOS (n=24)	17	17	16	17	16	17

Interpretation of Rankings						
MUNI Group	=	=	=	=	=	=
IOUPA Group	=	=	=	=	=	=
IOU Group	-	-	-	-	-	-
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt/Equity					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	4.16	3.70	3.57	24.16	10.21	9.16
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	8.61	5.78	5.25	3.37	2.58	5.12
CPS Energy	1.69	1.62	1.83	1.74	1.72	1.72
Gainesville Regional Utilities	5.69	6.54	6.51	7.37	6.60	6.54
Jackson Energy Authority	0.34	0.36	0.55	0.49	0.26	0.40
JEA Utilities	3.76	3.71	3.53	2.46	2.09	3.11
Knoxville Utilities Board	0.64	0.60	0.54	0.56	0.54	0.58
Richmond, City of	2.11	2.09	2.00	2.30	2.08	2.12
MUNI Average	3.26	2.96	2.89	2.61	2.27	2.80
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	0.78	0.85	0.81	0.85	0.80	0.82
National Fuel Gas Distribution Corp	0.55	0.49	0.54	0.52	0.55	0.53
PECO Gas (Exelon Corporation)	0.78	0.86	0.81	0.87	0.86	0.84
Peoples Natural Gas Company LLC	1.09	1.08	0.90	1.03	0.90	1.00
Peoples - Equitable Division	1.09	1.02	1.00	1.03	0.90	1.01
UGI Utilities Inc (Gas)	0.50	1.20	0.96	1.10	1.11	0.97
IOUPA Average	0.80	0.92	0.84	0.90	0.85	0.86
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	0.60	0.69	0.69	0.84	0.71	0.71
Brooklyn Union Gas Co	0.50	0.50	0.68	0.47	0.59	0.55
Chesapeake Utilities Corp	0.85	0.93	0.80	0.94	1.20	0.94
Colonial Gas Co	0.33	0.32	0.31	0.30	0.69	0.39
Connecticut Natural Gas Corp	0.40	0.41	0.41	0.55	0.57	0.47
Corning Natural Gas Corp	0.82	0.82	1.49	1.50	1.59	1.24
New Jersey Natural Gas Co	0.81	0.79	0.90	0.81	0.76	0.81
South Jersey Gas Co	0.96	1.06	0.89	0.96	1.00	0.97
Southern Connecticut Gas Co	0.57	0.58	0.58	0.63	0.74	0.62
Yankee Gas Services Co	0.67	0.62	0.57	0.60	0.75	0.64
IOU Average	0.65	0.67	0.73	0.76	0.86	0.74

PGW's Ranking Within the						
MUNI Group (n=8)	6	5	6	8	8	8
IOUPA Group (n=7)	7	7	7	7	7	7
IOU Group (n=11)	11	11	11	11	11	11
ALLCOS (n=24)	22	21	22	24	24	24

Interpretation of Rankings						
MUNI Group	=	=	=	-	-	-
IOUPA Group	-	-	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	IGF/Revenues					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	33%	28%	25%	32%	35%	31%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	51%	50%	43%	53%	56%	51%
CPS Energy	56%	58%	58%	55%	56%	57%
Gainesville Regional Utilities	57%	44%	47%	51%	50%	50%
Jackson Energy Authority	56%	52%	46%	49%	55%	52%
JEA Utilities	59%	63%	65%	65%	57%	62%
Knoxville Utilities Board	65%	67%	64%	62%	72%	66%
Richmond, City of	51%	51%	46%	44%	47%	48%
MUNI Average	56%	55%	53%	54%	56%	55%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	50%	51%	52%	48%	55%	51%
National Fuel Gas Distribution Corp	41%	36%	36%	33%	33%	36%
PECO Gas (Exelon Corporation)	62%	60%	58%	58%	60%	60%
Peoples Natural Gas Company LLC	41%	37%	35%	35%	37%	37%
Peoples - Equitable Division	53%	54%	67%	69%	57%	60%
UGI Utilities Inc (Gas)	58%	55%	63%	62%	56%	59%
IOUPA Average	51%	49%	52%	51%	50%	50%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	33%	31%	41%	40%	41%	37%
Brooklyn Union Gas Co	34%	33%	26%	27%	27%	29%
Chesapeake Utilities Corp	NA	NA	NA	NA	NA	NA
Colonial Gas Co	44%	37%	45%	47%	45%	44%
Connecticut Natural Gas Corp	41%	32%	41%	35%	37%	37%
Corning Natural Gas Corp	36%	35%	35%	30%	37%	35%
New Jersey Natural Gas Co	40%	41%	46%	47%	40%	43%
South Jersey Gas Co	NA	NA	NA	NA	NA	NA
Southern Connecticut Gas Co	37%	34%	41%	38%	43%	39%
Yankee Gas Services Co	NA	NA	NA	NA	NA	NA
IOU Average	38%	35%	39%	38%	39%	38%

PGW's Ranking Within the						
MUNI Group (n=8)	8	8	8	8	8	8
IOUPA Group (n=7)	7	7	7	7	6	7
IOU Group (n=11)	7	8	8	6	7	7
ALLCOS (n=24)	20	21	21	19	19	20

Interpretation of Rankings						
MUNI Group	-	-	-	-	-	-
IOUPA Group	-	-	-	-	-	-
IOU Group	=	=	=	=	=	=
ALLCOS	-	-	-	-	-	-

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	FFO/CapEx					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	110%	77%	57%	95%	97%	87%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	215%	185%	151%	177%	229%	191%
CPS Energy	156%	109%	89%	70%	90%	103%
Gainesville Regional Utilities	98%	53%	60%	64%	255%	106%
Jackson Energy Authority	NA	127%	29%	137%	297%	148%
JEA Utilities	400%	350%	227%	307%	167%	290%
Knoxville Utilities Board	100%	60%	55%	86%	128%	86%
Richmond, City of	94%	98%	70%	65%	129%	91%
MUNI Average	177%	140%	97%	129%	185%	145%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	58%	64%	54%	51%	59%	57%
National Fuel Gas Distribution Corp	226%	177%	89%	157%	158%	161%
PECO Gas (Exelon Corporation)	325%	304%	319%	292%	254%	299%
Peoples Natural Gas Company LLC	114%	122%	93%	55%	58%	88%
Peoples - Equitable Division	177%	121%	160%	97%	90%	129%
UGI Utilities Inc (Gas)	101%	93%	98%	52%	66%	82%
IOUPA Average	167%	147%	136%	117%	114%	136%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	71%	56%	63%	50%	47%	57%
Brooklyn Union Gas Co	76%	54%	51%	37%	22%	48%
Chesapeake Utilities Corp	68%	50%	45%	54%	36%	51%
Colonial Gas Co	85%	64%	58%	48%	35%	58%
Connecticut Natural Gas Corp	89%	63%	84%	69%	70%	75%
Corning Natural Gas Corp	43%	58%	65%	66%	58%	58%
New Jersey Natural Gas Co	89%	85%	70%	95%	66%	81%
South Jersey Gas Co	52%	52%	52%	51%	59%	53%
Southern Connecticut Gas Co	66%	66%	89%	98%	65%	77%
Yankee Gas Services Co	85%	81%	64%	52%	60%	68%
IOU Average	72%	63%	64%	62%	52%	63%

PGW's Ranking Within the						
MUNI Group (n=8)	4	6	6	4	7	7
IOUPA Group (n=7)	5	6	6	4	3	5
IOU Group (n=11)	1	3	8	2	1	1
ALLCOS (n=24)	8	13	18	8	9	11

Interpretation of Rankings						
MUNI Group	=	=	=	=	-	-
IOUPA Group	=	-	-	=	=	=
IOU Group	+	=	=	+	+	+
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Days Cash					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	64	74	71	67	95	74
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	79	123	196	221	155	155
CPS Energy	299	278	324	295	299	299
Gainesville Regional Utilities	242	271	313	216	325	273
Jackson Energy Authority	163	194	369	289	457	294
JEA Utilities	97	159	154	165	144	144
Knoxville Utilities Board	187	120	69	79	158	123
Richmond, City of	23	114	128	72	129	93
MUNI Average	156	180	222	191	238	197
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	2	2	4	4	3	3
National Fuel Gas Distribution Corp	131	125	129	140	220	149
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	2	1	2	2	11	4
IOUPA Average	45	43	45	49	78	52
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	NA	1	3	3	1	2
Brooklyn Union Gas Co	8	1	1	2	2	3
Chesapeake Utilities Corp	4	3	4	4	4	4
Colonial Gas Co	NA	NA	NA	NA	NA	NA
Connecticut Natural Gas Corp	9	4	1	1	1	3
Corning Natural Gas Corp	2	2	98	7	3	22
New Jersey Natural Gas Co	0	0	31	0	0	6
South Jersey Gas Co	2	1	2	2	2	2
Southern Connecticut Gas Co	1	10	1	1	3	3
Yankee Gas Services Co	1	NA	2	8	2	3
IOU Average	3	3	16	3	2	5

PGW's Ranking Within the						
MUNI Group (n=8)	7	8	7	8	8	8
IOUPA Group (n=7)	2	2	2	2	2	2
IOU Group (n=11)	1	1	2	1	1	1
ALLCOS (n=24)	8	9	9	9	9	9

Interpretation of Rankings						
MUNI Group	-	-	-	-	-	-
IOUPA Group	+	+	+	+	+	+
IOU Group	+	+	+	+	+	+
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	FFO/Avg Debt					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	8%	6%	5%	9%	10%	8%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	14%	14%	11%	13%	22%	15%
CPS Energy	8%	10%	9%	8%	9%	9%
Gainesville Regional Utilities	5%	3%	5%	5%	8%	5%
Jackson Energy Authority	31%	25%	18%	17%	33%	25%
JEA Utilities	9%	11%	12%	14%	12%	12%
Knoxville Utilities Board	18%	21%	18%	17%	27%	20%
Richmond, City of	8%	9%	7%	7%	10%	8%
MUNI Average	13%	13%	11%	12%	17%	13%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	25%	24%	23%	21%	25%	24%
National Fuel Gas Distribution Corp	41%	35%	33%	28%	29%	33%
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	23%	20%	23%	20%	22%	22%
IOUPA Average	30%	26%	26%	23%	25%	26%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	23%	20%	22%	20%	19%	21%
Brooklyn Union Gas Co	14%	13%	13%	10%	8%	12%
Chesapeake Utilities Corp	24%	24%	22%	23%	18%	22%
Colonial Gas Co	32%	29%	32%	35%	22%	30%
Connecticut Natural Gas Corp	34%	27%	37%	28%	26%	30%
Corning Natural Gas Corp	16%	15%	14%	9%	9%	13%
New Jersey Natural Gas Co	20%	20%	18%	18%	18%	19%
South Jersey Gas Co	16%	15%	16%	15%	15%	15%
Southern Connecticut Gas Co	19%	19%	20%	21%	20%	20%
Yankee Gas Services Co	16%	17%	17%	15%	16%	16%
IOU Average	21%	20%	21%	19%	17%	20%

PGW's Ranking Within the						
MUNI Group (n=8)	5	7	7	5	5	7
IOUPA Group (n=7)	4	4	4	4	4	4
IOU Group (n=11)	11	11	11	10	9	11
ALLCOS (n=24)	18	20	20	17	16	20

Interpretation of Rankings						
MUNI Group	=	-	-	=	=	-
IOUPA Group	=	=	=	=	=	=
IOU Group	-	-	-	-	=	-
ALLCOS	=	-	-	=	=	-

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	FFO Coverage					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	2.53	2.11	2.14	3.26	3.45	2.70
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	3.91	4.03	3.47	3.92	6.01	4.27
CPS Energy	2.95	3.40	3.36	3.14	3.21	3.21
Gainesville Regional Utilities	2.27	1.60	2.15	2.22	2.93	2.23
Jackson Energy Authority	8.56	7.60	7.02	5.61	3.68	6.49
JEA Utilities	3.16	3.88	3.99	4.34	3.81	3.84
Knoxville Utilities Board	5.25	5.97	5.64	5.31	7.93	6.02
Richmond, City of	2.90	3.30	2.68	3.01	3.78	3.13
MUNI Average	4.14	4.25	4.04	3.94	4.48	4.17
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	5.34	5.06	5.26	4.76	5.67	5.22
National Fuel Gas Distribution Corp	6.44	5.45	5.40	5.25	5.83	5.67
PECO Gas (Exelon Corporation)	4.43	4.67	4.84	4.73	4.87	4.71
Peoples Natural Gas Company LLC	3.86	4.97	4.26	4.52	5.37	4.60
Peoples - Equitable Division	5.35	1.39	4.96	6.01	4.69	4.48
UGI Utilities Inc (Gas)	6.60	6.28	7.11	6.67	5.59	6.45
IOUPA Average	5.34	4.64	5.31	5.32	5.34	5.19
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	6.14	5.42	7.21	7.78	6.49	6.61
Brooklyn Union Gas Co	4.41	4.88	5.10	3.82	3.54	4.35
Chesapeake Utilities Corp	7.57	8.11	8.25	8.52	6.94	7.88
Colonial Gas Co	5.15	4.85	5.28	5.45	4.12	4.97
Connecticut Natural Gas Corp	5.76	5.17	6.80	7.91	7.44	6.62
Corning Natural Gas Corp	5.29	4.71	6.40	3.24	3.16	4.56
New Jersey Natural Gas Co	7.87	7.45	7.23	6.28	6.43	7.05
South Jersey Gas Co	6.80	6.42	7.51	6.12	6.10	6.59
Southern Connecticut Gas Co	4.01	4.11	4.43	4.97	4.59	4.42
Yankee Gas Services Co	4.56	4.30	4.20	3.93	4.85	4.37
IOU Average	5.76	5.54	6.24	5.80	5.37	5.74

PGW's Ranking Within the						
MUNI Group (n=8)	7	7	8	5	6	7
IOUPA Group (n=7)	7	6	7	7	7	7
IOU Group (n=11)	11	11	11	10	10	11
ALLCOS (n=24)	23	22	24	20	21	23

Interpretation of Rankings						
MUNI Group	-	-	-	=	=	-
IOUPA Group	-	-	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	EBIT Coverage					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	1.81	1.35	1.21	2.14	2.28	1.76
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	3.07	3.04	2.32	2.66	4.78	3.17
CPS Energy	1.27	1.73	1.59	1.33	1.45	1.47
Gainesville Regional Utilities	1.21	0.51	0.96	0.73	1.46	0.97
Jackson Energy Authority	6.77	5.54	4.44	3.89	2.91	4.71
JEA Utilities	1.51	2.09	2.02	2.29	1.81	1.94
Knoxville Utilities Board	4.56	5.05	4.65	4.24	6.77	5.05
Richmond, City of	1.58	1.70	0.98	0.97	1.89	1.42
MUNI Average	2.85	2.81	2.42	2.30	3.01	2.68
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	5.18	4.76	4.80	4.23	4.52	4.70
National Fuel Gas Distribution Corp	6.80	5.40	5.05	4.41	4.87	5.31
PECO Gas (Exelon Corporation)	3.49	3.61	3.69	3.55	3.84	3.64
Peoples Natural Gas Company LLC	3.29	3.33	3.54	4.33	3.97	3.69
Peoples - Equitable Division	5.76	1.40	5.13	5.70	3.97	4.39
UGI Utilities Inc (Gas)	6.71	5.75	6.52	6.59	4.71	6.06
IOUPA Average	5.21	4.04	4.79	4.80	4.31	4.63
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	3.46	2.59	4.29	4.45	3.74	3.71
Brooklyn Union Gas Co	4.28	4.37	4.98	2.94	2.12	3.74
Chesapeake Utilities Corp	7.32	7.80	7.89	6.75	5.73	7.10
Colonial Gas Co	3.66	3.04	3.43	3.73	2.53	3.28
Connecticut Natural Gas Corp	4.16	2.23	4.66	4.08	3.76	3.78
Corning Natural Gas Corp	5.02	4.11	5.65	2.48	2.83	4.02
New Jersey Natural Gas Co	7.80	7.26	6.58	6.05	4.25	6.39
South Jersey Gas Co	6.66	6.20	7.06	5.79	4.91	6.12
Southern Connecticut Gas Co	3.43	3.01	4.07	3.24	3.40	3.43
Yankee Gas Services Co	4.46	3.88	3.78	3.34	3.95	3.88
IOU Average	5.03	4.45	5.24	4.29	3.72	4.54

PGW's Ranking Within the						
MUNI Group (n=8)	4	7	6	5	4	5
IOUPA Group (n=7)	7	7	7	7	7	7
IOU Group (n=11)	11	11	11	11	10	11
ALLCOS (n=24)	20	23	22	21	19	21

Interpretation of Rankings						
MUNI Group	=	-	=	=	=	=
IOUPA Group	-	-	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Interest-Only Debt Service Coverage					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	2.52	2.13	2.23	3.38	3.59	2.77
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	4.60	4.72	4.10	5.60	6.75	5.15
CPS Energy	3.79	4.23	4.30	4.02	4.15	4.10
Gainesville Regional Utilities	2.92	2.08	2.72	2.53	2.22	2.49
Jackson Energy Authority	9.41	8.72	7.59	5.69	2.84	6.85
JEA Utilities	3.59	4.17	4.74	4.92	4.46	4.38
Knoxville Utilities Board	6.52	7.32	7.37	7.06	9.51	7.56
Richmond, City of	3.09	3.33	2.86	3.18	3.67	3.23
MUNI Average	4.85	4.94	4.81	4.71	4.80	4.82
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	6.70	6.38	6.59	5.84	6.18	6.34
National Fuel Gas Distribution Corp	8.18	6.81	6.50	6.09	6.64	6.84
PECO Gas (Exelon Corporation)	1.72	1.62	1.38	1.36	1.48	1.51
Peoples Natural Gas Company LLC	4.83	5.46	5.51	6.64	6.31	5.75
Peoples - Equitable Division	7.13	0.64	6.59	8.57	4.51	5.49
UGI Utilities Inc (Gas)	8.27	7.60	8.38	8.21	6.41	7.77
IOUPA Average	6.14	4.75	5.83	6.12	5.26	5.62
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	6.63	6.16	8.41	9.21	7.33	7.55
Brooklyn Union Gas Co	5.56	5.91	4.30	4.05	5.03	4.97
Chesapeake Utilities Corp	10.13	10.67	11.13	9.83	8.25	10.00
Colonial Gas Co	6.92	6.43	7.20	7.50	5.41	6.69
Connecticut Natural Gas Corp	6.80	5.30	7.91	9.51	8.67	7.64
Corning Natural Gas Corp	6.81	5.80	6.11	3.53	4.33	5.32
New Jersey Natural Gas Co	10.06	9.36	8.75	7.79	6.26	8.44
South Jersey Gas Co	8.44	8.09	9.64	7.80	6.87	8.17
Southern Connecticut Gas Co	4.94	4.41	5.48	5.47	5.68	5.20
Yankee Gas Services Co	5.91	5.26	5.16	4.71	5.41	5.29
IOU Average	7.22	6.74	7.41	6.94	6.32	6.93

PGW's Ranking Within the						
MUNI Group (n=8)	8	7	8	6	6	7
IOUPA Group (n=7)	6	5	6	6	6	6
IOU Group (n=11)	11	11	11	11	11	11
ALLCOS (n=24)	23	21	23	21	21	22

Interpretation of Rankings						
MUNI Group	-	-	-	=	=	-
IOUPA Group	-	=	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Debt Service Coverage (P & I)					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	1.35	1.13	1.25	1.86	2.00	1.52
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	2.57	2.54	2.12	0.87	2.15	2.05
CPS Energy	2.11	2.54	2.61	2.40	2.52	2.44
Gainesville Regional Utilities	1.92	1.60	1.72	1.60	1.57	1.68
Jackson Energy Authority	9.41	7.41	6.36	2.10	0.45	5.15
JEA Utilities	1.55	1.58	2.11	2.20	1.69	1.83
Knoxville Utilities Board	3.19	3.47	3.18	1.56	4.06	3.09
Richmond City of	1.60	1.78	1.45	0.90	1.67	1.48
MUNI Average	3.19	2.99	2.79	1.66	2.02	2.53
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	6.70	6.38	6.59	5.84	6.18	6.34
National Fuel Gas Distribution Corp	8.18	6.81	6.50	6.09	6.64	6.84
PECO Gas (Exelon Corporation)	1.72	1.62	1.38	1.36	1.48	1.51
Peoples Natural Gas Company LLC	4.83	5.46	5.51	6.64	6.31	5.75
Peoples - Equitable Division	7.13	0.64	6.59	8.57	4.51	5.49
UGI Utilities Inc (Gas)	8.27	7.60	8.38	8.21	6.41	7.77
IOUPA Average	6.14	4.75	5.83	6.12	5.26	5.62
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	4.93	5.85	6.44	6.99	6.17	6.08
Brooklyn Union Gas Co	5.56	5.91	4.30	0.28	0.97	3.40
Chesapeake Utilities Corp	4.94	5.13	5.99	5.02	2.66	4.75
Colonial Gas Co	6.92	6.43	7.20	7.50	5.41	6.69
Connecticut Natural Gas Corp	3.44	5.30	3.83	2.46	8.67	4.74
Corning Natural Gas Corp	1.16	1.44	3.31	0.85	0.21	1.39
New Jersey Natural Gas Co	1.70	5.87	5.37	2.75	0.98	3.33
South Jersey Gas Co	3.88	5.21	3.77	0.80	0.72	2.88
Southern Connecticut Gas Co	4.20	3.72	4.65	4.61	1.36	3.71
Yankee Gas Services Co	1.33	5.26	5.16	4.71	1.05	3.50
IOU Average	3.81	5.01	5.00	3.60	2.82	4.05
PGW's Ranking Within the						
MUNI Group (n=8)	8	8	8	4	4	7
IOUPA Group (n=7)	7	6	7	6	6	6
IOU Group (n=11)	9	11	11	8	5	10
ALLCOS (n=24)	22	23	24	16	13	21
Interpretation of Rankings						
MUNI Group	-	-	-	=	=	-
IOUPA Group	-	-	-	-	-	-
IOU Group	=	-	-	=	=	-
ALLCOS	-	-	-	=	=	-

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	CapEx/DA					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	193%	189%	215%	212%	217%	205%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	92%	102%	94%	88%	111%	97%
CPS Energy	74%	132%	150%	170%	140%	133%
Gainesville Regional Utilities	123%	103%	160%	127%	52%	113%
Jackson Energy Authority	0%	158%	516%	127%	77%	176%
JEA Utilities	33%	46%	67%	53%	84%	57%
Knoxville Utilities Board	209%	351%	300%	175%	188%	245%
Richmond, City of	153%	147%	141%	151%	114%	141%
MUNI Average	98%	148%	204%	127%	109%	137%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	440%	373%	424%	418%	460%	423%
National Fuel Gas Distribution Corp	167%	172%	323%	154%	160%	195%
PECO Gas (Exelon Corporation)	286%	293%	315%	310%	351%	311%
Peoples Natural Gas Company LLC	173%	176%	192%	291%	350%	236%
Peoples - Equitable Division	177%	231%	174%	308%	285%	235%
UGI Utilities Inc (Gas)	330%	309%	327%	541%	392%	380%
IOUPA Average	262%	259%	293%	337%	333%	297%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	200%	228%	230%	285%	309%	250%
Brooklyn Union Gas Co	292%	381%	460%	486%	710%	466%
Chesapeake Utilities Corp	348%	479%	528%	479%	661%	499%
Colonial Gas Co	198%	227%	260%	327%	408%	284%
Connecticut Natural Gas Corp	198%	208%	206%	211%	218%	208%
Corning Natural Gas Corp	546%	359%	427%	301%	330%	393%
New Jersey Natural Gas Co	316%	327%	368%	292%	389%	338%
South Jersey Gas Co	536%	502%	475%	462%	405%	476%
Southern Connecticut Gas Co	309%	274%	266%	212%	294%	271%
Yankee Gas Services Co	289%	294%	360%	403%	418%	353%
IOU Average	323%	328%	358%	346%	414%	354%

PGW's Ranking Within the						
MUNI Group (n=8)	7	7	6	8	8	7
IOUPA Group (n=7)	4	3	3	2	2	2
IOU Group (n=11)	1	1	2	2	1	1
ALLCOS (n=24)	10	9	9	10	9	8

Interpretation of Rankings						
MUNI Group	-	-	=	-	-	-
IOUPA Group	=	=	=	+	+	+
IOU Group	+	+	+	+	+	+
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Net Plant/Gross Plant					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	58%	57%	57%	57%	57%	57%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	NA	NA	NA	NA	NA	NA
CPS Energy	60%	58%	56%	56%	55%	57%
Gainesville Regional Utilities	56%	54%	52%	50%	48%	52%
Jackson Energy Authority	62%	60%	65%	63%	62%	62%
JEA Utilities	53%	50%	48%	46%	38%	47%
Knoxville Utilities Board	68%	69%	68%	68%	67%	68%
Richmond, City of	66%	64%	63%	62%	61%	63%
MUNI Average	61%	59%	59%	58%	55%	58%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	79%	80%	99%	81%	82%	84%
National Fuel Gas Distribution Corp	64%	64%	64%	64%	64%	64%
PECO Gas (Exelon Corporation)	70%	70%	70%	72%	71%	71%
Peoples Natural Gas Company LLC	69%	69%	69%	69%	70%	69%
Peoples - Equitable Division	69%	69%	69%	69%	70%	69%
UGI Utilities Inc (Gas)	67%	68%	70%	71%	73%	70%
IOUPA Average	70%	70%	74%	71%	72%	71%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	74%	74%	75%	77%	78%	76%
Brooklyn Union Gas Co	72%	74%	77%	78%	80%	76%
Chesapeake Utilities Corp	78%	80%	80%	81%	82%	80%
Colonial Gas Co	69%	71%	72%	74%	77%	73%
Connecticut Natural Gas Corp	67%	67%	68%	69%	69%	68%
Corning Natural Gas Corp	71%	72%	77%	77%	76%	75%
New Jersey Natural Gas Co	79%	79%	79%	79%	79%	79%
South Jersey Gas Co	79%	80%	81%	81%	82%	81%
Southern Connecticut Gas Co	76%	76%	75%	75%	74%	75%
Yankee Gas Services Co	75%	76%	76%	77%	78%	76%
IOU Average	74%	75%	76%	77%	78%	76%

PGW's Ranking Within the						
MUNI Group (n=8)	5	5	4	4	4	4
IOUPA Group (n=7)	7	7	7	7	7	7
IOU Group (n=11)	11	11	11	11	11	11
ALLCOS (n=24)	21	21	20	20	20	20

Interpretation of Rankings						
MUNI Group	=	=	=	=	=	=
IOUPA Group	-	-	-	-	-	-
IOU Group	-	-	-	-	-	-
ALLCOS	-	-	-	-	-	-

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	CapEx/Net Plant					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	7%	7%	8%	8%	9%	8%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	7%	8%	8%	8%	9%	8%
CPS Energy	4%	7%	8%	9%	7%	7%
Gainesville Regional Utilities	8%	7%	12%	11%	4%	8%
Jackson Energy Authority	0%	8%	23%	6%	4%	8%
JEA Utilities	2%	3%	5%	4%	7%	4%
Knoxville Utilities Board	9%	15%	13%	8%	9%	11%
Richmond, City of	7%	8%	7%	8%	6%	7%
MUNI Average	5%	8%	11%	8%	7%	8%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	14%	12%	14%	13%	14%	13%
National Fuel Gas Distribution Corp	6%	6%	11%	6%	6%	7%
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	10%	9%	9%	16%	11%	11%
IOUPA Average	10%	9%	11%	12%	10%	10%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	11%	12%	12%	14%	14%	13%
Brooklyn Union Gas Co	9%	11%	12%	12%	14%	12%
Chesapeake Utilities Corp	13%	17%	17%	16%	19%	16%
Colonial Gas Co	9%	10%	11%	13%	16%	12%
Connecticut Natural Gas Corp	11%	11%	11%	11%	11%	11%
Corning Natural Gas Corp	17%	11%	10%	8%	9%	11%
New Jersey Natural Gas Co	8%	9%	10%	8%	10%	9%
South Jersey Gas Co	13%	12%	12%	12%	10%	12%
Southern Connecticut Gas Co	11%	10%	8%	8%	11%	10%
Yankee Gas Services Co	8%	8%	9%	10%	10%	9%
IOU Average	11%	11%	11%	11%	12%	11%

PGW's Ranking Within the						
MUNI Group (n=8)	4	2	3	3	6	4
IOUPA Group (n=7)	2	2	1	2	2	2
IOU Group (n=11)	1	1	1	1	1	1
ALLCOS (n=24)	5	3	3	4	7	5

Interpretation of Rankings						
MUNI Group	=	+	=	=	=	=
IOUPA Group	+	+	+	+	+	+
IOU Group	+	+	+	+	+	+
ALLCOS	+	+	+	+	=	+

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	CapEx/Gross Plant					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	4%	4%	4%	4%	5%	4%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	NA	NA	NA	NA	NA	NA
CPS Energy	2%	4%	4%	5%	4%	4%
Gainesville Regional Utilities	5%	4%	6%	6%	2%	5%
Jackson Energy Authority	0%	5%	15%	4%	2%	5%
JEA Utilities	1%	2%	2%	2%	3%	2%
Knoxville Utilities Board	6%	11%	9%	5%	6%	7%
Richmond, City of	5%	5%	5%	5%	4%	5%
MUNI Average	3%	5%	7%	5%	4%	5%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	11%	9%	13%	10%	11%	11%
National Fuel Gas Distribution Corp	4%	4%	7%	4%	4%	5%
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	6%	6%	6%	11%	8%	7%
IOUPA Average	7%	6%	9%	8%	8%	8%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	8%	9%	9%	11%	11%	10%
Brooklyn Union Gas Co	6%	8%	9%	9%	11%	9%
Chesapeake Utilities Corp	10%	13%	14%	13%	16%	13%
Colonial Gas Co	6%	7%	8%	10%	12%	9%
Connecticut Natural Gas Corp	7%	8%	7%	7%	8%	7%
Corning Natural Gas Corp	12%	8%	7%	6%	7%	8%
New Jersey Natural Gas Co	7%	7%	8%	6%	8%	7%
South Jersey Gas Co	10%	9%	9%	9%	8%	9%
Southern Connecticut Gas Co	8%	8%	6%	6%	8%	7%
Yankee Gas Services Co	6%	6%	7%	8%	8%	7%
IOU Average	8%	8%	8%	9%	10%	9%

PGW's Ranking Within the						
MUNI Group (n=8)	4	2	2	2	6	3
IOUPA Group (n=7)	1	1	1	1	2	1
IOU Group (n=11)	1	1	1	1	1	1
ALLCOS (n=24)	4	2	2	2	7	3

Interpretation of Rankings						
MUNI Group	=	+	+	+	=	=
IOUPA Group	+	+	+	+	+	+
IOU Group	+	+	+	+	+	+
ALLCOS	+	+	+	+	=	+

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	CapEx/Capitalization					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	6%	6%	7%	8%	10%	7%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	6%	7%	6%	6%	7%	6%
CPS Energy	3%	6%	7%	8%	6%	6%
Gainesville Regional Utilities	5%	4%	7%	7%	3%	5%
Jackson Energy Authority	0%	5%	17%	4%	3%	6%
JEA Utilities	2%	3%	4%	3%	5%	3%
Knoxville Utilities Board	7%	13%	11%	7%	7%	9%
Richmond, City of	6%	7%	7%	7%	5%	6%
MUNI Average	4%	6%	8%	6%	5%	6%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	19%	15%	18%	18%	18%	18%
National Fuel Gas Distribution Corp	6%	7%	12%	6%	6%	7%
PECO Gas (Exelon Corporation)	NA	NA	NA	NA	NA	NA
Peoples Natural Gas Company LLC	NA	NA	NA	NA	NA	NA
Peoples - Equitable Division	NA	NA	NA	NA	NA	NA
UGI Utilities Inc (Gas)	8%	11%	11%	18%	13%	12%
IOUPA Average	11%	11%	14%	14%	12%	12%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	12%	14%	14%	16%	16%	14%
Brooklyn Union Gas Co	6%	8%	9%	9%	12%	9%
Chesapeake Utilities Corp	16%	21%	21%	19%	24%	20%
Colonial Gas Co	9%	11%	13%	17%	18%	14%
Connecticut Natural Gas Corp	11%	13%	13%	13%	13%	13%
Corning Natural Gas Corp	17%	11%	9%	8%	9%	11%
New Jersey Natural Gas Co	10%	10%	11%	9%	12%	10%
South Jersey Gas Co	15%	14%	14%	14%	12%	14%
Southern Connecticut Gas Co	10%	10%	8%	8%	12%	10%
Yankee Gas Services Co	8%	8%	10%	10%	10%	9%
IOU Average	11%	12%	12%	12%	14%	12%

PGW's Ranking Within the						
MUNI Group (n=8)	5	4	3	7	8	7
IOUPA Group (n=7)	1	1	1	2	2	1
IOU Group (n=11)	1	1	1	1	2	1
ALLCOS (n=24)	5	4	3	8	10	7

Interpretation of Rankings						
MUNI Group	=	=	=	-	-	-
IOUPA Group	+	+	+	+	+	+
IOU Group	+	+	+	+	+	+
ALLCOS	+	+	+	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Net Plant/Capitalization					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	90%	94%	98%	107%	112%	100%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	81%	81%	84%	75%	82%	81%
CPS Energy	86%	85%	83%	87%	86%	85%
Gainesville Regional Utilities	59%	60%	60%	66%	63%	62%
Jackson Energy Authority	65%	66%	74%	75%	92%	74%
JEA Utilities	80%	85%	86%	82%	74%	81%
Knoxville Utilities Board	77%	83%	88%	87%	83%	84%
Richmond City of	82%	87%	92%	86%	88%	87%
MUNI Average	76%	78%	81%	80%	81%	79%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	132%	130%	135%	136%	129%	132%
National Fuel Gas Distribution Corp	115%	117%	108%	104%	110%	111%
PECO Gas (Exelon Corporation)	122%	119%	122%	134%	121%	124%
Peoples Natural Gas Company LLC	100%	104%	113%	105%	108%	106%
Peoples - Equitable Division	100%	107%	108%	105%	108%	106%
UGI Utilities Inc (Gas)	79%	123%	120%	113%	117%	110%
IOUPA Average	108%	117%	118%	116%	116%	115%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	112%	114%	119%	117%	115%	115%
Brooklyn Union Gas Co	71%	75%	72%	80%	84%	76%
Chesapeake Utilities Corp	124%	124%	123%	119%	121%	122%
Colonial Gas Co	104%	109%	117%	127%	118%	115%
Connecticut Natural Gas Corp	101%	113%	116%	115%	117%	112%
Corning Natural Gas Corp	101%	98%	98%	101%	103%	100%
New Jersey Natural Gas Co	117%	117%	109%	115%	115%	115%
South Jersey Gas Co	119%	122%	123%	120%	118%	120%
Southern Connecticut Gas Co	94%	103%	101%	104%	106%	102%
Yankee Gas Services Co	96%	100%	103%	104%	104%	101%
IOU Average	104%	108%	108%	110%	110%	108%

PGW's Ranking Within the						
MUNI Group (n=8)	1	1	1	1	1	1
IOUPA Group (n=7)	6	7	7	4	4	7
IOU Group (n=11)	10	10	9	7	7	9
ALLCOS (n=24)	15	16	15	10	10	15

Interpretation of Rankings						
MUNI Group	+	+	+	+	+	+
IOUPA Group	-	-	-	=	=	-
IOU Group	-	-	=	=	=	=
ALLCOS	=	=	=	=	=	=

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Gas Revenue/MCF					
	2014	**2015**	**2016**	**2017**	**2018**	Average
Philadelphia Gas Works	$9 20	$8 57	$8 41	$8 93	$8 93	$8 81
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	$5 75	$4 74	$3 69	$3 94	$3 94	$4 41
CPS Energy	NA	NA	NA	NA	NA	NA
Gainesville Regional Utilities	$4 74	$3 72	$3 52	$4 10	$4 10	$4 04
Jackson Energy Authority	$5 16	$4 80	$4 43	$4 76	$4 76	$4 78
JEA Utilities	NA	NA	NA	NA	NA	NA
Knoxville Utilities Board	$9 81	$9 09	$8 24	$9 08	$9 08	$9 06
Richmond, City of	$9 07	$5 75	$5 61	$9 70	$9 70	$7 97
MUNI Average	$6 91	$5 62	$5 10	$6 32	$6 32	$6 05
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	$6 63	$6 98	$6 74	$7 08	$7 08	$6 90
National Fuel Gas Distribution Corp	$4 92	$4 27	$3 93	$4 46	$4 46	$4 41
PECO Gas (Exelon Corporation)	$7 02	$6 16	$5 40	$6 13	$6 13	$6 17
Peoples Natural Gas Company LLC	NA	NA	NA	$5 74	$5 74	$5 74
Peoples - Equitable Division	NA	NA	NA	$4 40	$4 40	$4 40
UGI Utilities Inc (Gas)	$3 69	$3 34	$2 90	$3 33	$3 33	$3 32
IOUPA Average	$5 57	$5 19	$4 74	$5 19	$5 19	$5 16
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	$10 30	$9 26	$8 98	$10 68	$10 68	$9 98
Brooklyn Union Gas Co	$7 31	$6 72	$6 71	$8 39	$8 39	$7 50
Chesapeake Utilities Corp	$8 09	$7 90	$6 56	$7 78	$7 78	$7 62
Colonial Gas Co	$11 23	$9 49	$9 38	$11 95	$11 95	$10 80
Connecticut Natural Gas Corp	$9 44	$8 04	$8 26	$9 40	$9 40	$8 91
Corning Natural Gas Corp	$3 78	$3 10	$3 18	$2 73	$2 73	$3 10
New Jersey Natural Gas Co	$8 86	$5 05	$4 54	$6 29	$6 29	$6 21
South Jersey Gas Co	$7 48	$8 33	$6 63	$9 07	$9 07	$8 12
Southern Connecticut Gas Co	$4 85	$4 00	$3 99	$4 28	$4 28	$4 28
Yankee Gas Services Co	$8 82	$8 43	$8 13	$8 85	$8 85	$8 62
IOU Average	$8 02	$7 03	$6 64	$7 94	$7 94	$7 51

PGW's Ranking Within the						
MUNI Group (n=8)	5	5	6	4	4	5
IOUPA Group (n=7)	5	5	5	7	7	7
IOU Group (n=11)	8	9	9	7	7	8
ALLCOS (n=24)	16	17	18	16	16	18

Interpretation of Rankings						
MUNI Group	=	=	=	=	=	=
IOUPA Group	=	=	=	-	-	-
IOU Group	=	=	=	=	=	=
ALLCOS	=	=	=	=	=	=

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PHILADELPHIA GAS WORKS
COMPARATIVE BENCHMARK DATA AND RATIOS
FOR THE FISCAL YEARS ENDED 2014 - 2018

	Non-Commodity Revenue/Revenue					
	2014	2015	2016	2017	2018	Average
Philadelphia Gas Works	59%	63%	75%	71%	73%	68%
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	44%	48%	61%	61%	57%	54%
CPS Energy	64%	65%	68%	70%	68%	67%
Gainesville Regional Utilities	58%	59%	71%	67%	62%	63%
Jackson Energy Authority	47%	48%	59%	59%	54%	53%
JEA Utilities	60%	62%	64%	62%	61%	62%
Knoxville Utilities Board	41%	44%	53%	52%	51%	48%
Richmond, City of	46%	50%	58%	54%	57%	53%
MUNI Average	51%	54%	62%	61%	59%	57%
PUC Jurisdictional Investor Owned Natural Gas Utilities						
Columbia Gas of Pennsylvania, Inc	57%	64%	72%	70%	68%	66%
National Fuel Gas Distribution Corp	65%	79%	86%	73%	71%	75%
PECO Gas (Exelon Corporation)	49%	57%	65%	62%	58%	58%
Peoples Natural Gas Company LLC	61%	70%	94%	85%	80%	78%
Peoples - Equitable Division	63%	69%	67%	62%	53%	63%
UGI Utilities Inc (Gas)	49%	54%	60%	54%	52%	54%
IOUPA Average	57%	66%	74%	68%	64%	66%
Non-Jurisdictional Investor Owned Natural Gas Utilities						
Boston Gas Co	53%	56%	69%	67%	61%	61%
Brooklyn Union Gas Co	58%	60%	71%	66%	63%	64%
Chesapeake Utilities Corp	NA	NA	NA	NA	NA	NA
Colonial Gas Co	52%	54%	65%	62%	55%	58%
Connecticut Natural Gas Corp	46%	51%	56%	52%	52%	51%
Corning Natural Gas Corp	62%	68%	79%	74%	72%	71%
New Jersey Natural Gas Co	51%	55%	64%	61%	54%	57%
South Jersey Gas Co	NA	NA	NA	NA	NA	NA
Southern Connecticut Gas Co	50%	57%	57%	54%	53%	54%
Yankee Gas Services Co	NA	NA	NA	NA	NA	NA
IOU Average	53%	57%	66%	62%	59%	59%

PGW's Ranking Within the						
MUNI Group (n=8)	3	2	1	1	1	1
IOUPA Group (n=7)	4	5	3	3	2	3
IOU Group (n=11)	2	2	2	2	1	2
ALLCOS (n=24)	7	7	4	4	2	4

Interpretation of Rankings						
MUNI Group	=	+	+	+	+	+
IOUPA Group	=	=	=	=	+	=
IOU Group	+	+	+	+	+	+
ALLCOS	=	=	+	+	+	+

Source of Information S&P Capital IQ, PUC Annual Reports, Audited Annual Reports, and AGA Statistics

PHILADELPHIA GAS WORKS
COMPARISONS BETWEEN
BENCHMARK RATIOS AND BOND ORDINANCE DEBT SERVICE COVERAGES
FOR THE FISCAL YEARS ENDED 2014 - 2018

	2014	2015	2016	2017	2018	Average
Benchmark Ratios Debt Service Coverage (P & I) (1)						
Philadelphia Gas Works	1.35	1.13	1.25	1.86	2.00	1.52
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	2.57	2.54	2.12	0.87	2.15	2.05
CPS Energy	2.11	2.54	2.61	2.40	2.52	2.44
Gainesville Regional Utilities	1.92	1.60	1.72	1.60	1.57	1.68
Jackson Energy Authority	9.41	7.41	6.36	2.10	0.45	5.15
JEA Utilities	1.55	1.58	2.11	2.20	1.69	1.83
Knoxville Utilities Board	3.19	3.47	3.18	1.56	4.06	3.09
Richmond, City of	1.60	1.78	1.45	0.90	1.67	1.48
MUNI Average	3.19	2.99	2.79	1.66	2.02	2.53
Bond Ordinance Debt Service Coverage (P & I)						
Philadelphia Gas Works						
Debt Service Coverage Senior 1998 Ordinance Bonds	2.11	2.14	2.13	2.71	2.35	2.29
Debt Service Coverage (Combined liens)	1.79	1.82	2.13	2.71	2.35	2.16
Debt Service Coverage (Combined liens with $18 0M City Fee)	1.60	1.64	1.90	2.44	2.15	1.95
Municipally Owned Natural Gas Utilities						
Citizens Energy Group	2.29	2.28	1.88	1.96	2.81	2.24
CPS Energy						
Senior Lien	2.72	3.15	3.67	3.46	3.84	3.37
Senior and Junior Lien	2.46	2.73	2.74	2.58	2.65	2.63
Gainesville Regional Utilities	2.09	2.32	2.15	1.98	2.15	2.14
Jackson Energy Authority	6 00	6.00	4.28	3.24	4.62	4.83
JEA Utilities						
Senior	5.40	5.80	6.59	7.53	6.55	6.37
Senior and Subordinate	2.41	2.63	2.89	2.53	2.30	2.55
Knoxville Utilities Board	3.44	3.52	3.16	2.99	4.10	3.44
Richmond, City of (2)	1.56	1.66	1.68	2.11	1.82	1.77
MUNI Average	3.15	3.34	3.23	3.15	3.43	3.26

Notes: (1) From Schedule 4 page 14.
(2) Reported for combined Gas, Water and Wastewater operations.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

CONSTANCE E. HEPPENSTALL

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPIC:

Cost of Service

February 28, 2020

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TABLE OF EXHIBITS

I. INTRODUCTION

Q. PLEASE STATE YOUR NAME FOR THE RECORD.

A Constance E. Heppenstall.

Q. BY WHOM ARE YOU EMPLOYED?

A. I am employed by Gannett Fleming Valuation and Rate Consultants, LLC.

Q. PLEASE DESCRIBE YOUR POSITION WITH GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC AND BRIEFLY STATE YOUR GENERAL DUTIES AND RESPONSIBILITIES.

A. My title is Senior Project Manager, Rate Studies. My duties and responsibilities include the preparation of accounting and financial data for revenue requirement and cash working capital claims, the allocation of cost of service to customer classifications, and the design of customer rates in support of public utility rate filings.

Q. HAVE YOU PRESENTED TESTIMONY IN RATE PROCEEDINGS BEFORE A REGULATORY AGENCY?

A. Yes. I have testified before the Pennsylvania Public Utility Commission, the Arizona Corporation Commission, the Kentucky Public Service Commission, the Missouri Public Service Commission, the Virginia State Corporation Commission, the Hawaii Public Utility Commission, the West Virginia Public Service Commission and the Indiana Utility Regulatory Commission concerning revenue requirements, cost of service allocations and rate design. A list of cases in which I have testified is attached to my testimony as Appendix A.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. I have a Bachelor of Arts Degree in Economics from the University of Virginia, Charlottesville, Virginia and a Master's of Science in Industrial Administration from Carnegie-Mellon University's Tepper School of Business, Pittsburgh, Pennsylvania.

Q. WOULD YOU PLEASE DESCRIBE YOUR PROFESSIONAL AFFILIATIONS?

A. I am a member of the American Water Works Association, the Pennsylvania Municipal Authorities Association and the National Association of Water Companies.

Q. BRIEFLY DESCRIBE YOUR WORK EXPERIENCE.

A. I joined the Valuation and Rates Division of Gannett Fleming (formerly Gannett Fleming, Inc.) in August 2006, as a Rate Analyst. Prior to my employment at Gannett Fleming, I was a Vice President of PriMuni, LLP where I developed financial analyses to test proprietary software in order to ensure its pricing accuracy in accordance with securities industry's conventions. From 1987 to 2001, I was employed by Commonwealth Securities and Investments, Inc. as a public finance professional where I created and implemented financial models for public finance clients in order to create debt structures to meet clients' needs. From 1986 to 1987, I was a public finance associate with Mellon Capital Markets.

II. <u>PURPOSE OF TESTIMONY</u>

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. I am testifying on behalf of Philadelphia Gas Works ("PGW" or the "Company") in support of its base rate case filing with the Pennsylvania Public Utility Commission ("Commission").

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

A. The purpose of my testimony is to present and explain PGW's cost of service allocation study, sometimes called class cost of service study. Exhibit CEH-1 sets forth the cost of service and the revenues under present and proposed rates for the Company's operations. In addition, the exhibit shows on Schedule H, the calculation of the Merchant Function Charge, on Schedule I, the calculation of the Gas Procurement Charge and on Schedule J the calculation of the pro forma rate of return for the TED Rider customers as of 8/31/2021.

Q. WAS EXHIBIT CEH-1 PREPARED BY YOU OR UNDER YOUR DIRECTION AND SUPERVISION?

A. Yes, it was.

Q. WHAT IS THE PURPOSE OF A COST OF SERVICE ALLOCATION STUDY?

A. The purpose of the study is to allocate PGW's full revenue requirement or total cost of service to the various customer classes. The study allocates costs to the Residential, Commercial, Industrial, Municipal, Philadelphia Housing Authority General Service ("PHA-GS"), PHA-Rate 8, Developmental Natural Gas Vehicle Service ("NGVS"), and the Interruptible classes. Customers under contract or non-tariff rates are excluded from the allocation of costs as this is a base rate proceeding. The revenues from the contract customers are included as a source of revenue to reduce the overall cost of service to be allocated to the other classes.

Q. WHAT METHOD OF ALLOCATION WAS USED IN THE STUDY?

A. The study uses the Average and Extra Demand Method (or Average/Excess) as that term is defined in the text "Gas Rate Fundamentals", published by the American Gas Association's Rate Committee.

Q. PLEASE DESCRIBE EXHIBIT CEH-1.

A. Philadelphia Gas Works, Exhibit CEH-1, Cost of Service Allocation Study as of August 31, 2021 (Exhibit CEH-1) is a cost of service allocation that supports PGW's revenue distribution under proposed rates in this proceeding. The results of the study are set forth in Schedule A. The results are based on the projected costs for the fully projected future test year of August 31, 2021 as provided by PGW. The exhibit includes a description of the methods of allocation, the actual allocation of the cost of service and the measure of value, including the factors used for the allocation to PGW's customer classes.

Q. PLEASE OUTLINE IN DETAIL YOUR COST ALLOCATION PROCEDURES.

A. The allocation of costs to cost functions and customer classifications is presented in Schedule E, pages 10 through 13 of Exhibit CEH-1. Since this is a base rate proceeding, we have excluded gas costs from the cost of service in Schedule E to develop costs by function and classification only for the costs related to the delivery of gas.

In Schedule E, the items of cost including operation and maintenance expenses, depreciation expense, interest expense, City payment and net income (labeled in Column 1) are presented in Column 3. These costs are allocated to the functions and customer classifications as follows: Residential, Commercial, Industrial, Municipal, PHA-GS, PHA-Rate 8, NGVS, and Interruptible classes.

Column 2 shows the allocation factor used for each item of cost. The description of the factors used is presented in Schedule F, beginning on page 14, of Exhibit CEH-1.

Q. PLEASE EXPLAIN THE ALLOCATION OF COST ITEMS IN EXHIBIT CEH-1.

A. We allocate each cost based on individual factors, both on a volumetric basis and customer cost basis. For example, production expenses are allocated volumetrically to classes using Factor 1 which is based on the average day demand for firm sales, excluding transportation sales. Storage expenses are incurred to provide gas service during peak times. As a result, these costs are allocated volumetrically on Factor 2A, the peak extra capacity by class, excluding the Interruptible class.

Distribution costs are allocated based on the type of cost. Costs related to meters are allocated to customer costs using Factor 4, which is based on the historic cost of meters by class. Costs related to services are allocated to customer costs based on Factor 4, which is also based on the historic cost of services by class. Costs related to distribution load dispatching, M&R Station, mains, measuring station expenses (except industrial measuring station expenses which were directly assigned to the industrial class) are allocated volumetrically based on Factor 3, which is the average and excess capacity for each classification. The weighting of the factors was based on the system-wide load factor which results in 26.5047% allocated on average daily usage and 73.4953% allocated to excess above average daily usage. See Factor 2 for the calculation of the load factor. The Interruptible customer class average and excess usage is included in the calculation as these customers have only been interrupted once (in 2004) in over 22 years and cannot be truly considered as interruptible for cost allocation purposes.

Customer Accounting Expenses and Customer Service and Information Expenses, other than Uncollectible Accounts, are allocated to customer costs based on Factor 7, number of customers by class. Uncollectible Account costs are split between those recovered through the Merchant Function Charge (MFC) and those collected through the customer charge. The costs recovered through the MFC are calculated in Schedule H and are directly assigned. The costs recovered through the customer charge are allocated to customer costs based on Factor 14 which uses a three-year average of uncollectibles to develop the factors.

Administrative and General Expenses, which are not labor related, are allocated on a composite Factor 10. Factor 10 is based on the allocation of all other operation and maintenance expenses other than Administrative and General Expenses. Labor related costs such as Injuries and Damages, Employee Pension and Benefits and OPEB Funding are allocated on Factor 11, which is a composite allocation of labor expense. The calculation is shown in Schedule F, Factor 11 and the pages following.

Depreciation Expense is allocated based on the specific cost, similar to the allocation of operation and maintenance expense. For example, depreciation expense related to Production Plant is allocated on Factor 1. Expense related to Storage Plant is allocated on Factor 2A, etc.

Interest and Other Expense, City Payment and Net Income, as these are all capital related, are allocated based on Factor 12, which is a composite factor based on the allocation of Utility Plant in Service Net of Accumulated Depreciation and Cash Working Capital. The calculation is on pages 27 to 28 of Exhibit CEH-1. Cash Working Capital for the exhibit was calculated based on the rule of thumb method of 1/8 of Operation and Maintenance Expense.

Q. WHAT ARE THE RESULTS OF THE COST OF SERVICE ALLOCATION STUDY?

A. The results of cost of service study as calculated on Schedule E are summarized in Schedule D. The total cost of service by classification in Schedule D is brought forward to Schedule A, columns 2 and 3. These results are then compared to the pro forma revenues under present rates (columns 3 and 5) and proposed rates (columns 6 and 7). The proposed increases in revenue under proposed rates and the percent increase are shown in columns

8 and 9 of Schedule A. Please refer to the direct testimony of Mr. Dybalski (PGW St. No. 6) for a description of the proposed rate design and revenue distribution.

Q. PLEASE EXPLAIN SCHEDULE B AND C OF EXHIBIT CEH-1.

A. Schedule B shows the rate of return by customer class under present rates and Schedule C shows the rate of return by customer class under proposed rates. These schedules show that PGW is moving toward unity in its proposed rate design.

Q. PLEASE DESCRIBE YOUR ANALYSIS OF CUSTOMER COSTS.

A. Schedule G shows the calculation of customer costs by customer class, showing both the results of a fully allocated customer cost of service and a direct customer cost analysis. The costs in Schedule G are developed from the allocation to customer costs in Schedule E.

Q. PLEASE DESCRIBE THE CALCULATION OF THE MERCHANT FUNCTION CHARGE (MFC) ON SCHEDULE H.

A. The MFC is applied to the firm sales service customer and is designed to recover the uncollectible expenses related to gas purchases. In Schedule H, the uncollectible expense (in 1000 dollars) is allocated by class based on a three-year average of collectible expense shown in the calculation of Factor 14. These amounts are then prorated by the amount of GCR revenue to total revenue by class shown on Line 4. The proration of Uncollectible expense is shown on Line 6 and converted to dollars on line 7. Line 9 develops the MCF by dividing the result on Line 7 by the Annual Firm Volume Sales in MCF in line 8.

Q. PLEASE DESCRIBE THE CALCULATION OF THE GAS PROCUREMENT CHARGE IN SCHEDULE I.

A. The Gas Procurement Charge (GPC) is calculated by adding the cost of natural gas supply service including acquisition, management and benefits to the cost of cash working capital related to storage of gas for a total of $885,086. This total is divided by annual firm sales service volumes of 41,370,382 for a calculated charge of $0.0214 per MCF. For the calculation of proposed revenue, PGW elected to maintain the present rate of $0.04 per MCF.

Q. PLEASE DESCRIBE THE CALCULATION OF THE TED RIDER RATE OF RETURN AS SHOWN IN SCHEDULE J.

A. In the settlement of the prior case, PGW agreed to "maintain records of all TED Rider investments and TED Rider negotiated rates. In the event that PGW files a general base rate case during the three-year TED Rider pilot program following the effective date of rates established in this proceeding, PGW will provide information, as part of its initial filing, showing the *pro forma* rate of return on incremental investment for TED Rider customers as a sub-class in its filed cost of service study." Schedule J shows the calculation of the rate of return on the incremental investment for the TED Rider class as of 8/31/2021.

III. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

Appendix A

CONSTANCE E. HEPPENSTALL – LIST OF CASES TESTIFIED

	Year	Jurisdiction	Docket No.	Client/Utility	Subject
1.	2010	AZ CC	W-01303A-09-0343 and SW-01303A-09-0343	Arizona American Water Company	Rate Consolidation
2.	2010	Pa PUC	R-2010-2179103	City of Lancaster – Water Fund	Revenue Requirements
3.	2012	Pa PUC	R-2012-2311725	Hanover Borough	Cost of Service/Rev Reqmts.
4.	2012	Pa PUC	R-2012-2310366	City of Lancaster – Sewer Fund	Revenue Requirements
5.	2013	Pa PUC	R-2013-2350509	City of DuBois – Bureau of Water	Revenue Requirements
6.	2013	Pa PUC	R-2013-2390244	City of Bethlehem – Bureau of Water	Revenue Requirements
7.	2014	Pa PUC	R-2014-2418872	City of Lancaster – Water Fund	Revenue Requirements
8.	2014	Pa PUC	R-2014-2428304	Hanover Borough	Revenue and Revenue Reqmts..
9.	2015	KY PSC	Case No.2015-000143	Northern Kentucky Water District	Cost of Service
10.	2016	Pa PUC	R-2016-2554150	City of DuBois – Bureau of Water	Cost of Service/Revenue Reqmts
11.	2016	AZ CC	WS-01303A-16-0145	EPCOR Water Arizona, Inc.	Cost of service/Rate Design
12.	2017	MO PSC	WR-2017-0285	Missouri-American Water Company	Cost of Service/Rate Design
13.	2017	MO PSC	SR-2017-0286	Missouri-American Water Company	Cost of Service/Rate Design
14.	2017	VA SCC	PUR-2017-00082	Aqua Virginia, Inc.	Cost of Service/Rate Design
15.	2017	AZ CC	WS-01303A-17-0257	EPCOR Water Arizona, Inc.	Cost of Service/Rate Design
16.	2017	HI PUC	2017-0446	Hana Water Systems LLC – North	Cost of Service/Rate Design
17.	2017	HI PUC	2017-0447	Hana Water Systems LLC – South	Cost of Service/Rate Design
18.	2018	PA PUC	2018-3000834	SUEZ Water Pennsylvania, Inc.	Revenue Requirements
19.	2018	KY PSC	2018-00208	Water Service Corp. of KY	Cost of Service/Rate Design
20.	2018	WV PSC	18-0573-W-42T	West Virginia American Water Company	Cost of Service
21.	2018	IN IRC	50208	Indiana American Water Company	Cost of Service/Demand Study
22.	2018	KY PSC	2018-00291	Northern Kentucky Water District	Cost of Service/Rate Design
23.	2018	KY PSC	2018-00358	Kentucky American Water	Cost of Service/Rate Design
24.	2019	PA PUC	R-2019-3006904	Newtown Artesian Water Co.	Revenue Reqmts/Rate Design
25.	2019	PA PUC	R-2019-3010955	City of Lancaster – Sewer Fund	Rev. Reqmts/Cost of Service/Rat

VERIFICATION

I, Constance E. Heppenstall, hereby state that: (1) I am employed by Gannett Fleming Valuation and Rate Consultants, LLC as Senior Project Manager, Rate Studies; (2) I have been retained by Philadelphia Gas Works ("PGW") and am authorized to present testimony on its behalf; (3) the facts set forth in my testimony 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).

February 28, 2020
Dated

Constance E. Heppenstall
Senior Project Manager, Rate Studies
Gannett Fleming Valuation and Rate Consultants, LLC

Exhibit CEH-1

Philadelphia Gas Works Exhibit CEH-1
Witness: C.E. Heppenstall

PHILADELPHIA GAS WORKS

COST OF SERVICE ALLOCATION STUDY

AS OF AUGUST 31, 2021

GANNETT FLEMING VALUATION AND RATE CONSULTANTS, LLC
Valley Forge, Pennsylvania

Gannett Fleming

Excellence Delivered ***As Promised***

February 6, 2020

Philadelphia Gas Works
800 W. Montgomery Avenue
Philadelphia, PA 19122

Attention: Gregory J. Stunder, Esquire
Vice President – Regulatory and Legislative Affairs

Ladies and Gentlemen:

Pursuant to your request, we have prepared a cost of service allocation study based on pro forma revenue requirements for the twelve months ended August 31, 2021, for Philadelphia Gas Works.

The attached report presents the results of the study, as well as supporting schedules which set forth the detailed allocation calculations. Schedule A, on page 5, presents a comparison of the cost of service by service classification with the revenues produced by each classification under present and proposed rates.

Respectfully submitted,

GANNETT FLEMING VALUATION
AND RATE CONSULTANTS, LLC

CONSTANCE E. HEPPENSTALL
Senior Project Manager

CEH:mle
066355

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PART I. INTRODUCTION

PART II. COST OF SERVICE BY SERVICE CLASSIFICATION

PART I. INTRODUCTION

PHILADELPHIA GAS WORKS

COST OF SERVICE ALLOCATION STUDY
AS OF AUGUST 31, 2021

PART I. INTRODUCTION

PLAN OF REPORT

The report sets forth the results of the cost of service allocation study prepared for Philadelphia Gas Works, based on the twelve months ended August 31, 2021 (FPFTY). Part I, Introduction, includes statements with respect to the basis of the study, the procedures employed, and a summary of the results of the study. Part II, Cost of Service by Service Classification, presents the detailed schedules of the allocation of costs to service classifications, the bases for the allocations, and the development of certain customer and demand costs.

BASIS OF THE STUDY

The purpose of the study was to allocate costs of Philadelphia Gas Works to the several customer classifications based on considerations of quantity of gas consumed; sales and transportation; demand characteristics; and costs associated with metering, billing, and accounting. The allocation study was based on recognized procedures for allocating costs to customer classifications in proportion to each classification's use of the facilities, commodity, and services which entail the total cost of providing gas service.

ALLOCATION PROCEDURES

The allocation study was based on the Average and Extra Demand Method for allocating costs to service classifications. The method is identified as the "Average and

Excess Demand Method" in "Gas Rate Fundamentals," (published in 1987 by the American Gas Association's Rate Committee) in which it is described. The three basic categories of cost responsibility are commodity, capacity, and customer costs. In the Average and Extra Demand Method, the capacity costs are allocated to service classifications on a combined basis of average use and use above average at peak demands. The following presents a brief discussion of costs and the manner in which they were allocated.

Commodity Costs are the costs that tend to vary with the quantity of gas used. Commodity costs in this study include production plant expenses and associated costs. Commodity costs were allocated to service classifications on the basis of average daily sales volumes.

Capacity Costs are costs associated with meeting the peak demands of the system. Capacity costs attributable to sales and transportation service include Distribution expenses and capital costs not associated with the customer costs category. The capacity costs were allocated to service classifications on a combined basis of average use and extra demand (demand in excess of average use). For presentation purposes, the commodity and capacity costs are combined into the volumetric function for each classification.

Customer Costs are costs associated with serving customers regardless of their usage or demand characteristics. Customer costs include the expenses and capital costs related to meters, regulators, and services and expenses related to meter reading and billing. The customer costs were allocated to service classifications on the bases of the number of meters, services and customers.

The allocation of costs to service classifications and the bases for the allocations are presented in Part II, Cost of Service by Service Classification.

RESULTS OF STUDY

The data summarized in Schedule A, "Comparison of Cost of Service with Revenues Under Present and Proposed Rates by Service Classification for the Twelve Months Ended August 31, 2021," constitute the principal results of the allocation study. Schedules B through F in Part II of the report present the details of the allocation of costs of service, including the return based on the allocated measure of value, by service classification as well as the bases for the allocation factors. Schedule G presents the development of customer costs per bill by service classification. Schedule H presents the calculation of the Merchant Function charge. Schedule I presents the calculation of the Gas Procurement charge. Schedule J presents the calculation of the historic test year rate of return for the TED Rider.

PHILADELPHIA GAS WORKS

COMPARISON OF COST OF SERVICE WITH REVENUES UNDER PRESENT AND PROPOSED RATES
BY SERVICE CLASSIFICATION FOR THE TWELVE MONTHS ENDED AUGUST 31, 2021
WITHOUT GAS COSTS

Service Classification	Pro Forma Cost of Service (in 000's)		Pro Forma Margin Revenues, Under Present Rates		Pro Forma Margin Revenues, Under Proposed Rates		Revenue Increase	
	Amount	Percent	Amount (in 000's)	Percent	Amount (in 000's)	Percent	Amount	Percent Increase
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Residential	$ 376,387	79.2%	$ 318,467	78.9%	$ 377,566	79.6%	$ 59,098	18 6%
Commercial	61,769	13.0%	59,883	14.8%	63,183	13.3%	3,300	5 5%
Industrial	4,807	1.0%	4,681	1.2%	4,894	1.0%	213	4.5%
Municipal	6,411	1.4%	4,541	1.1%	5,476	1.2%	935	20.6%
PHA - GS	1,667	0.4%	1,354	0.3%	1,679	0.4%	325	24.0%
PHA - Rate 8	2,634	0.6%	2,598	0.6%	2,724	0.6%	127	4.9%
NGVS	4	0.0%	2	0.0%	2	0.0%	-	0.0%
Interruptible	20,767	4.4%	12,700	3.1%	18,700	3.9%	6,000	47.2%
Total	$ 474,447	100.0%	$ 404,225	100.0%	$ 474,223	100.0%	$ 69,998	17 3%
GTS and Other Contract Revenue	1,840		1,840		1,840		-	
Other Surcharges and Revenue	73.105		73,105		73,105		-	
Other Operating Revenues	27,525		27,525		27,525		-	
Total Other Revenues	102,470		102,470		102,470		-	
Total	$ 576,917		$ 506,695		$ 576,693		$ 69,998	13 8%

PART II. COST OF SERVICE

BY SERVICE CLASSIFICATION

PHILADELPHIA GAS WORKS

DEVELOPMENT OF RATE OF RETURN BY SERVICE CLASSIFICATION
UNDER PRESENT RATES

Item (1)	Cost of Service (2)	Residential (3)	Commercial (4)	Industrial (5)	Municipal (6)	PHA - GS (7)	PHA -Rate 8 (8)	NGVS (9)	Interruptible (10)
1 Revenues From Tariff Sales and Transportation	$ 403,844	$ 318,467	$ 59,883	$ 4,681	$ 4,541	$ 1,354	$ 2,217	$ 2	$ 12,700
2 Other Revenues	102,462	79,292	15,938	1,265	1,593	376	676	-	3,322
3 Total Operating Revenues	506,306	397,759	75,821	5,946	6,134	1,730	2,893	2	16,022
4 Less Operating Expenses and City Contribution	408,183	325,486	54,715	4,202	5,621	1,555	2,269	1	14,335
5 Income Before Interest and Surplus	98,123	72,273	21,106	1,744	513	175	624	1	1,687
6 Less Interest and City Contribution	65,078	49,827	9,060	740	943	176	414	1	3,917
7 Current Revenue Over/Under Requirements	33,045	22,446	12,046	1,004	(430)	(1)	210	0	(2,230)
8 Original Cost Measure of Value (Factor 15)	1,543,587	1,181,854	214,892	17,553	22,366	4,179	9,821	17	92,905
9 Rate of Return before Interest and Surplus, Percent	6.36%	1.90%	5.61%	5.72%	-1.92%	-0.03%	2.14%	1.91%	-2.40%
10 Relative Rate of Return	1.00	0.30	0.88	0.90	-0.30	-0.01	0.34	0.30	-0.38

PHILADELPHIA GAS WORKS

DEVELOPMENT OF RATE OF RETURN BY SERVICE CLASSIFICATION
UNDER PROPOSED RATES

Item (1)	Cost of Service (2)	Residential (3)	Commercial (4)	Industrial (5)	Municipal (6)	PHA - GS (7)	PHA -Rate 8 (8)	NGVS (9)	Interruptible (10)
1 Revenues From Tariff Sales and Transportation	474,223	$ 377,566	$ 63,183	$ 4,894	$ 5,476	$ 1,679	$ 2,724	$ 2	$ 18,700
2 Other Revenues	102,462	79,155	15,916	1,268	1,588	370	679	-	3,486
3 Total Operating Revenues	576,685	456,721	79,099	6,162	7,064	2,049	3,403	2	22,186
4 Less Operating Expenses and City Contribution	411,338	328,723	54,671	4,194	5,604	1,586	2,260	1	14,298
5 Income Before Interest and Surplus	165,347	127,998	24,428	1,967	1,460	462	1,143	1	7,888
6 Less Interest	65,078	49,850	9,045	739	941	176	413	1	3,912
7 Current Revenue Over/Under Requirements	100,270	78,148	15,383	1,228	519	286	730	0	3,976
8 Original Cost Measure of Value (Factor 15)	1,543,982	1,182,711	214,593	17,527	22,325	4,191	9,806	17	92,812
9 Rate of Return before Interest and Surplus, Percent	10 71%	10 82%	11 38%	11 22%	6 54%	11.03%	11 66%	7 79%	8 50%
10 Relative Rate of Return	1 00	1 01	1 06	1 05	0 61	1 03	1 09	0 73	0 79

PHILADELPHIA GAS WORKS
SUMMARY COST OF SERVICE BY SERVICE CLASSIFICATION

Cost Function	Cost of Service (Schedule E)	Residential	Commercial	Industrial	Muncipal	PHA- GS	PHA - Rate 8	NGVS	Interruptible
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Volumetric Costs									
Residential	$ 177,478	$ 177,478							
Commercial	39,738		39,738						
Industrial	3,450			3,450					
Municipal	4,143				4,143				
PHA GS	923					923			
PHA R8	1,777						1,777		
NGVS	1							1	
Interruptible	20,711								20,711
Total Volumetric Costs	248,222	177,478	39,738	3,450	4,143	923	1,777	1	20,711
Customer Costs									
Residential	198,909	198,909							
Commercial	22,031		$ 22,031						
Industrial	1,357			$ 1,357					
Municipal	2,268				$ 2,268				
PHA GS	744					$ 744			
PHA R8							$ 857		
NGVS	3							$ 3	
Interruptible	56								$ 56
GTS/IT	-								
Total Customer Costs	225,368	198,909	22,031	1,357	2,268	744	857	3	56
Total Excluding Gas Costs	$ 473,590	$ 376,387	$ 61,769	$ 4,807	$ 6,411	$ 1,667	$ 2,634	$ 4	$ 20,767

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

	Account	Factor Ref	Cost of Service in '000 s	Volumetric Costs								Customer Costs							
				Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	OPERATION AND MAINTENANCE EXPENSES																		
	PRODUCTION EXPENSES																		
	Manufactured Gas Production Expenses																		
701	Operation Labor and Expenses	1	259	208	44	3	4	1	-	-	-	-	-	-	-	-	-	-	
702	Boiler Fuel	1	0	-		-	-	-	-	-	-	-	-	-	-	-	-	-	
703	Misc Steam Expenses	1	350	281	59	4	5	2	-	-	-	-	-	-	-	-	-	-	
706	Maintenance of Structures	1	5	4	1	-		-	-	-	-	-	-	-	-	-	-	-	
707	Maintenance of Boiler Plant Equipment	1	232	186	39	2	3	1	-	-	-	-	-	-	-	-	-	-	
708	Maintenance of Other Production Plant	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
710	Operation Supervision and Engineering	1	0	-	-		-	-	-	-	-	-	-	-	-	-	-	-	
712	Other Power Expenses	1	744	596	125	8	10	3	1	-	-	-	-	-	-	-	-	-	-
734	Duplicate Charges - Credit	1	(543)	(435)	(92)	(6)	(7)	(2)	(1)	-	-	-	-	-	-	-	-	-	-
735	Misc Production Expenses	1	1 367	1 096	231	15	18	6	1	-	-	-	-	-	-	-	-	-	-
740	Maintenance Supervision and Engineering	1	373	299	63	4	5	2	-	-	-	-	-	-	-	-	-	-	-
741	Maintenance of Structures	1	125	100	21	1	2	1	-	-	-	-	-	-	-	-	-	-	-
742	Maintenance of Production Equipment	1	449	360	76	5	6	2	-	-	-	-	-	-	-	-	-	-	-
	Total Manu Gas Production Expenses		3 361	2 695	567	36	46	16	1	0	0	0	0	0	0	0	0	0	0
	Other Gas Supply Expenses																		
804	Natural Gas Transmission Line Purchases	1		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
807	Purchased Gas Expense	1	4 939	3 960	833	53	67	21	5	-	-	-	-	-	-	-	-	-	-
808	Purchases Gas Cost Adjustments	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
812	Gas Used for Operations	1	378	303	64	4	5	2	-	-	-	-	-	-	-	-	-	-	-
813	Other Gas Supply Expenses	1	2 625	2 105	443	28	35	11	3	-	-	-	-	-	-	-	-	-	-
	Total Other Gas Supply Expenses		7 942	6 368	1 340	85	107	34	8	-	-	-	-	-	-	-	-	-	-
	Total Natural Gas Production Expenses		**11,303**	**9,063**	**1,907**	**121**	**153**	**50**	**9**	-	-	-	-	-	-	-	-	-	-
	OTHER STORAGE EXPENSE																		
840	Operating Supervision and Engineering	2A	1 551	1 196	278	26	31	6	14	-	-	-	-	-	-	-	-	-	-
841	Operation Labor and Expenses	2A	3 312	2 554	594	55	66	12	31	-	-	-	-	-	-	-	-	-	-
842	Rents	2A	296	228	53	5	6	1	3	-	-	-	-	-	-	-	-	-	-
843	Maintenance	2A	7 554	5 825	1 355	125	151	28	70	-	-	-	-	-	-	-	-	-	-
850	Operatin Supervision and Engineering	2A	1 550	1 195	278	26	31	6	14	-	-	-	-	-	-	-	-	-	
	Total Natural Gas Storage Expense		**14,263**	**10,998**	**2,558**	**237**	**285**	**53**	**132**	-	-	-	-	-	-	-	-	-	-

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

				Volumetric Costs								Customer Costs							
	Account	Factor Ref	Cost of Service in '000 s	Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
DISTRIBUTION EXPENSES																			
870	Supervision And Engineering	8	2 042	716	179	16	19	4	9	-	123	744	185	13	24	4	7		
871	Distribution Load Dispatching	3	1 944	1 308	326	29	35	6	16	-	224	-	-	-	-	-	-		
874	Mains And Services Expenses																		
	Mains	3	2 606	1 752	438	39	46	9	21	-	301	-	-	-	-	-	-	-	-
	Services	6	2 606	-			-	-	-	-	-	2 417	162	9	10	-	9		-
875	M & R Station Expenses -General	3	2 492	1 676	418	37	44	8	20	-	287	-	-	-	-	-	-	-	-
877	M & R Station Expenses - City Gate Station	3	615	414	103	9	11	2	5	-	71	-	-	-	-	-	-	-	-
878	Meter and House Regulator Expenses	4	19 109	-			-	-	-	-	-	13 674	4 296	313	590	82	152	1	-
879	Customer Installations Expenses	4	8 696	-	-		-	-	-	-	-	6 223	1 955	142	269	37	69	-	-
880	Other Expenses	8	10 301	3 611	902	80	96	18	44	-	620	3,755	934	66	123	18	34	-	
881	Rents	8	12	5	1	-		-	-	-	1	4	1	-	-	-	-	-	-
885	Maintenance Super And Engineering	8	316	111	28	2	3	1	1	-	19	115	29	2	4	1	1	-	-
887	Maint Of Mains	3	29 148	19 598	4 895	436	520	97	240	-	3 363	-	-	-	-	-	-	-	-
889	Maint Of Measuring Station Expenses - General	3	1 039	699	174	16	19	3	9	-	120	-	-	-	-	-	-	-	-
890	Maint Of Measuring Station Expenses - Industrial	6	62	-	-	-	-	-	-	-	-	58	4	-	-	-	-	-	-
891	Maint Of Measuring Station Expenses - City Gate	3	534	359	90	8	10	2	4	-	62	-	-	-	-	-	-	-	
892	Maint Of Services	6	1 815	-	-	-	-	-	-	-	-	1,683	113	6	7	-	6	-	
893	Maint Of Meters and House Regulators	7	2 957		-	-	-	-	-	-	-	2,783	145	3	5	12	7	-	2
	Total Distribution Expenses		**86,294**	**30,249**	**7,554**	**672**	**803**	**150**	**369**	-	**5,191**	**31,456**	**7,824**	**554**	**1,032**	**154**	**285**	**1**	**2**
CUSTOMER ACCOUNTING EXPENSES																			
	Operation																		
901	Supervision	7	2 192	-	-	-	-	-	-	-	-	2,063	107	3	4	9	5	-	2
902	Meter Reading Expenses	7	761	-		-	-	-	-	-	-	716	37	1	1	3	2	-	1
903	Customer Records & Coll Expenses	7	29 896	-	-	-	-	-	-	-	-	28,139	1,463	35	50	118	66	-	25
904	Uncollectible Accounts - MFC	DA	9 420	9 048	287	8		76											
904	Uncollectibe Accounts - Other	14	23,681	-	-	-	-	-	-	-	-	22,873	618	21	-	169	-	-	-
	Total Customer Accounting Expenses		**65,950**	**9,048**	**287**	**8**	-	**76**	-	-	-	**53,791**	**2,225**	**60**	**55**	**299**	**73**	-	**28**
CUSTOMER SERVICE AND INFORMATION EXPENSES																			
	Operation																		
908	Customer Assistance Expenses	7	5 510	-	-	-	-	-	-	-	-	5,186	270	6	9	22	12	-	5
	Total Customer Service & Info Expenses		**5,510**	-	-	-	-	-	-	-	-	**5,186**	**270**	**6**	**9**	**22**	**12**	-	**5**
ADMINISTRATIVE AND GENERAL EXPENSES																			
920	Administrative & General Salaries	10	20 739	6 715	1 392	117	140	37	58	-	587	10 231	1 167	70	124	54	42	-	4
921	Office Supplies and Expenses	10	34 579	11 196	2 321	196	234	62	96	-	979	17,058	1,946	117	207	90	70	-	7
922	Administrative Expenses Transferred-Credit	10	(31,676)	(10 258)	(2 126)	(179)	(214)	(57)	(88)	-	(897)	(15,626)	(1,783)	(107)	(189)	(82)	(64)	-	(6)
923	Outside Services Employed - Other	10	3 059	990	205	17	21	6	9	-	87	1,509	172	10	18	8	6	-	1
925	Injuries and Damages	11	9 813	5 437	1 229	107	130	27	55	-	485	2,125	176	8	15	10	7	-	1
926	Employee Pensions and Benefits	11	61 467	34 059	7 701	672	814	171	342	-	3 036	13,310	1,102	53	92	62	42	-	9
999	OPEB Funding - Surcharge	1A	16 000	11 572	3 592	291	334	59	152	-	-	-	-	-	-	-	-	-	-
999	OPEB Funding	11	9 422	5 221	1 180	103	125	26	52	-	465	2 040	169	8	14	10	6	-	1
924	Property Insurance	10	1 847	598	124	10	13	3	5	-	52	911	104	6	11	5	4	-	

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

Account		Factor Ref	Cost of Service in 000 s	Volumetric Costs								Customer Costs							
				Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
928	Regulatory Commission Expense	10	5 532	1 791	371	31	37	10	15	-	157	2,729	311	19	33	14	11	-	1
929	Duplicate Charges	10	(715)	(232)	(48)	(4)	(5)	(1)	(2)	-	(20)	(353)	(40)	(2)	(4)	(2)	(1)	-	-
930	General Advertising Expenses	10	8 282	2 682	556	47	56	15	23	-	235	4 086	466	28	50	21	17	-	2
	Refunding and Other Savings	10	(753)	(244)	(51)	(4)	(5)	(1)	(2)	-	(21)	(371)	(42)	(3)	(5)	(2)	(2)	-	-
	Total Administrative & General Expenses		137 596	69 527	16 446	1 404	1 680	357	715	-	5 145	37 649	3 748	207	366	188	138	-	20
	Total Operation and Maintenance Expenses		**320,916**	**128,885**	**28,752**	**2,442**	**2,921**	**686**	**1,225**	-	**10,336**	**128,082**	**14,067**	**827**	**1,462**	**663**	**508**	**1**	**55**
DEPRECIATION AND AMORTIZATION EXPENSE																			
PRODUCTION PLANT																			
305	Structures and Improvements	1	789	632	133	8	11	3	1	-	-	-	-	-	-	-	-		
306	Boiler Plant Equipment	1	88	70	15	1	1	-	-	-	-	-	-	-	-	-	-	-	
307	Other Power Equipment	1	13	11	2	-		-	-	-	-	-	-	-	-	-	-	-	
311	LPG Equipment	1	78	63	13	1	1	-		-	-	-	-	-	-	-	-	-	-
312	Oil Gas Equipment	1	3	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
317	Purification Equipment	1	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
318	Residual Refining Equipment	1	0		-			-	-	-	-	-	-	-	-	-	-	-	-
319	Gas Mixing Equipment	1	0		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
320	Other Equipment	1	806	646	136	9	11	3	1	-	-	-	-	-	-	-	-	-	-
STORAGE PLANT																			
361	Structures and Improvements	2A	323	249	58	5	6	1	3	-	-	-	-	-	-	-	-	-	-
362	Gas Holders	2A	622	480	112	10	12	2	6	-	-	-	-	-	-	-	-	-	-
363	Purification Equipment	2A	10	8	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
364	Liquefaction Equipment	2A	1 140	879	204	19	23	4	11	-	-	-	-	-	-	-	-	-	-
365	Vaporizing Equipment	2A	801	618	144	13	16	3	7	-	-	-	-	-	-	-	-	-	-
366	Compressor Equipment	2A	305	235	55	5	6	1	3	-	-	-	-	-	-	-	-	-	-
367	Measuring and Regulating Equipment	2A	224	173	40	4	4	1	2	-	-	-	-	-	-	-	-	-	-
368	Other Equipment	2A	592	457	106	10	12	2	5	-	-	-	-	-	-	-	-	-	-
DISTRIBUTION PLANT																			
375	Structures And Improvements	9	54	21	5	-	1	-	-	-	4	19	2	-	-	-	-	-	
376	Mains	3	17 309	11,638	2,907	259	309	57	142	-	1,997	-	-	-	-	-	-	-	
377	Compression Station Equipment	3	26	17	4	-	-	-	-	-	3	-	-	-	-	-	-	-	-
378	Measuring & Regulating Equipment - General	3	444	299	75	7	8	1	4	-	51	-	-	-	-	-	-	-	-
380	Services	6	21 736	-	-	-	-	-	-	-	-	20,159	1,348	73	84	-	72	-	-
381	Meters	4	2 886	-	-	-	-	-	-	-	-	2,066	649	47	89	12	23	-	-
382	Meter Installations	4	2,692	-	-	-	-	-	-	-	-	1,927	605	44	83	12	21	-	-
383	House Regulators	6	55	-	-	-	-	-	-	-	-	51	3	-	-	-	-	-	-
384	House Regulator Installations	4	95	-	-	-	-	-	-	-	-	68	21	2	3	-	1	-	-
385	Industrial Measuring & Regulating Equipment	6	12	-	-	-	-	-	-	-	-	12	1	-	-	-	-	-	-
387	Other Equipment	9	488	196	49	4	5	1	2	-	34	174	19	1	2	-	1	-	-
GENERAL PLANT																			
390	Structures And Improvements	10	2 500	810	168	14	17	5	7	-	71	1,233	141	8	15	6	5	-	-
391	Office Furniture And Equipment	10	4 893	1 584	328	28	33	9	14	-	139	2,414	275	17	29	13	10	-	1
392	Transportation Equipment	10	6 613	2 141	444	37	45	12	18	-	187	3,263	372	22	40	17	13	-	1
393	Stores Equipment	10	22	7	1	-	-	-	-	-	1	11	1	-	-	-	-	-	
394	Tools Shop And Garage Equipment	10	624	202	42	4	4	1	2	-	18	308	35	2	4	2	1		-
396	Power Operated Equipment	10	104	34	7	1	1	-	-	-	3	52	6	-	1	-	-	-	
397	Communication Equipment	10	1 003	325	67	6	7	2	3	-	28	495	56	3	6	3	2	-	-
398	Miscellaneous Equipment	10	580	188	39	3	4	1	2	-	16	286	33	2	3	2	1	-	-
	Total Depreciation & Amortization Expense		**67,934**	**21,985**	**5,157**	**448**	**537**	**109**	**233**	-	**2,552**	**32,538**	**3,567**	**221**	**359**	**67**	**150**	-	**2**
	Cost of Removal	12	**4,500**	**1,836**	**446**	**39**	**47**	**9**	**21**	-	**270**	**1,811**	**180**	**12**	**18**	**3**	**8**	-	
	Total Operating Expenses		**393,350**	**152,706**	**34,355**	**2,929**	**3,505**	**804**	**1,479**	-	**13,158**	**162,231**	**17,814**	**1,060**	**1,839**	**733**	**666**	**1**	**57**

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

Account	Factor Ref	Cost of Service in '000's	Volumetric Costs								Customer Costs							
			Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
INTEREST AND OTHER EXPENSE																		
Interest on Long Term Debt	12	54 442	22 208	5 393	474	567	112	253	-	3 271	19 495	2 174	144	220	36	93	1	2
Other	12	(9 612)	(3 922)	(952)	(84)	(100)	(20)	(45)	-	(578)	(3 442)	(384)	(25)	(39)	(6)	(16)	-	
AFUDC	12	(2 212)	(903)	(219)	(19)	(23)	(5)	(10)	-	(133)	(792)	(88)	(6)	(9)	(1)	(4)	-	
Loss From Extinguishment of Debt	12	4 460	1 818	442	39	46	9	21	-	268	1 597	178	12	18	3	8	-	
Total Interest and Other Expense		47 078	19 201	4 664	410	490	96	219	-	2 828	16 858	1 880	125	190	32	81	1	2
CITY PAYMENT	12	18,000	7,341	1,783	157	187	37	84	-	1,082	6,445	719	48	73	12	31	-	1
NET INCOME	12	118,493	48 330	11,739	1,033	1,235	244	552	1	7,121	42,430	4,731	313	480	79	201	1	4
TOTAL COST OF SERVICE		576,921	227,578	52,541	4,529	5,417	1,181	2,334	1	24,189	227,964	25,144	1,546	2,582	856	979	3	64
Less Other Revenues																		
Interest Gain/Loss and Other Income	12	7 400	3 018	733	64	77	15	34	-	445	2 650	295	20	30	5	13	-	-
Appliance Repair and Other Revenues	13	7,964	3 109	713	61	73	16	31	-	314	3 207	354	22	36	13	14	-	1
Other Revenues	13	12 161	4 744	1 089	94	112	25	48	-	479	4,897	540	33	56	19	21	-	1
DSIC Surcharge	13	35 000	13 661	3 135	270	322	71	138	-	1,378	14,095	1,555	95	160	56	60	-	4
OPEB Surcharge	11	16 000	8 866	2 005	175	212	45	89	-	790	3,465	287	14	24	16	11	-	2
CRP Forgiveness	1A	12 950	9 365	2 907	235	270	48	123	-	-	-	-	-	-	-	-	-	-
LIURP	1A	7 989	5 778	1 794	145	167	30	76	-	-	-	-	-	-	-	-	-	-
Efficiency Cost Recovery	1A	1 166	842	262	21	24	4	11	-	-	-	-	-	-	-	-	-	-
Contract Revenues	13	1 840	717	165	14	17	4	7	-	72	741	82	5	8	3	3	-	-
Subtotal		102 470	50 100	12 803	1 079	1 274	258	557	-	3,478	29,055	3 113	189	314	112	122	-	8
TOTAL COST OF SERVICE RELATED TO TARIFF SALES AND TRANSPORTATION		$ 474,451	$ 177,478	$ 39,738	$ 3,450	$ 4,143	$ 923	$ 1,777	$ 1	$ 20,711	$ 198,909	$ 22,031	$ 1,357	$ 2,268	$ 744	$ 857	$ 3	$ 56

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 1. ALLOCATION OF COSTS WHICH VARY DIRECTLY WITH SALE OF GAS

Factors are based on the pro forma average daily sales volumes for each service classification.

Service Classification	Pro Forma Average Daily PGC Volumes (Mcf)	Allocation Factor 1	Pro Forma Average Daily Firm Sales (Mcf)	Allocation Factor 1A
(1)	(2)	(3)	(4)	(5)
Volumetric Costs				
Residential	90,870	0.80171	95,087	0.72327
Commercial	19,118	0.16867	29,515	0.22451
Industrial	1,212	0.01070	2,387	0.01816
Municipal	1,532	0.01352	2,744	0.02087
PHA GS	487	0.00430	487	0.00370
PHA R8	122	0.00108	1,245	0.00947
NGVS	2	0.00002	2	0.00002
Interruptible	-	-		
Total	113,343	1.00000	131,467	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTORS 2 AND 2A. CALCULATION OF MAXIMUM DAY EXTRA DEMAND FACTORS.

Factors are based on the maximum day extra demand throughput for each classification

Service Classification	Pro Forma Average Daily Throughput Volumes (Mcf)	Peak Day Capacity (Mcf)	Extra Capacity (Mcf)	Allocation Factor 2	Allocation Factor 2A*
(1)	(2)	(3)	(4)=(3)-(2)	(5)	
Volumetric Costs					
Residential	95,087	429,513	334,426	0.71231	0.77118
Commercial	29,515	107,276	77,761	0.16563	0.17932
Industrial	2,387	9,559	7,172	0.01527	0.01654
Municipal	2,744	11,394	8,650	0.01842	0.01995
PHA GS	487	2,119	1,633	0.00348	0.00376
PHA R8	1,245	5,251	4,006	0.00853	0.00924
NGVS	2	6	4	0.00001	0.00001
Interruptible	37,849	73,696	35,847	0.07635	
Total	169,316	638,814	469,499	1.00000	1.00000

* Factor 2A excludes Interruptible volumes

Load Factor	0.265047	0.734953

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 3 ALLOCATION OF COSTS ASSOCIATED WITH DISTRIBUTION

Factors are based on the weighting of the factors derived from average daily throughput volumes volumes and from maximum day extra capacity demand for each service classification, as follows:

	Average Daily Throughput			Maximum Day Extra Demand		
Service Classification	MCF/Day	Allocation Factor	Weighted Factor*	Allocation Factor 2	Weighted Factor*	Allocation Factor 3
(1)	(2)	(3)	(4)=(3)x 0.26505	(5)	(6)=(5)x 0.73495	(7)=(4)+(6)
Volumetric Costs						
Residential	95,087	0.56160	0.14885	0.71231	0.52351	0.67236
Commercial	29,515	0.17432	0.04620	0.16563	0.12173	0 16793
Industrial	2,387	0.01410	0.00374	0.01527	0.01122	0.01496
Municipal	2,744	0 01621	0.00430	0.01842	0.01354	0.01784
PHA GS	487	0.00287	0.00076	0.00348	0.00256	0.00332
PHA R8	1,245	0.00735	0.00195	0.00853	0.00627	0.00822
NGVS	2	0.00001	-	0.00001	0.00001	0.00001
Interruptible	37,849	0.22354	0.05925	0.07635	0.05611	0 11536
Total	169,316	1.00000	0.26505	1.00000	0.73495	1.00000

* The weighting of the factors is based on the percentage of average daily throughput.

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 4. ALLOCATION OF COSTS ASSOCIATED WITH METERS AND ACCOUNTS 381

Factors are based on the cost of meters by class included in Accounts 381 Meters and M&R Equipment.

Service Classification	Original Cost of Meters	Allocation Factor
(1)	(2)	(3)
Customer Costs		
Residential	$ 57,306,393	0.71560
Commercial	18,004,478	0.22483
Industrial	1,311,869	0.01638
Municipal	2,474,336	0.03090
PHA - GS	344,988	0 00431
PHA - Rate 8	636,266	0.00795
NGVS	2,419	0.00003
Interruptible	-	-
Total	$ 80,080,750	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 5. ALLOCATION OF COSTS ASSOCIATED WITH INDUSTRIAL MEASURING AND REGULATING EQUIPMENT

Directly assigned to the Industrial Class

Service Classification	Allocation Factor
(1)	(1)
Volumetric	
Industrial	1.0000

FACTOR 6. ALLOCATION OF COSTS ASSOCIATED WITH SERVICES AND HOUSE REGULATORS.

Factors are based on the cost of services by class included in Account 380, Service Lines.

Service Classification	Original Cost of Service Lines	Allocation Factor
(1)	(2)	(3)
Customer Costs		
Residential	$ 721,587,925	0.92745
Commercial	48,242,086	0.06200
Industrial	2,632,485	0.00338
Municipal	3,005,872	0.00386
PHA - GS	868	0.00001
PHA - Rate 8	2,561,336	0.00329
NGVS	5,398	0.00001
Interruptible	-	-
		-
Total	$ 778,035,970	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 7. ALLOCATION OF COSTS ASSOCIATED WITH CUSTOMER ACCOUNTING AND METER READING.

Factors are based on the number of customers for each classification, as follows.

Service Classification	Number of Customers	Allocation Factor 7
(1)	(2)	(3)
Customer Costs		
Residential	479,356	0.94122
Commercial	24,915	0.04892
Industrial	594	0.00117
Municipal	850	0.00167
PHA - GS	2,011	0.00395
PHA - Rate 8	1,129	0.00222
NGVS	3	0.00001
Interruptible	427	0.00084
Total	509,286	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 8 ALLOCATION OF DISTRIBUTION OPERATION OTHER EXPENSES AND RENT.

Factors are based on distribution operation expenses other than those being allocated.

Service Classification	Operation Expenses	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 25,806	0.35052
Commercial	6,444	0 08753
Industrial	574	0.00780
Municipal	685	0.00930
PHA GS	127	0.00173
PHA R8	315	0.00428
NGVS	-	-
Interruptible	4,428	0.06014
Customer Costs		
Residential	26,838	0.36453
Commercial	6,675	0.09066
Industrial	473	0.00642
Municipal	881	0.01197
PHA GS	131	0 00178
PHA R8	243	0.00330
NGVS	1	0 00001
Interruptible	2	0 00003
Total	$ 73,623	1.00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 9. ALLOCATION OF DISTRIBUTION ASSETS

Factors are based on distribution assets other than those being allocated.

Service Classification	Rate Base Costs	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 501,306	0 40060
Commercial	125,206	0.10006
Industrial	11,154	0.00891
Municipal	13,301	0.01063
PHA GS	2,476	0.00198
PHA R8	6,129	0.00490
NGVS	7	0 00001
Interruptible	86,011	0.06873
Customer Costs		
Residential	445,402	0.35594
Commercial	49,401	0.03948
Industrial	3,336	0.00267
Municipal	4,949	0.00395
PHA GS	482	0.00039
PHA R8	2,180	0.00174
NGVS	8	0.00001
Interruptible	-	-
Total	$ 1,251,348	1 00000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 10. ALLOCATION OF ADMINISTRATIVE AND GENERAL EXPENSES

Factors are based on the allocation of operation and maintenance expenses.

Service Classification	Operation & Maintenance Expenses	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 59,358	0.3238
Commercial	12,306	0.0671
Industrial	1,038	0.0057
Municipal	1,241	0.0068
PHA GS	329	0.0018
PHA R8	510	0.0028
NGVS	-	-
Interruptible	5,191	0.0283
Customer Costs		
Residential	90,433	0.4933
Commercial	10,319	0.0563
Industrial	620	0.0034
Municipal	1,096	0.0060
PHA GS	475	0.0026
PHA R8	370	0 0020
NGVS	1	0.0000
Interruptible	35	0.0002
Total	$ 183,323	1.0000

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 11. ALLOCATION OF LABOR RELATED TAXES AND BENEFITS.

Factors are based on the allocation of total operation and maintenance direct labor expense to service classifications as shown on the following page.

Service Classification	Total Labor Expense	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 76,145	0.55411
Commercial	17,217	0.12529
Industrial	1,504	0.01094
Municipal	1,821	0.01325
PHA GS	383	0.00279
PHA R8	765	0.00557
NGVS	-	-
Interruptible	6,787	0.04939
Customer Costs		
Residential	29,756	0.21654
Commercial	2,464	0.01793
Industrial	118	0.00086
Municipal	205	0.00149
PHA GS	139	0.00101
PHA R8	93	0.00068
NGVS	-	-
Interruptible	20	0.00015
Total	$ 137,417	1.00000

PHILADELPHIA GAS WORKS

FACTOR 11 - ALLOCATION OF LABOR COSTS TO CUSTOMER CLASS SERVICE CLASSIFICATIONS

	Account	Factor Ref	Labor Costs	Volumetric Costs: Residential	Commercial	Industrial	Municipal	PHA GS	PHA - R8	NGVS	Interruptible	Customer Costs: Res	Com	Ind	Muni	PHA - GS	PHA - Rate 8	NGVS	Interruptible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
	OPERATION AND MAINTENANCE EXPENSES																		
	TOTAL PAYROLL 2019																		
02	President & CEO	10	$ 92	$ 30	$ 6	$ 1	$ 1	$	$ -	$ -	$ 3	$ 45	$ 5	$ -	$ 1	$ -	$ -	$ -	$
03	Corporate Communications	10	1 067	345	72	6	7	2	3	-	30	526	60	4	6	3	2	-	
04	Officers Salaries	10	4 188	1 356	281	24	28	8	12	-	119	2 066	236	14	25	11	8	-	1
05	Legal	10	1 358	440	91	8	9	2	4		38	670	76	5	8	4	3	-	
07	Commercial Resource Center	7	959			-			-	-		903	47	1	2	4	2	-	1
09	Gas Control & Acquisition	*	2 314	1 855	390	25	31	10	2				-	-	-	-	-	-	
10	VP Reg Compliance & Customer Programs	10	3 139	1 016	211	18	21	6	9	-	89	1 548	177	11	19	8	6		1
11	Human Resources	10	1 002	324	67	6	7	2	3	-	28	494	56	3	6	3	2		
13	Chief Operating Officer	10	79	26	5	-	1		-	-	2	39	4	-	-	-	-		
14	Security	10	188	61	13	1	1	-	1	-	5	93	11	1	1	-	-		
15	VP Regulatory & Legislative Affairs	10	96	31	6	1	1		-	-	3	47	5	-	1	-	-	-	-
16	VP Supply Chain	10	0		-			-	-	-	-	-	-	-	-	-	-		
17	VP Budget & Strategic Development	10	594	192	40	3	4	1	2	-	17	293	33	2	4	2	1	-	
20	Gas Planning & Rates	10	546	177	37	3	4	1	2	-	15	269	31	2	3	1	1	-	
21	Customer Review	7	878		-	-		-	-	-	-	826	43	1	1	3	2		1
22	By-Pass Bonuses	10	55	18	4	-	-	-	-	-	2	27	3	-	-	-	-		
30	Engineering Services	2	911	649	151	14	17	3	8	-	70	-	-	-	-		-	-	
31	Chemical Services	1	568	455	96	6	8	2	1	-	-	-	-	-	-	-	-	-	
38	VP Technical Compliance	10	648	210	44	4	4	1	2	-	18	320	36	2	4	2	1	-	
39	SVP HRD Labor & Corp Comm	10	245	79	16	1	2		1	-	7	121	14	1	1	1	-	-	
40	Chief Financial Officer	10	80	26	5	-	1	-	-	-	2	39	5	-	-	-	-	-	
41	Risk Management	10	914	296	61	5	6	2	3	-	26	451	51	3	5	2	2	-	
43	Account Management	7	2 024	-		-	-	-	-	-	-	1 905	99	2	3	8	4	-	2
44	Customer Service	7	9 229			-		-	-	-	-	8 687	451	11	15	36	20	-	5
45	Accounting & Reporting	10	1 603	519	108	9	11	3	4	-	45	791	90	5	10	4	3	-	
46	Treasury	10	865	280	58	5	6	2	2	-	24	427	49	3	5	2	2		
47	Information Services	10	5 054	1 636	339	29	34	9	14	-	143	2 493	284	17	30	13	10	-	1
49	Collections	7	2 119		-	-		-	-	-	-	1 994	104	2	4	8	5	-	2
50	Field Services	2	27 686	19 721	4 586	423	510	96	236	-	2 114	-	-	-	-	-	-	-	
52	Distribution	2	38 863	27 683	6 437	593	716	135	332	-	2 967	-	-	-	-	-	-	-	
53	Gas Processing	1	10 862	8 708	1 832	116	147	47	12	-	-	-	-	-	-	-	-	-	-
54	Internal Auditing	10	297	96	20	2	2	1	1	-	8	147	17	1	2	1	1		-
56	SVP Operations & Supply Chain	2	71	51	12	1	1	-	1	-	5	-	-	-	-	-	-	-	
57	SVP Gas Management	2	555	395	92	8	10	2	5	-	42	-	-	-	-	-	-	-	

PHILADELPHIA GAS WORKS

FACTOR 11 - ALLOCATION OF LABOR COSTS TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

	Account	Factor Ref	Labor Costs	Volumetric Costs: Residential	Commercial	Industrial	Municipal	PHA GS	PHA - R8	NGVS	Interruptible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
58	VP Marketing	10	135	44	9	1	1	-	-	-	4
59	Organizational Development	10	936	303	63	5	6	2	3	-	27
60	Marketing	10	2 686	870	180	15	18	5	7	-	76
65	Labor Relations	10	259	84	17	1	2	-	1	-	7
67	Corporate Planning	10	550	178	37	3	4	1	2	-	16
68	Customer Programs	7	700	-		-	-	-	-	-	-
71	Supply Chain	2	6 208	4 422	1 028	95	114	22	53	-	474
72	Facilities Management	2	2 242	1 597	371	34	41	8	19	-	171
73	Fleet Operations	10	3 286	1 064	221	19	22	6	9	-	93
77	Resource Management and Technology	2	1 273	908	211	19	23	4	11		97
	TOTAL LABOR RELATED COST FOR ALLOCATION		$ 137 424	$ 76 145	$ 17 217	$ 1 504	$ 1 821	$ 383	$ 765	$ -	$ 6 787

	Account	Customer Costs: Res	Com	Ind	Muni	PHA - GS	PHA - Rate 8	NGVS	Interruptible
	(1)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
58	VP Marketing	67	8	-	1	-	-		-
59	Organizational Development	462	53	3	6	2	2	-	-
60	Marketing	1,325	151	9	16	7	5	-	1
65	Labor Relations	129	15	1	2	1	1	-	
67	Corporate Planning	272	31	2	3	1	1		
68	Customer Programs	659	34	1	1	3	2	-	1
71	Supply Chain	-	-	-	-	-	-		-
72	Facilities Management	-	-	-				-	
73	Fleet Operations	1 621	185	11	20	9	7	-	1
77	Resource Management and Technology	-	-	-	-	-	-	-	-
	TOTAL LABOR RELATED COST FOR ALLOCATION	$ 29 756	$ 2 464	$ 118	$ 205	$ 139	$ 93	$ -	$ 20

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 12 ALLOCATION OF SURPLUS AND INTEREST EXPENSE

Factors are based on the result of allocating the original cost measure of value, as presented on the following pages

Service Classification	Original Cost Less Depreciation	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 629,849	0.40792
Commercial	152,943	0.09906
Industrial	13,451	0.00871
Municipal	16,079	0.01041
PHA GS	3,161	0.00205
PHA R8	7,184	0.00465
NGVS	7	-
Interruptible	92,772	0.06009
Customer Costs		
Residential	552,862	0.35808
Commercial	61,650	0.03993
Industrial	4,076	0.00264
Municipal	6,246	0.00405
PHA GS	1,030	0.00067
PHA R8	2,622	0 00170
NGVS	10	0.00001
Interruptible	40	0 00003
Total	$ 1,543,982	1 00000

FACTOR 13 ALLOCATION OF REGULATORY COMMISSION EXPENSES, ASSESSMENTS AND OTHER REVENUES

Factors are based on the allocated cost of service excluding those items being allocated.

Service Classification	Total Cost of Service	Allocation Factor
(1)	(2)	(3)
Volumetric Costs		
Residential	$ 192,188	0.39032
Commercial	44,097	0 08956
Industrial	3,789	0 00770
Municipal	4,531	0 00920
PHA GS	1,003	0 00204
PHA R8	1,943	0 00395
NGVS	1	-
Interruptible	19,387	0 03937
Customer Costs		
Residential	198,281	0 40270
Commercial	21,885	0 04444
Industrial	1,334	0 00271
Municipal	2,254	0 00458
PHA GS	785	0 00159
PHA R8	842	0 00171
NGVS	2	-
Interruptible	59	0 00012
Total	492,382	0 99999

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

	Account	Factor Ref	Cost of Service in '000's	Volumetric Costs								Customer Costs							
				Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
RATE BASE																			
PRODUCTION PLANT																			
304	Land and Land Rights	1	1 453	1 165	245	16	20	6	2	-	-	-	-	-	-	-			-
305	Structures and Improvements	1	14 146	11 343	2 386	151	191	61	15	-	-	-	-	-	-	-	-		
306	Boiler Plant Equipment	1	414	332	70	4	6	2	-	-	-	-	-	-	-	-	-	-	
307	Other Power Equipment	1	135	108	23	1	2	1	-	-	-	-	-	-	-	-	-		
311	LPG Equipment	1	511	410	86	5	7	2	1	-	-	-	-	-	-	-	-	-	
312	Oil Gas Equipment	1	78	63	13	1	1	-	-	-	-	-	-	-	-	-			
317	Purification Equipment	1	(1)	(1)	-		-	-	-	-	-	-	-	-	-	-	-		-
318	Residual Refining Equipment	1	(0)			-		-	-	-	-	-	-	-	-	-			
319	Gas Mixing Equipment	1	0	-	-	-	-	-	-		-	-	-	-	-	-	-		-
320	Other Equipment	1	13 261	10 631	2 237	142	179	57	14		-	-	-	-	-	-			-
	Total Production Plant		29 999	24 051	5 060	320	406	129	32	-	-	-	-	-	-	-	-	-	-
STORAGE AND PROCESSING PLANT																			
360	Land and Land Rights	2A	328	253	59	5	7	1	3	-	-	-	-	-	-	-		-	-
361	Structures and Improvements	2A	6 641	5 121	1 191	110	132	25	61	-	-	-	-	-	-	-			
362	Gas Holders	2A	(89)	(69)	(16)	(1)	(2)		(1)	-	-	-	-	-	-	-	-	-	
363	Purification Equipment	2A	(17)	(13)	(3)		-	-		-	-	-	-	-	-	-	-		
364	Liquefaction Equipment	2A	8 481	6 540	1 521	140	169	32	78	-		-	-	-	-	-		-	
365	Vaporizing Equipment	2A	5 548	4 278	995	92	111	21	51	-	-	-	-	-	-	-	-	-	
366	Compressor Equipment	2A	6 142	4 736	1 101	102	123	23	57	-		-	-	-	-	-	-	-	
367	Measuring and Regulating Equipment	2A	1 282	989	230	21	26	5	12	-	-	-	-	-	-	-	-	-	
368	Other Equipment	2A	13 065	10 075	2 343	216	261	49	121	-	-	-	-	-	-	-			
	Total Storage and Processing Plant		41 380	31 910	7 421	685	827	156	382	-	-	-	-	-	-	-	-	-	
DISTRIBUTION PLANT																			
374	Land and Land Rights	9	101	40	10	1	1	-	-	-	7	36	4	-	-	-		-	-
375	Structures And Improvements	9	(21)	(8)	(2)	-		-	-	-	(1)	(7)	(1)	-	-	-	-		
376	Mains	3	736 129	494 944	123 618	11 012	13 133	2 444	6 051	7	84 920	-	-	-	-	-	-		-
377	Compression Station Equipment	3	(33)	(22)	(6)		(1)	-	-	-	(4)	-	-	-	-	-	-	-	-
378	Measuring & Regulating Equipment General	3	9 495	6 384	1 594	142	169	32	78	-	1 095	-	-	-	-	-	-	-	
380	Services	6	393 500	-	-	-		-	-	-	-	364 951	24,397	1,330	1,519	4	1 295	4	-
381	Meters	4	51 484		-	-		-		-	-	36 842	11,575	843	1 591	222	409	2	-
382	Meter Installations	4	59 400		-	-	-	-	-	-		42 506	13,355	973	1,835	256	472	2	
383	House Regulators	6	1 131		-	-	-	-		-	-	1 049	70	4	4	-	4	-	-
384	House Regulator Installations	6	58	-	-	-				-		54	4	-	-	-	-	-	
385	Industrial Measuring & Regulating Equipment	5	186		-	-	-	-	-		-	-	-	186	-	-	-		
387	Other Equipment	9	12 172	4 876	1 218	108	129	24	60	-	837	4 332	481	32	48	5	21		
	Total Distribution Plant		1 263 602	506 214	126 432	11 263	13 431	2 500	6,189	7	86 854	449 763	49 885	3,368	4,997	487	2 201	8	
GENERAL PLANT																			
389	Land and Land Rights	10	3 713	1 202	249	21	25	7	10	-	105	1 832	209	13	22	10	7		1
390	Structures And Improvements	10	72 433	23 452	4 862	410	490	130	201	-	2 051	35 731	4 077	245	433	188	146	1	14
391	Office Furniture And Equipment	10	59 655	19 315	4 005	338	404	107	166	-	1 689	29 428	3,358	202	357	155	121	1	11
392	Transportation Equipment	10	14 474	4 686	972	82	98	26	40	-	410	7 140	815	49	87	37	29	-	3
393	Stores Equipment	10	68	24	5	-	-	-	-	-	2	33	4	-	-	-	-	-	
394	Tools Shop And Garage Equipment	10	5 990	1 941	402	34	41	11	17	-	170	2 955	337	20	36	16	12	-	1
396	Power Operated Equipment	10	216	71	14	1	1	-	1	-	6	106	12	1	1	1	-	-	

PHILADELPHIA GAS WORKS

COST OF SERVICE AS OF AUGUST 31, 2021, AT PROPOSED REVENUE LEVEL ALLOCATED TO
CUSTOMER CLASS SERVICE CLASSIFICATIONS

			Volumetric Costs								Customer Costs							
Account	Factor Ref	Cost of Service in '000's	Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible	Res	Com	Ind	Muni	PHA - GS	PHA - R8	NGVS	Interruptible
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
397 Communication Equipment	10	1 415	459	95	8	10	3	4	-	40	698	80	5	8	4	3	-	-
398 Miscellaneous Equipment	10	10 921	3 536	733	62	74	20	30	-	309	5 388	615	37	65	28	22	-	2
Total General Plant		168 885	54 686	11,337	956	1 143	304	469	-	4 782	83 311	9 507	572	1 009	439	340	2	32
Total Plant		1 503 865	616 861	150 250	13 224	15 807	3 089	7 072	7	91 636	533 074	59 392	3 940	6 006	926	2 541	10	32
OTHER RATE BASE ELEMENTS																		
Cash Working Capital	10	40 115	12 988	2 693	227	272	72	112		1 136	19 788	2,258	136	240	104	81	-	8
Total Other Rate Base Elements		40 115	12 988	2 693	227	272	72	112	-	1 136	19,788	2 258	136	240	104	81	-	8
Total Measure of Value		$ 1,543 980	$ 629,849	$ 152,943	$ 13,451	$ 16,079	$ 3,161	$ 7,184	$ 7	$ 92,772	$ 552,862	$ 61,650	$ 4,076	$ 6,246	$ 1,030	$ 2,622	$ 10	$ 40

PHILADELPHIA GAS WORKS

FACTORS FOR ALLOCATING COST OF SERVICE TO SERVICE CLASSIFICATIONS

FACTOR 14 ALLOCATION OF UNCOLLECTIBLES NOT RECOVERED FROM MFC

Factors are based on 3-year average of uncollectibles

Service Classification	3-Year Average Uncollectibles	Allocation Factor
(1)	(2)	(3)
Customer Costs		
Residential	$ 36,884,034	0.96587
Commercial	996,900	0.02611
Industrial	33,769	0 00088
Municipal	-	-
PHA GS	272,444	0.00713
PHA R8	484	0.00001
Total	38,187,631	1.00000

PHILADELPHIA GAS WORKS

CALCULATION OF CUSTOMER COSTS PER BILL BY SERVICE CLASSIFICATION

	Cost of Service (1)	Residential (2)	Commercial (3)	Industrial (4)	Municipal (5)	PHA - GS (6)	PHA - R8 (7)	NGVS (8)	Interruptible (9)
Fully Allocated Customer Costs									
Customer Costs (in 1,000's)	259,138	$ 227,964	$ 25,144	$ 1,546	$ 2,582	$ 856	$ 979	$ 3	$ 64
Number of Customers	509,286	479,356	24,915	594	850	2,011	1,129	3	427
Customer Cost per bill		**$ 39.63**	**$ 84.10**	**$ 216.80**	**$ 253.14**	**$ 35.47**	**$ 72.26**	**$ 83.33**	**$ 12.49**
Direct Customer Costs (in 1000's)									
O & M Expenses									
874 Mains And Services Expenses									
Mains									
Services									
876 M & R Station Expenses - Industrial									
878 Meter and House Regulator Expenses	19,108	13,674	4,296	313	590	82	152	1	-
879 Customer Installations Expenses	8,695	6,223	1,955	142	269	37	69	-	-
892 Maintenance of Services	1,815	1,683	113	6	7	-	6	-	-
893 Maintenance of Meters & House Regulators	2,957	2,783	145	3	5	12	7	-	2
901 Supervision	2,193	2,063	107	3	4	9	5	-	2
902 Meter Reading Expenses	761	716	37	1	1	3	2	-	1
903 Customer Records & Coll Expenses	29,896	28,139	1,463	35	50	118	66	-	25
904 Uncollectible Accounts	-	-	-	-	-	-	-	-	-
905 Miscellaneous Cust Accts Expenses	23,681	22,873	618	21	-	169	-	-	-
908 Customer Assistance Expenses	5,510	5,186	270	6	9	22	12	-	5
Subtotal O & M Expenses	94,616	83,340	9,004	530	935	452	319	1	35

PHILADELPHIA GAS WORKS

CALCULATION OF CUSTOMER COSTS PER BILL BY SERVICE CLASSIFICATION

		Cost of Service	Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - R8	NGVS	Interruptible
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Depreciation Expense										
380	Services	21,736	20,159	1,348	73	84	-	72	-	-
381	Meters	2,886	2,066	649	47	89	12	23	-	-
382	Meter Installations	2,692	1,927	605	44	83	12	21	-	-
383	House Regulators	54	51	3	-	-	-	-	-	-
384	House Regulator Installations	95	68	21	2	3	-	1	-	-
385	Industrial M & R Equipment	13	12	1	-	-	-	-	-	-
390	Structures and Improvements	-								
391	Office Furniture And Equipment	-								
Subtotal Depreciation		27,476	32,538	3,567	221	359	67	150	-	2
Rate Base										
380	Services	393,500	364,951	24,397	1,330	1,519	4	1,295	4	-
381	Meters	51,484	36,842	11,575	843	1,591	222	409	2	-
382	Meter Installations	59,399	42,506	13,355	973	1,835	256	472	2	-
383	House Regulators	1,131	1,049	70	4	4	-	4	-	-
384	House Regulator Installations	58	54	4	-	-	-	-	-	-
385	Industrial M & R Equipment	186	-	-	186	-	-	-	-	-
390	Structures And Improvements	40,835 *	35,731	4,077	245	433	188	146	1	14
391	Office Furniture and Equipment	33,633 *	29,428	3,358	202	357	155	121	1	11
Subtotal Rate Base		580,226	510,561	56,836	3,783	5,739	825	2,447	10	25
Surplus and Interest @ 10 7%		62,221	54,751	6,095	406	615	88	262	1	3
Total Direct Customer Costs		$ 193,741	$ 170,629	$ 18,666	$ 1,157	$ 1,909	$ 607	$ 731	$ 2	$ 40
Number of Customers		509,286	479,356	24,915	594	850	2,011	1,129	3	427
Direct Costs per bill			**$ 29.66**	**$ 62.43**	**$ 162.20**	**$ 187.20**	**$ 25.17**	**$ 53.99**	**$ 57.57**	**$ 7.74**

* Customer cost portion of account

PHILADELPHIA GAS WORKS

CALCULATION OF MERCHANT FUNCTION CHARGE

Line No		Residential	Commercial	Industrial	Municipal	PHA - GS	PHA - Rate 8	NGVS	Interruptible	Total
(1)	Non-Gas Revenue - Proposed Rates	$ 377,566	$ 63,183	$ 4,894	$ 5,476	$ 1,679	$ 2,724	$ 2	$ 18,700	$ 474,223
(2)	GCR Revenue	149,009	31,482	1,996	2,519	800	201	4	-	$ 186,010
(3)	Total Revenue - Lines (1)+(2)	$ 526,574	$ 94,665	$ 6,890	$ 7,995	$ 2,478	$ 2,926	$ 6	$ 18,700	$ 660,234
(4)	Percent of GCR to Total Revenue - Lines (2)/(3)	28 30%	33 26%	28 97%		32 27%				
(5)	Uncollectible Account 904 (000's)	31,971	864	29	-	236	-	-	-	33,101
(6)	Uncollectible Account 904 to GCR (000's) - Line (4) X (5)	9,048	287	8	-	76				
(7)	Uncollectible Share of Revenue, % - Line (6)/(2)	6 07%	0 91%	0 42%		9 52%				
(8)	Uncollectible Account 904 to GCR - Line (6) X 1000	9,047,867	287,455	8,439	-	76,160				
(9)	Annual Firm Sales Service Volumes	33,167,501	6,978,235	442,503	559,040	222,298		804	-	41,370,382
(10)	Merchant Function Charge per MCF - Line (8)/(9)	0 2728	0 0412	0 0191	-	0 3426				

PHILADELPHIA GAS WORKS

CALCULATION OF GAS PROCUREMENT CHARGE

Natural Gas Supply Service, Acquisition and Management and Benefits	$	375,503
Storage Gas Working Capital Plus Cash Working Capital - Cost		509,583
Total GPC Costs	$	885,086
Annual Firm Sales Service Volumes - MCF		41,370,382
Gas Procurement Charge		0.0214

PHILADELPHIA GAS WORKS

CALCULATION OF TED RIDER RATE OF RETURN

Line No.			
	Revenue from TED Rider Customer - Pro Forma 8/31/2021		
(1)	Pro Forma Revenue Excluding GCR - TED	$	91,224
(2)	PGW Investment	$	152,000
(3)	Rate of Return - Line (1) divided by Line (2)		60.02%

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

KENNETH S. DYBALSKI

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:

Test Year Sales and Revenues
Revenue Allocation

February 28, 2020

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I. QUALIFICATIONS AND PURPOSE OF TESTIMONY

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

A. My name is Kenneth S. Dybalski. My position is Vice President – Energy Planning & Technical Compliance at the Philadelphia Gas Works.

Q. HOW LONG HAVE YOU HELD THIS POSITION?

A. I assumed my current position in 2016. Prior to this position, I was the Director of Gas Planning & Rates from 2006 to 2016 and the Manger of Gas Planning from 2001 to 2006.

Q. AS IT PERTAINS TO GAS PLANNING AND RATEMAKING, WHAT ARE YOUR JOB RESPONSIBILITIES?

A. In my present position, I am responsible for the short and long term planning of gas demand, gas supply, raw material expense and revenue; overseeing the preparation of sales, sendout, revenue and fuel expense projections; developing peak day/hour load projections; overseeing the development of the various filings before the Pennsylvania Public Utility Commission (PUC) and Philadelphia Gas Commission (PGC), including the quarterly and annual Gas Cost Rate (GCR) filings; preparing the Integrated Resource Planning Report; and providing supporting documentation for gas costs related to PGW's Operating Budget before the Philadelphia Gas Commission.

Q. PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND.

A. I received both a BS and MBA from Temple University in Philadelphia, Pennsylvania.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I submitted testimony for the PGW 1307(f) Annual GCR Filings in Docket Nos. R-2019-3007636, R-2018-2645938, R-2017-2587526, R-2016-2526700, R-2015-2465656, R-2014-2404355, R-2013-2346376, R-2012-2286447, R-2011-2224739, R-2010-20157062, R-2009-2088076, and R-2008-2021348. I have also submitted testimony in

PGW's last base rate proceeding (Docket No. R-2017-2586783), in PGW's previous base rate proceeding (Docket No. R-2009-2139884) and PGW's 2008 Extraordinary Rate Request (Docket No. R-2008-2073938).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to describe and support:

1) the process used to develop the sales forecast for the test year;

2) an analysis of the Heating Degree Days ("HDD") used to calculate pro forma sales for the Fully Projected Future Test Year ("FPFTY"); and

3) the allocation of the proposed base rate increase by customer class.

II. SALES FORECAST PROCEDURES

Q. WHAT PROCEDURES DID PGW EMPLOY WHEN FORECASTING SALES FOR THE TEST YEAR?

A. The total system-wide demand is a function of the projected gas demand per customer and the anticipated number of customers in each class. In determining customer demand, PGW projects customer usage, giving consideration to significant gains or losses in numerous homogeneous groups for the period being projected. PGW's Gas Planning Department attempts to determine for each customer class the level of demand related to experienced temperatures and the level of demand that is not affected by changes in temperature. Within each class the most recent summer and winter usage patterns are established from historical records. Summer data provides each class of customer's non-temperature sensitive load requirements (baseload) which can be expressed in terms of thousands of cubic feet (Mcf) per day, per customer. Similarly, winter data, after removal of the daily baseload level, determines the temperature sensitive load requirements for each class of customer.

This temperature sensitive usage primarily reflects space heating, but also includes such other temperature sensitive usage as water heating attributable to colder water inlet temperatures due to colder ground temperatures and similar process variations, as well as supplementary heating. This overall heating requirement can be expressed in terms of the cubic feet of gas utilized per degree of temperature change on a per customer basis for each separate customer classification. In addition, consideration is given to the variation of customer utilization patterns for space heating over the year, recognizing the transitional fall start-up of heaters, the deep winter period needs and the tapering off and shut-down which occurs in the late spring. These usage patterns, taken in conjunction with anticipated customer counts and average temperature and "normal" degree day levels, form the basis of determining customer class and total system demands.

Q. WHAT IS A DEGREE DAY?

A. The term "degree days" quantifies the daily average degrees of temperature below a base level of 65 degrees Fahrenheit and is used as a tool to measure heating or cooling requirements. For example, on a day experiencing an average temperature of 40 degrees Fahrenheit, there would be 25 heating degree days.

Q. PLEASE EXPLAIN THE USE OF "NORMAL" TEMPERATURES.

A. Due to the inconsistencies of weather and weather forecasting techniques, and because test year data are required to reflect "normal" conditions, no attempt is made to predict the specific daily temperatures of the projection period. Instead, PGW has developed a normal monthly temperature pattern by analyzing statistical records of actual temperature patterns over a 20-year period. This pattern reflects 3,962 degree-days. See Table 1 below.

Table 1					
PGW 30 YEAR DEGREE DAY HISTORY					
	HEATING		HEATING		HEATING
YEAR	SEASON	YEAR	SEASON	YEAR	SEASON
1989-90	4,431	**1999-00**	3,960	**2009-10**	3,730
1990-91	3,900	**2000-01**	4,505	**2010-11**	4,005
1991-92	4,542	**2001-02**	3,463	**2011-12**	3,034
1992-93	4,731	**2002-03**	4,794	**2012-13**	3,889
1993-94	4,998	**2003-04**	4,292	**2013-14**	4,405
1994-95	4,200	**2004-05**	4,327	**2014-15**	4,431
1995-96	5,169	**2005-06**	3,819	**2015-16**	3,354
1996-97	4,622	**2006-07**	3,773	**2016-17**	3,546
1997-98	3,996	**2007-08**	3,746	**2017-18**	3,981
1998-99	3,886	**2008-09**	4,181	**2018-19**	3,995
10 Year Ave. (2010-2019)		3,837			
20 Year Ave. (2000-2019)		3,962			
30 Year Ave. (1990-2019)		4,124			

Q. WHY HAS PGW USED A 20-YEAR AVERAGE TO DETERMINE NORMAL WEATHER FOR ITS SERVICE TERRITORY?

A. The Settlement of PGW's last base rate proceeding at Docket No. R-2017-2586783 required PGW to utilize the 20-year average of degree days experienced in its service territory as "normal" weather. PGW has utilized a 20-year average of degree days as shown in Table 1. The 20-year degree day average fairly represents the expected future yearly degree days and the last two (2017-18 and 2018-19) heating season degree days were within 1% of the 20 year average of 3,962.

Q. HOW IS THE 20-YEAR AVERAGE LEVEL OF DEGREE DAYS USED IN THE SALES FORECAST?

A. The annual 3,962 degree-days which compose the PGW normal monthly temperature patterns form the basis of the calculation of the temperature sensitive component of demand for the Fully Projected Future Test Year. Table 1 documents Philadelphia's 20-year degree day history at Richmond Plant. The application of the above-described baseload and space heating factors and customer counts, when applied to a calendar-based daily temperature pattern, produces a daily total of customer requirements identified as sendout.

Q. HOW WILL THIS DETERMINATION OF NORMAL WEATHER AFFECT PGW'S EXISTING "WEATHER NORMALIZATION ADJUSTMENT CLAUSE"?

A. The Weather Normalization Adjustment ("WNA") clause in the Company's Tariff is based on the normal twenty years weather at the Philadelphia International Airport and PGW will apply the normal weather determination from this base rate case.

III. ALLOCATION OF PROPOSED RATE INCREASE BY CUSTOMER CLASS

Q. WHAT ARE THE GOALS OF THE COMPANY'S PROPOSED REVENUE ALLOCATION AND RATE DESIGN?

A. The Company's goals in its proposed revenue allocation and rate design are:

- To implement an increase in each class's customer charge, to the extent that the results of the Class Cost of Service Study ("CCOSS") justifies such an increase, that sets the customer charge at a level that covers a greater portion of the fixed customer costs associated with providing service to each class of customer (excluding classes, such as Interruptible Sales or GTS where the rates are governed by contracts);
- To allocate the remainder of the increase to each class in a way that moves the various rate classes closer to their full cost of service while avoiding applying an unreasonably large portion of the increases to any one of the firm customer classes;

- To allocate the revenue increase in such a way that would result in rates that are similar for customers that share similar service requirements but are nonetheless grouped under different Rate Classes; and
- To recognize in the allocation of the increase any special characteristics of a customer class that makes the CCOSS results less reflective of cost causation.

Q. PLEASE DESCRIBE THE DATA SUPPLIED BY GANNETT FLEMING THAT ASSISTED PGW IN DETERMINING HOW TO IMPLEMENT THESE GOALS.

A. With respect to customer charges, Ms. Heppenstall of Gannett Fleming provided a CCOSS that details the Company's proposals. That study provided "customer cost" results that determined the actual fixed customer cost per customer by class. These results show the level of monthly customer charge that would be required if the Company were to recover 100% of its fixed customer related costs in a monthly customer charge. Secondly, Ms. Heppenstall's CCOSS provided the revenues relative to cost of service for each rate class under existing rates.

Q. WHAT ARE PGW'S PROPOSED CUSTOMER CHARGES?

A. The proposed customer charges are shown below. For each customer class, PGW attempted to move the charge closer to the full cost of service. See Table 2 below.

Table 2

Customer Group*	Current Charge (Per Meter)	% Increase (Calculated)	Proposed Charge (As Filed)	Direct Customer Costs Per Bill (Cost of Service Study)	Proposed Charge as % of Customer-Related Costs
Rate GS – Residential	$13.75	40%	$19.25	$29.66	65%
Rate GS - Commercial Customers	$23.40	40%	$32.75	$62.43	52%
Rate GS:- Industrial Customers	$70	40%	$98	$162.20	60%
Rate GS – Public Housing Authority Customers	$13.75	40%	$19.25	$25.17	76%
Rate MS	$23.40	40%	$32.75	$187.20	17%
PHA(Rate 8)	$23.40	40%	$32.75	$53.99	61%
NGVS	$35	0%	$35	$57.57	61%

Q. DOES INCREASING THE CUSTOMER CHARGE IN THE MANNER PROPOSED PROVIDE ANY BENEFITS?

A. Yes. Charging rates that better reflect the customer-related costs for each customer more properly aligns rates with costs and provides more revenue stability. Currently, PGW is still recovering a majority of its fixed customer costs in its variable delivery charges. This makes the recovery of these costs contingent upon achieving PGW's projected normal sales volumes. Since these costs, by definition, do not vary by volume, cost recovery in this way is inefficient and distorts the price signals to customers. Greater revenue stability will also improve PGW's cash flow and make it less susceptible to weather variability.

Q. HOW IS PGW PROPOSING TO ALLOCATE THE OVERALL RATE INCREASE TO EACH CUSTOMER CLASS?

A. Based on the guidance provided by Ms. Heppenstall, PGW allocated the increase as set forth in the proposed tariff and the table below.

Table 3		
Allocation Of Proposed Rate Increase		
Rate Class	**Proposed Increase ($)**	**Share of Proposed Increase (%)**
Residential	59,100,000	84%
Commercial	3,300,000	5%
Industrial	213,000	0.3%
PHA GS	325,000	0.5%
Municipal	935,000	1%
PHA (Rate 8)	127,000	0.2%
NGVS	0	0%
IT (Consolidated)	6,000,000	9%
TOTAL	**70,000,000**	100%

The delivery rates and percentage increases for each class are as follows:

Table 4

Rate Class	Current ($/MCF)	% Increase from Current	Proposed ($/MCF)*
Residential	6.6967	10%	7.3893
Commercial	4.8651	1%	4.9034
Industrial	4.7698	0%	4.7843
PHA GS	5.7105	13%	6.4535
Municipal	4.2723	20%	5.1105
PHA (Rate 8)	5.0163	0%	5.0163
NGVS	1.2833	0%	1.2833
IT-A	2.2885	53%	3.4928
IT-B	1.1077	53%	1.6906
IT-C	0.8643	53%	1.3191
IT-D	0.7669	53%	1.1705
IT-E	0.7426	53%	1.1334

*** The proposed delivery charge ($/MCF) does <u>not</u> include the Merchant Function Charge ("MFC") and the Gas Procurement Charge ("GPC")**

I believe that these allocations of the proposed rate increase is a reasonable application of the rate allocation guidelines I articulated above.

Q. IS PGW PROVIDING DATA ADJUSTING THE UNIVERSAL SERVICE COST ALLOCATION TO REMOVE ALL NON-RESIDENTIAL CUSTOMER CLASSES?

A. Yes. PGW is providing this data as required by the Commission's Opinion and Order in PGW's last base rate proceeding (Docket No. R-2017-2586783). See Table 5 below.

Table 5		
Residential Class Only		
Universal Service Surcharge		
		Expense
Enhanced Low Income Retrofit Program (ELIRP)	$	7,988,818
Customer Responsibility Program (CRP)	$	43,730,644
Conservation Incentive Credit	$	-
Senior Citizen Discount *	$	1,915,917
August 2020 Under Collection	$	94,994
Total $ to be Recovered	$	53,730,374
All Applicable Volumes (MCF)		47,850,113
Universal Service & Energy Conservation Surcharge	**$**	**1.1229**
Residential Only Applicable Volumes (MCF)		32,670,276
Universal Service & Energy Conservation Surcharge	**$**	**1.6446**
Increase in Surcharge to Residential Class	$	0.5217

Q. BASED ON THIS DATA, WHAT IS THE IMPACT OF REMOVING ALL NON-RESIDENTIAL CUSTOMER CLASSES FROM THE UNIVERSAL SERVICE COST ALLOCATION?

A. The impact is that the Universal Service & Energy Conservation Surcharge would be an increase by $0.5217 / Mcf to $1.6446 / Mcf or by 46.5% to the residential class.

Q. WHAT DO YOU RECOMMEND?

A. I recommend that the Universal Service Cost Allocation continue to be recovered by all firm classes of customers.

IV. CONCLUSION

Q. DOES THIS COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

I, Kenneth S. Dybalski, hereby state that: (1) I am the Vice President - Energy Planning & Technical Compliance for Philadelphia Gas Works ("PGW"); (2) the facts set forth in my testimony 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).

February 28, 2020
Dated

Kenneth S. Dybalski
Vice President - Energy Planning & Technical Compliance
Philadelphia Gas Works

{L0857895.1}

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

DOUGLAS A. MOSER

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:
Efforts to Improve Safety, Reliability and Customer Service
Proposed Tariff Revisions

February 28, 2020

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TABLE OF EXHIBITS

I. INTRODUCTION

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

A. My name is Douglas A. Moser. My position with Philadelphia Gas Works ("PGW" or "Company") is Executive Vice President and Acting Chief Operating Officer.

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A. I received a Bachelor of Science degree in Chemical Engineering from Pennsylvania State University in 1979. Also, I received a Master's in Business Administration from Widener University in 1990. I have held the following positions at PGW: Engineering Assistant; Production Engineer; Supervisor – Gas Conditioning; Operations Engineer – Gas Processing Department; Manager – Gas Control; Manager – Gas Acquisition; Senior Project Manager – Strategic Planning Department and Vice President and Senior Vice President of Gas Management.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes. I submitted testimony for the PGW 1307(f) Annual Gas Cost Rate ("GCR") filings before the Pennsylvania Public Utility Commission ("PUC" or "Commission") in Docket Nos. R-2012-2286447, R-2011-2224739, R-2010-20157062, R-2009-2088076, R-2008-2021348 and R-00072110 and in the Company's Distribution System Improvement Charge proceedings in Docket Nos. P-2012-2337737; P-2015-2501500; and C-2015-2504092.

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

A. My testimony will describe the numerous efforts that PGW has undertaken during the last several years to improve the safety and reliability of the PGW gas distribution system, operate more efficiently, and improve its customer service.

II. EFFORTS TO IMPROVE SAFETY, RELIABILITY AND CUSTOMER SERVICE

A. Infrastructure Improvements To Enhance System Safety And Reliability

Q. PLEASE PROVIDE A GENERAL DESCRIPTION OF PGW'S GAS DISTRIBUTION SYSTEM.

A. PGW's gas distribution system serves approximately 500,000 customers in Southeastern Pennsylvania in the County and City of Philadelphia, using approximately 3,000 miles of natural gas mains ("mains") and some 3,000 miles of service lines ("services"). At the end of calendar year 2018, PGW's mains were comprised of 44% cast iron, 36% plastic and protected coated steel, and 20% unprotected coated steel and ductile iron.[1] The Company's services (the line from the main to the customer's meter) are made up of 79% plastic and protected coated steel, 17% bare steel and 4% unprotected coated steel.[2]

Q. WHAT IS PGW'S CURRENT PROJECTED TIME FRAME FOR REPLACING ITS CAST IRON MAIN INVENTORY?

A. PGW is projecting that it will replace all cast iron main inventory in 40.1 years based on the assumption that base rates will increase 5% every five years (starting in 2026) along with associated increases in DSIC recovery/spending. This assumption does not include the proposed $70 million rate increase.

Q. WILL THE PROJECTED TIME FRAME CHANGE WITH $70 MILLION IN RATE RELIEF?

A. Yes. When $70 million in rate relief is factored into the above assumptions, the associated increases in DSIC recovery/spending levels will result in all cast iron main inventory being replaced in 34.6 years. This reduces the overall replacement time frame by 14%.

---

1 *See*, PGW Long Term Infrastructure Improvement Plan, at 7.
2 *Id.*

Q. PLEASE DESCRIBE THE EFFORTS PGW HAS MADE SINCE ITS LAST RATE INCREASE IN 2017 TO MODERNIZE ITS NATURAL GAS DISTRIBUTION SYSTEM.

A. PGW has continued to make tremendous strides in reducing the amount of cast iron main in its system and replacing it with modern materials such as cathodically protected, coated steel and plastic. In the past seven (7) fiscal years, PGW has successfully removed 210.41 miles of this "at-risk" pipe from inventory. The following graphic shows this.

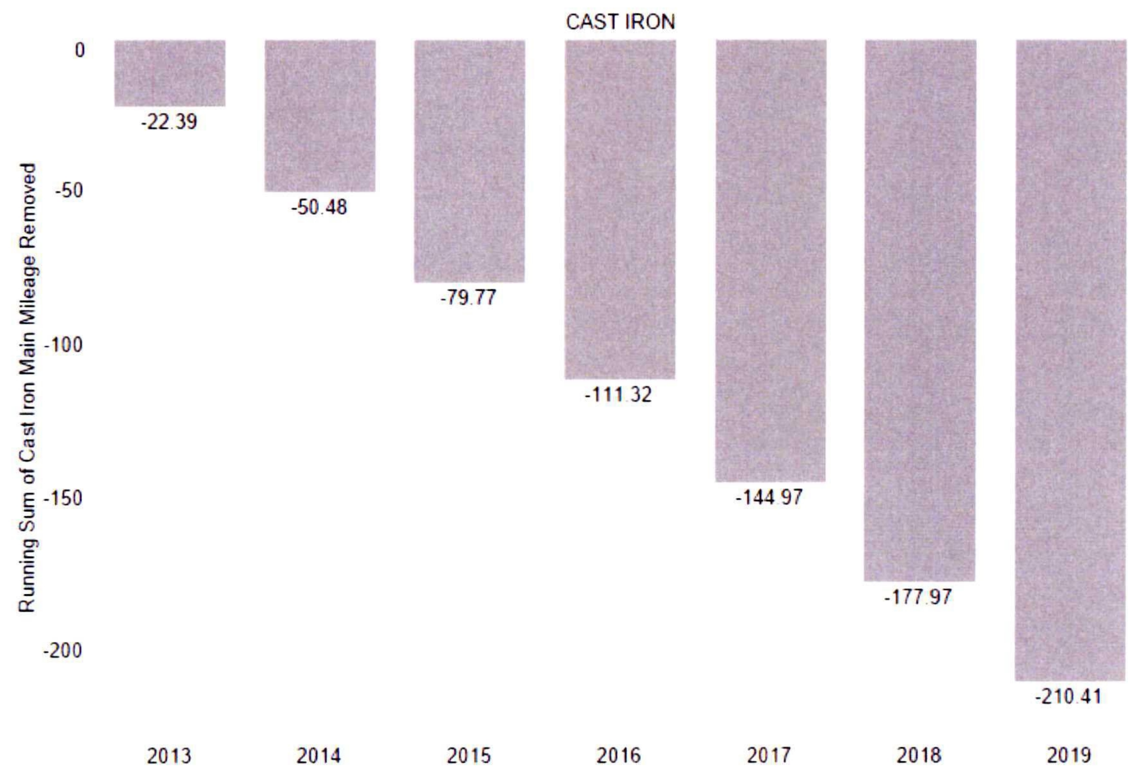

Figure 1 – Cumulative Cast Iron Main Removed from Inventory Fiscal Years 2013 – 2019

The installation of modern materials and subsequent elimination of "at-risk" pipe has been financed with PGW's base rates and the Distribution System Improvement Charge ("DSIC") mechanism, currently set at 7.5% of non-fuel (distribution) revenue. This funding combination has allowed PGW to successfully complete its first Long Term

Infrastructure Improvement Plan ("LTIIP") in FY 2017, removing approximately 3% more cast iron main than planned. Not only did PGW remove more cast iron main than originally planned, it was performed for a cost approximately 15% less than originally estimated.

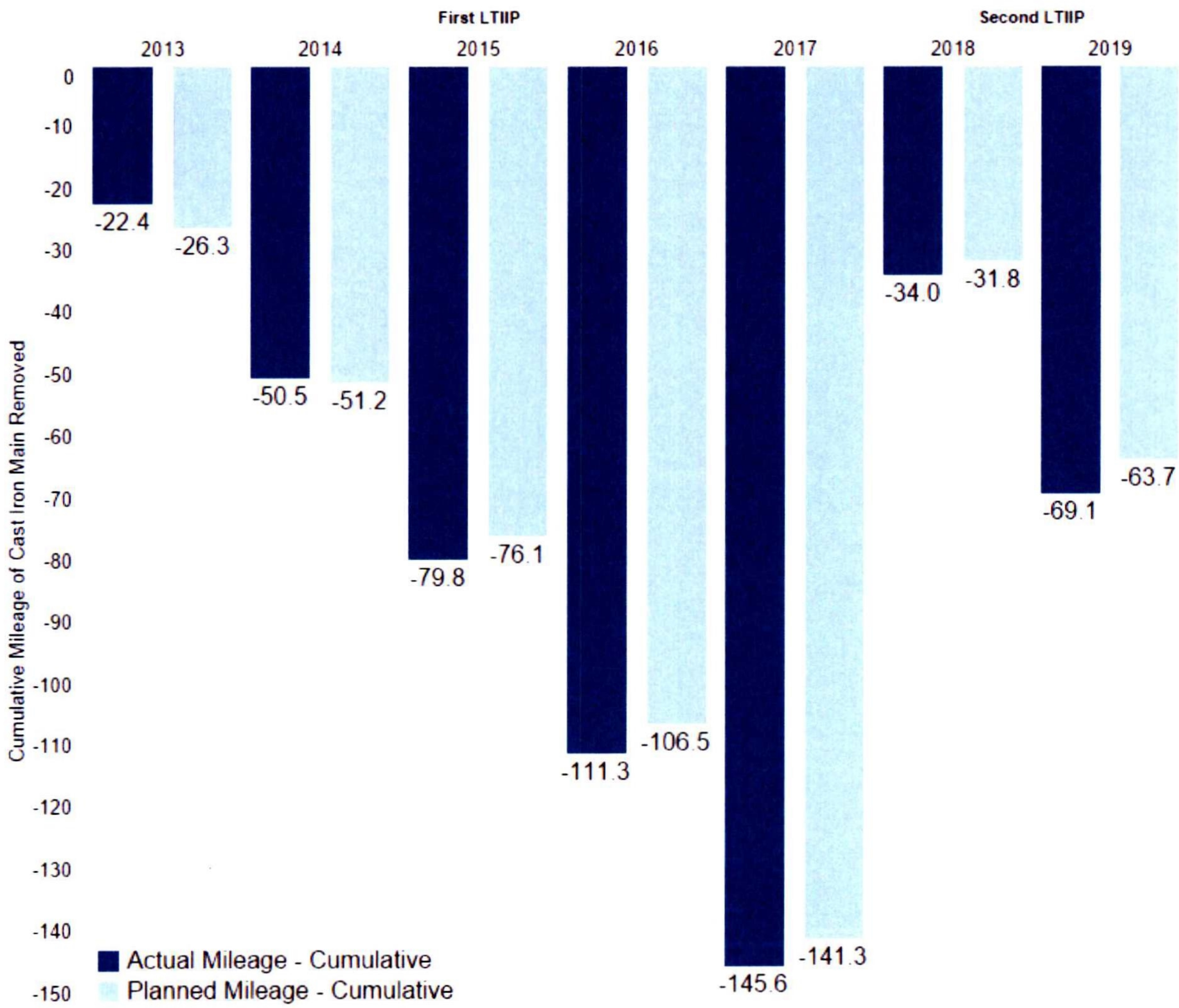

Figure 2 – LTIIP Cast Iron Main Removal Cumulative Results Fiscal Years 2013 - 2019

PGW's second LTIIP is off to a strong start. In the first two years of the five-year plan, PGW has eliminated 8% more cast iron main from inventory than originally planned.

{L0848301.4}

Q. IS THERE ANY EVIDENCE THAT THE ACCELERATED PIPELINE REPLACEMENT PROGRAM HAS IMPROVED SAFETY?

A. Yes, PGW continues to make significant strides towards reducing the number of hazardous leaks encountered on the distribution system. The graph below depicts hazardous leaks repaired on distribution mains from fiscal year 2013 through fiscal year 2019 showing a downward trend.

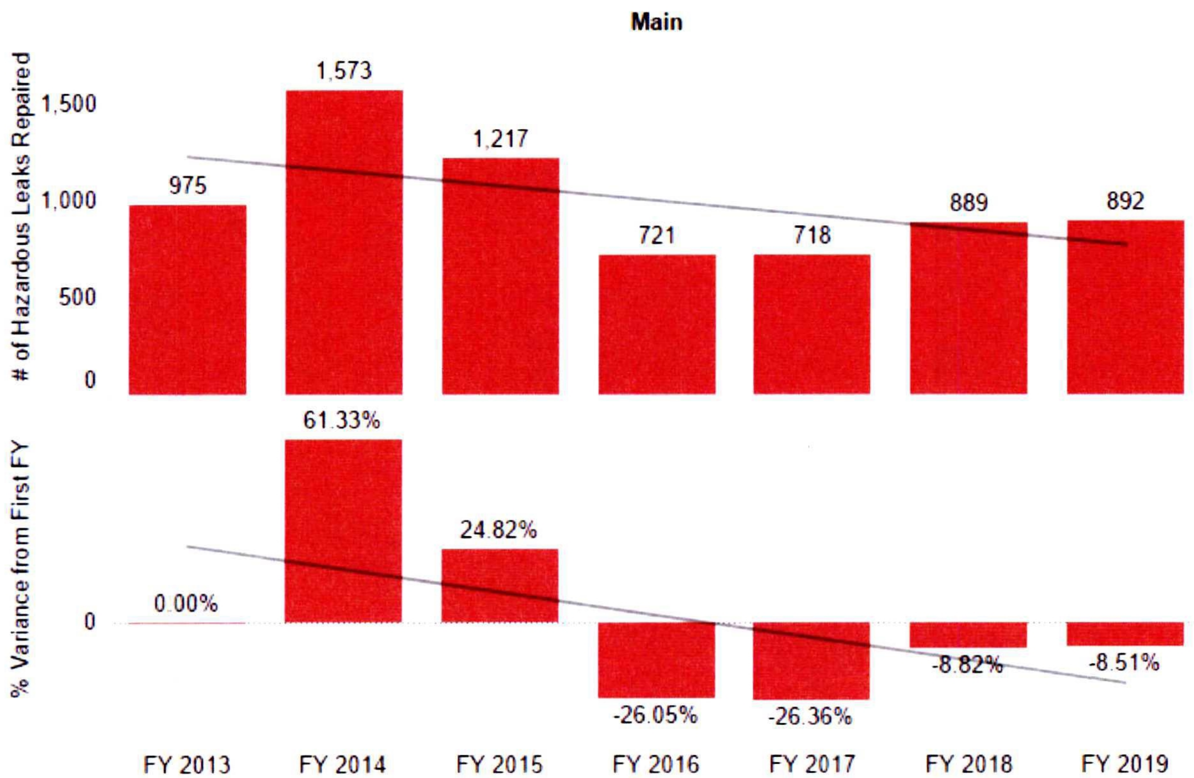

Figure 3 – Hazardous Leaks Repaired on Mains Fiscal Years 2013 – 2019

This continued downward trend is attributed to the prioritized selection, the accelerated pace of PGW's main replacement program and warmer than average winter seasons.

PGW has also made substantial gains in the reduction of hazardous leaks repaired on services. The number of hazardous leaks on service lines has continually declined since FY 2013 by greater than 37%.

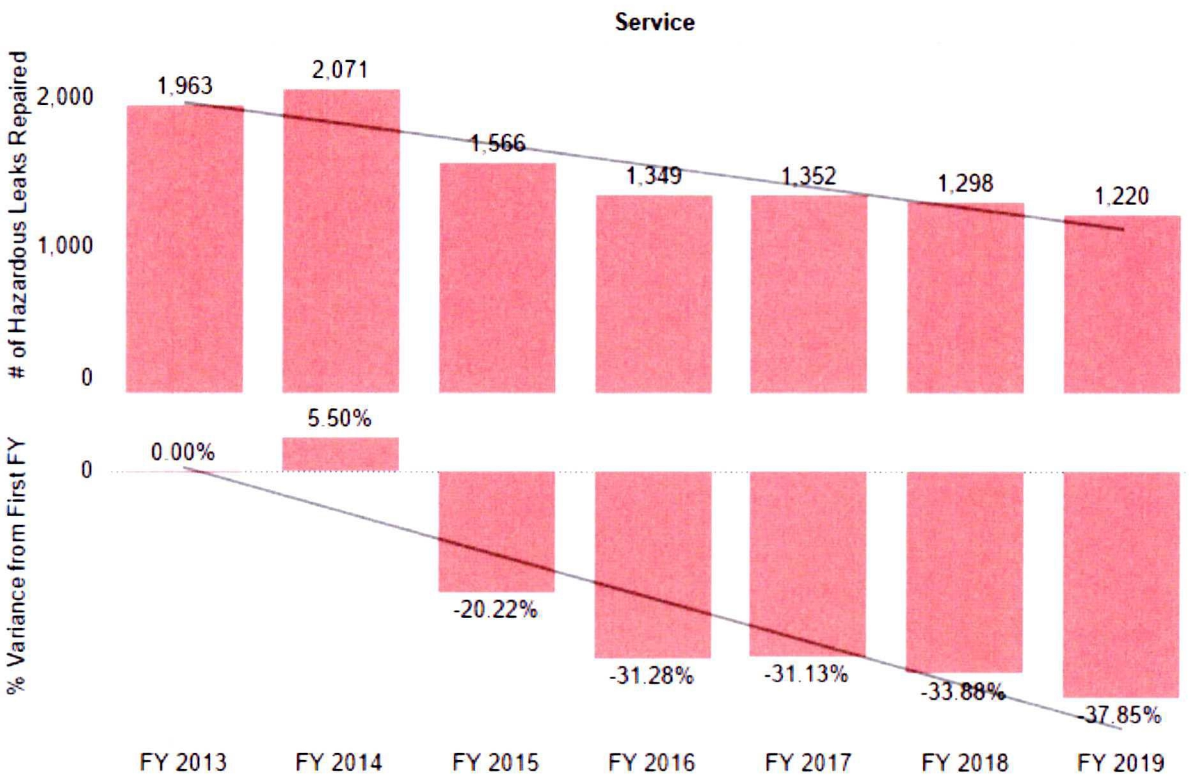

Figure 4 – Hazardous Leaks Repaired on Services Fiscal Years 2013 - 2019

It is PGW's practice to replace all bare steel services encountered on main replacement projects regardless of condition. This proactive replacement of aging steel service lines has aided PGW in continuously reducing the number of hazardous leaks caused by corrosion on service lines.

Q. WHAT STEPS HAS PGW TAKEN TO ENHANCE ITS EFFORTS TO DETECT AND APPROPRIATELY RESPOND TO NATURAL GAS LEAKS ON ITS SYSTEM?

A. PGW continues to make substantial strides in reducing its open leak backlog. PGW has an aggressive leak recheck procedure to ensure these lower grade leaks are monitored appropriately and are safe. This requires site visits on prescribed timelines to monitor gas reading levels and migration patterns. Over the past few fiscal years, PGW has made a concerted effort to repair these open leaks as shown in the graphic below.

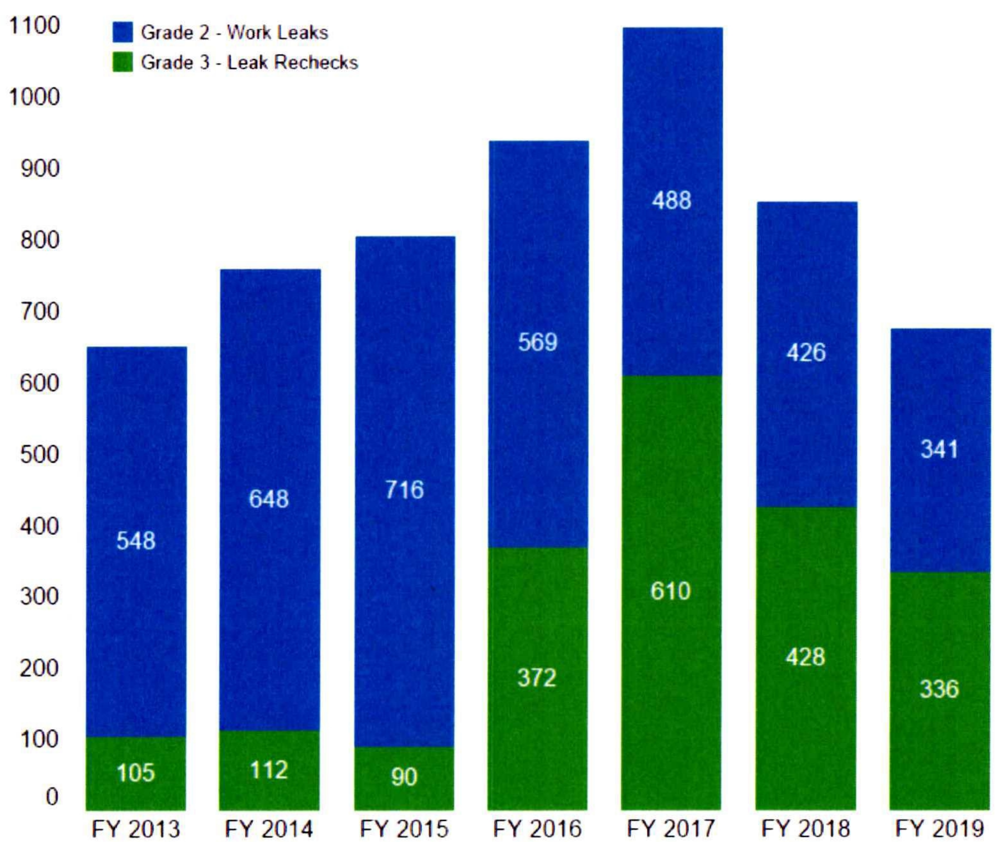

Figure 5 – Grade 2 and 3 leaks repaired Fiscal Years 2013 – 2019

Because of this focused effort to repair these leaks that are typically monitored, the total backlog of open leaks has been reduced by approximately 20% since the start of FY

2013. This eliminates the need to perform site visits to monitor gas levels thus ensuring the safety of our customers and the public and reducing the cost of the recheck program.

B. Efforts To Reduce Costs To Customers

Q. IN PRIOR RATE CASES, PGW HAS DOCUMENTED SEVERAL EFFORTS TO REDUCE COSTS AND OPERATE MORE EFFICIENTLY; PLEASE DESCRIBE AND PROVIDE AN UPDATE REGARDING THE MOST SIGNIFICANT OF THOSE STEPS.

A. PGW has as one of its key missions continually striving to provide safe, adequate and reasonable service to its customers in the most efficient and cost-effective manner possible. As a municipally owned utility with no shareholders, it is well to recall that all such cost savings accrue to the benefit of PGW ratepayers. While by no means an exhaustive list of cost reduction and efficiency steps, I describe some of the most impactful steps below.

1. Employee Benefit Costs

As I discussed in our prior rate case, perhaps the most significant step PGW has taken in the last several years to reduce costs was to revise its medical and dental benefits plans to become self-insured. PGW's Self Insurance Plan means that PGW pays the eligible health care and dental costs of its eligible union and non-union employees up to specified levels. To minimize the risks associated with such self-insurance, PGW has put in place "stop loss" insurance that covers expenditures when costs exceed designated levels. These self-insurance efforts have been able to significantly reduce PGW's health insurance premium costs for employees. In the eight years (FY 2012- FY 2019) that PGW's Self Insurance Plan for health care has been in effect, PGW has reduced its health insurance (both medical and dental insurance) costs by an estimated $68.7 million (See, Exhibit DAM-1) compared to the projected cost if PGW had remained fully insured, or about $9 million annually. This estimate was calculated by comparing the total "Actual Self Insured" cost that PGW incurs each year (for both active and retired employees) with the estimated amount (using the average of three different health cost indices) that PGW would have spent on health insurance if it were not self-insured.

Q. IN PGW'S LAST RATE CASE, THE COMPANY AGREED TO BEGIN TO TRACK ITS HEALTH CARE COST EXPENDITURES AND TO PROVIDE THOSE DATA TO THE COMMISSION. DO YOU HAVE DATA THAT RESPONDS TO THAT AGREEMENT?

A. Yes. As noted in the last rate case PGW agreed:

> [s]tarting with Fiscal Year ("FY") 2018, PGW will [provide] a health insurance cash expense schedule for each fiscal year which shows cash payments for health insurance, claims and administrative expenses and cash received for employee contributions. PGW will present this tracking in its next base rate case filing. The tracking schedule will provide this information for both active and retired employees separately.[3]

The attached Exhibit DAM-2 shows the information that PGW agreed to track. The amounts shown there are inclusive of all cash payments for claims and administrative expenses. A separate line shows employee contributions. All data is shown on an "active" and "retired" basis. Note that Blue Cross and Blue Shield (listed on the schedule) are the insurers of the Medicare Supplement Policies, which are still fully insured. Keystone PA and Amerihealth (listed on the schedule) are third-party administrators that adjudicate and process the claims, which are then paid by PGW.

Q. HAS PGW TAKEN ANY STEPS TO ATTEMPT TO CONTROL POST-RETIREMENT BENEFITS?

A. Yes. As I reported in the last base rate case, starting in 2011, retirement benefits for new employees do not include lifetime health insurance. Instead, upon retirement, those

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3 *PaPUC v PGW*, Docket No. R-2017-2586783, Joint Petition for Partial Settlement at par. 13, approved by the PaPUC in November 2017.

employees receive health insurance for five (5) years after their retirement date. The Plan was amended to change post-retirement healthcare coverage from lifetime to five (5) years for union employees hired after May 21, 2011, and non-union employees hired after December 21, 2011.

Q. HAS THIS CHANGE HAD AN EFFECT ON THE NUMBER OF PGW EMPLOYEES WHO WILL RECEIVE LIFETIME HEALTH BENEFITS WHEN THEY RETIRE?

A. Yes, the number of active employees who will receive lifetime health benefits upon their retirement has been greatly reduced. Currently, just 47% of PGW's active employees are eligible for lifetime health benefits upon retirement (down from 58% at the end of 2017). In 2011, all PGW employees were eligible for this benefit. This has had, and will continue to have a significant effect on benefit payouts. PGW's actuarial consultant has projected that savings from this and other plan changes for medical, dental, prescription, administrative expenses, life insurance, and taxes will reduce its post-retirement benefits obligation to retirees by $52.7 million compared to if all the post-2011 hires received lifetime medical benefits.

Q. HAVE THERE BEEN ANY CHANGES IN PGW'S PENSION PLAN FOR UNION AND NON-UNION EMPLOYEES IN AN EFFORT TO CONTROL COSTS?

A. Yes. PGW's non-contributory defined benefit plan is no longer available to union employees hired on or after May 22, 2011 or non-union employees hired after December 21, 2011. As an alternative to the non-contributory defined benefit plan, new hires have two options:

1) A defined contribution 401(a) plan with the following features:
   a. PGW contributes 5.5% of an employee's applicable compensation;
   b. The employee cannot make additional contributions;
   c. The employee directs the investment of funds; and
   d. The account is fully vested at all times.

2) A contributory defined benefit plan with all of the same features as the non-contributory defined benefit plan except that the employee is required to contribute 6% of the employee's applicable compensation.

Because most new employees choose option 1 (defined contribution), the cost to PGW of the pension benefit has been significantly reduced. PGW's actuarial consultants have calculated that PGW has saved \$4.5 million since its inception in 2011 and the present value of the savings over the next ten years is \$19.2 million, for a combined total of \$23.7 million.

2. **Prepaid Gas Arrangements**

Q. HAS PGW ENGAGED IN ANY EFFORTS TO REDUCE NATURAL GAS COSTS CHARGED TO SALES CUSTOMERS?

A. Yes. PGW has taken advantage of provisions in the Internal Revenue Code that permits municipal gas companies to use tax exempt bond financed prepaid gas purchase arrangements to obtain significant discounts on those purchases, the savings from which are passed on to PGW sales customers.

Q. WHAT IS A PREPAID GAS ARRANGEMENT?

A. Prepaid gas arrangements are agreements in which PGW has agreed to purchase gas from a gas supplier for (typically) 25 to 30 years. (PGW does not pay for the entire 25 to 30 years of purchases up front but receives a monthly invoice to pay for this gas). The natural gas is purchased from a gas supplier, through a third party municipal authority. The authority issues a tax-free long-term bond and uses the proceeds to "prepay" for the natural gas it will purchase on behalf of various municipal gas utilities, including PGW. The gas supplier sells the natural gas to the municipal authority (which is then, in turn sold to PGW) at a discount from index in recognition of the fact that the supplier is able to invest the prepayment proceeds at taxable rates. In order to share some of this investment income, the supplier provides PGW with natural gas at significant discounts from a market index price. The size of the discount is determined based on the spread between non-taxable bonds and taxable investments. As noted, the gas will still be purchased on index less the discount.

Q. HOW MANY SUCH ARRANGEMENTS HAS PGW ENTERED INTO?

A. PGW is currently involved in five (6) arrangements, and is evaluating the possibly of entering into more.

Q. HOW MUCH OF A DISCOUNT DOES THE PHILADELPHIA GAS WORKS RECEIVE BY ENTERING THESE ARRANGEMENTS?

A. The discount depends on financial market conditions at the time the arrangement is entered into. The targeted discounts were set by the companies managing the arrangement (and PGW is informed of the level of discount before it enters into the arrangement). The discount from index currently averages approximately thirty cents.

Q. HOW DOES THIS IMPACT PGW'S RATEPAYERS?

A. With this discount, PGW can purchase gas at a lower price and the cost savings are passed along to the ratepayer via the GCR.

Q. HOW MUCH IS PGW PROJECTING RATEPAYERS WILL SAVE EACH YEAR FROM THESE PREPAID GAS PURCHASE ARRANGEMENTS?

A. For FY 2020, PGW will save approximately $2.3 Million dollars for gas sales customers as a result of prepaid gas purchase arrangements. PGW is predicting that gas sales customers will save approximately $2.9Million in fiscal year 2021 from the five prepaid deals.

Q. HOW MUCH OF PGW'S GAS SUPPLY WILL BE PURCHASED VIA PREPAID GAS ARRANGEMENTS?

A. Currently, PGW is purchasing approximately 20% of its supply from prepaid gas arrangements.

C. Improving Customer Service

Q. PLEASE DESCRIBE SOME OF THE EFFORTS IN WHICH PGW HAS ENGAGED TO IMPROVE CUSTOMER SERVICE.

A. Since the last rate case, PGW has led various efforts to improve overall customer satisfaction. With the assistance of customer surveys, PGW has been able to implement various initiatives to focus on improving first time resolution of consumer complaints, grade of service, and abandon rate.[4] For instance, by focusing on right sizing staffing levels of PGW's call center, since FY2017, PGW has been able to improve its grade of service by over 3% by going from 87% to ninety percent 90%. Also, during the same time period, PGW has been able to reduce its average abandonment rate by over 40% by reducing it from 9% to 5% and first time resolution scores improved by over 2% by going from 85% to 87%. During this period, PGW implemented new customer service representative coaching strategies to improve the performance of staff in the areas of call abandonment and first time resolution.

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[4] 1. First Time Resolution – the percentage of customer interactions in which the reason or purpose of the customer's initial contact was resolved in one contact.

2. Grade of Service – the percentage of calls answered within a certain time frame. PGW's grade of service is the percentage of calls answered within thirty seconds. The industry standard at the moment is 80% within 30 seconds.

3. Abandon Rate – the percentage of total customer calls abandoned by customers. PGW's performance standard is having an abandon rate of total calls of five percent or less.

Q. ARE THERE ANY NEW OPTIONS OR IMPROVEMENTS FOR CUSTOMERS DESIRING TO PAY THEIR BILL OR OBTAIN INFORMATION ABOUT THEIR ACCOUNT?

A. Yes. For instance, in the summer of 2019, PGW launched Retail Cash. Retail Cash allows PGW cash only/underbanked customers to make payments at any CVS, 7-11, Family Dollar, Dollar General, or Speedway free of charge. PGW believes that providing the Retail Cash option free of charge is not only economically affordable, but it is also more convenient and provides more accessible payment options for cash only/underbanked customers, therefore, reducing the effort needed to conduct business with PGW. Also, PGW has made improvements to both the Interactive Voice Response ("IVR") and Web for customers who wish to conduct business via those respective mediums. The improvements for both IVR and Web were directly related to upgrading and enhancing current functionality to improve the customer experience when conducting business on the IVR and Web. Improvement in self-service options for its customers, has led to improvement in overall customer satisfaction.

Another initiative that PGW has undertaken to improve overall customer satisfaction since the last rate case has been improving the operations of its six (6) customer service centers. In FY2019, PGW performed an evaluation of the existing footprint of the customer service centers. The evaluation concluded that one of the customer service center should be closed which would allow resources to be reallocated to the remaining five (5) customer service centers. This resource reallocation has allowed PGW to provide weekend hours at certain customer service centers during peak periods and increase staffing at customer centers that experience heavier traffic. Overall, PGW has seen improvements in customer wait times and overall customer satisfaction due to the changes.

Further, in 2018, PGW voluntarily implemented a tool that allows customers to apply for its Customer Responsibility Program ("CRP") online. The software tool provides customers with an alternative option to the traditional mail and in-person application methods, and allows customers to securely complete the application process. The process includes uploading supporting documentation through the "My Account" option on PGW's website. This tool also provides customers with the ability to check the status of their application online, and receive future correspondence regarding their CRP plan electronically, if they elect to do so.

PGW has also undertaken a number of new projects designed to modernize the tools available to assist customers understand their bills and usage. For example, PGW is in the process of re-designing its bill. PGW expects the re-design to present an updated bill appearance that will utilize color images and ads, and provide more easily understood usage charts, and enhanced bill messaging opportunities. Further, PGW is in the process of updating its existing "My Account" with a solution that will provide customers with ease of use, an updated appearance, and the ability to view multiple properties.

Q. WHAT OTHER PGW PROJECTS WILL IMPROVE CUSTOMER SERVICE?

PGW recently issued a Request for Proposals for the replacement of its Customer Information System ("CIS"). The new CIS will enable PGW to take advantage of new, customer-focused technologies, such as the presentation of improved usage analyses. The new CIS is a technological transformation that will provide PGW with the ability to reduce manual processes and design more effective interactions with customers. It is currently scheduled to be implemented beginning in summer 2020 with a go live target of approximately mid to late 2022.[5]

Also, in 2019, PGW created an online Customer Focus Group platform. Other utilities have found advisory panels to be useful tools for looking at utility updates and communications from the customer perspective and receiving feedback quickly when implementing changes. PGW will use the platform as a cost-effective method to receive real-time feedback.

PGW believes that utilizing customer surveys and focus groups, improving self-service options, and evaluating and improving various business process within Customer Affairs has ultimately improved customer satisfaction. In fact, since the last rate case, overall customer satisfaction has improved by over 2% increasing from 83% to 85%. Not being satisfied with the results experienced over the last couple of years in the improvement of customer satisfaction scores, PGW continues to strive for improvement in its people, processes, and technology.

Q. IS THERE ANY INDEPENDENT EVIDENCE THAT PGW'S CUSTOMER SERVICE IS IMPROVING IN THE VIEW OF ITS CUSTOMERS?

A. Yes. Since the last filing, PGW has improved its overall J.D. Power customer satisfaction score by 66 points. In 2019, PGW has moved 15 spots to number 69 out of 84 natural gas brands in J.D. Powers' annual natural gas Customer Satisfaction ranking. PGW is also now 9th place out of the 12 East Large brands in the study; in 2016 PGW was 12 out of 12.

[5] It should be noted that, based on the current timeline, PGW will be required to cease implementing new system enhancements to the current CIS system by September, 2020 and refrain from making any such system changes until the new system is installed

Q. PLEASE DESCRIBE SOME OF THE AREAS IN WHICH PGW'S RATINGS HAVE IMPROVED?

PGW's most significant areas of improved satisfaction were in Corporate Citizenship, Communications, Price, and Billing & Payment. Since the last rate case filing, PGW's Corporate Citizenship score improved by 87 points, Communications improved by 83 points, Price improved by 100 points, and Billing and Payment increased by 51 points. In addition, both Corporate Citizenship and Communication now rank in the 3rd quartile. J.D. Power national overall rank comparisons for 2016 vs. 2019 are set forth below:

PGW National Rank Score Improvement			
Factor	2016 (82 Brands)	2019 (84 Brands)	(+)
Corporate Citizenship	77^{th}	55^{th}	+22
Communications	76^{th}	52^{nd}	+24
Price	82^{nd}	67^{th}	+15
Billing & Payment	74^{th}	63^{rd}	+11

Interestingly, all of these areas were previously noted as areas in which it would be challenging to make significant progress in customer perception. This is because of various factors such as relative price, the very high poverty levels in Philadelphia, the fact that PGW has a higher concentration of rental customers than comparable investor-owned utilities (rental customers show lower satisfaction levels), and PGW's inability to use shareholder dollars to make charitable donations, scholarship contributions and sponsorships (which tend to improve customer perception of the utility). As a municipal utility, PGW has no ability to fund such activities through shareholder dollars. Similarly, PGW's communications and advertising spending is restricted to safety messages, promotion of low-income programs, other customer programs, and new natural gas sales and conversion. PGW is not capable of engaging in shareholder financed corporate citizenship campaigns.

Nonetheless, PGW has shown improvement in customer satisfaction. We attribute that to our relentless attempts to improve the customer experience for our customers while, at the same time, continuing to deliver safe and reliable natural gas.

III. PROPOSED TARIFF REVISIONS

Q. WHAT REVISIONS TO PGW'S GAS SERVICE TARIFF ARE BEING PROPOSED IN THIS CASE?

A. A complete list of tariff modifications can be found in the List of Changes Made by this Tariff Supplement section in Proposed Tariff Supplement No. 128 to PGW Gas Service Tariff – Pa P.U.C. No. 2 provided in Exhibit DAM-3. The proposed effective date of the tariff changes is April 28, 2020. The proposed rate schedule changes are discussed in witness Dybalski's testimony (PGW St. No. 6). Apart from the proposed rate schedule changes, PGW is proposing: (1) the continuation of the Technology and Economic Development (TED) Rider beyond the initial three-year pilot period; (2) modifications to the Company's Micro-Combined Heat and Power (CHP) Incentive Program to incentivize customers to install micro-CHP equipment of various sizes up to 50 kW; and (3) language to clarify that the Company's Back-Up Service – Rate BUS applies in any instance in which an applicant is seeking to obtain firm gas service to run any type of operable back-up, standby or emergency, electric or, heat generation equipment. The aforementioned proposed tariff changes are discussed in detail by PGW witness Teme (PGW St. No. 8). In addition, I am proposing several modifications to PGW's Gas Service Tariff related to a supplier's balancing limits and charges, as discussed below.

Q. DO YOU HAVE ANY CONCERNS WITH THE SUPPLIER BALANCING PROVISIONS IN PGW'S CURRENT GAS SERVICE TARIFF?

A. Yes. I am concerned with Section 6 of PGW's Gas Service Tariff, related to a Supplier's balancing limits and charges.

Q. WHAT IS YOUR CONCERN?

A. Section 6(a) – (d) currently provides:

Daily balancing, and the reconciliation of end-of-month imbalances, shall be governed by the definitions, limits and charges set forth below:

(a) Daily Receipt Quantity. The supplier's confirmed pipeline nomination quantity, adjusted for unaccounted for Gas, for the Gas day.

(b) Daily Usage Quantity. Gas used by the Rate IT Customer(s) in a supply pool during the 24-hour Gas day as recorded by the Company's meter(s) at the Rate IT Customer location(s).

(c) Allowable Daily Variation. The daily usage quantity must be within plus or minus ten percent (+/-10%) of the daily receipt quantity.

(d) Daily Imbalance Surcharge. Supplier shall be charged $0.50 for each Dth outside the applicable allowable daily variation[.]

Despite the daily imbalance surcharge, PGW has experienced situations in which suppliers are not meeting or significantly over delivering their allowable daily variance. This situation creates a huge problem for PGW, in that it prevents PGW from being able to balance its load effectively.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend modifying Section 6(d) of PGW's Gas Service Tariff to increase the surcharge for suppliers whose daily usage quantity is greater than plus or minus one hundred percent. Specifically, I recommend adding the following language to Section 6(d), highlighted below:

Daily Imbalance Surcharge. The supplier will be charged $0.50 for each Dth outside the applicable allowable daily variation. If the variation is greater than plus or minus one hundred percent (+/- 100%) in (c) directly above, the Supplier shall be charged $2.00 for each Dth outside of the +/- 100% band.

Q. IS THIS PROPOSAL REASONABLE AND IN THE PUBLIC INTEREST?

A. Yes, increasing the surcharge as recommended above should give suppliers more of an incentive to meet the allowable daily variation and will, certainly, provide an incentive for suppliers to refrain from over delivering altogether. Thus, it will enable PGW to balance its load requirement.

Q. WHAT REVISIONS TO PGW'S SUPPLIER TARIFF ARE BEING PROPOSED IN THIS CASE?

A. A complete list of tariff modifications can be found in the List of Changes Made by this Tariff Supplement section in Proposed Tariff Supplement No. 85 to PGW Gas Supplier Tariff – Pa P.U.C. No. 1 provided in Exhibit DAM-4. The proposed effective date of the tariff changes is April 28, 2020.

Q. DO YOU HAVE ANY CONCERNS WITH PGW'S CURRENT GAS SUPPLIER TARIFF?

A. Yes. I am concerned with the provisions of PGW's Supplier Tariff related to: 1) supplier obligations; and 2) supplier pool balance cash out/in requirements.

Q. WHAT IS YOUR CONCERN WITH SUPPLIER OBLIGATIONS UNDER PGW'S CURRENT SUPPLIER TARIFF?

A. Under Section 7.2 of PGW's current Supplier Tariff, Suppliers are obligated to:

> accept a release, assignment or transfer on a recallable basis of a pro rata share of Company's applicable interstate pipeline firm transportation at the applicable contract rate, or if authorized by Company, obtain firm pipeline transportation capacity assignable to the Company for delivery of gas supply to delivery point(s) determined by Company in an amount sufficient to meet the peak requirements of Firm Transportation customers being served with this capacity.

Under this Tariff provision, capacity is assigned to the suppliers through the pipelines' electronic bulletin boards and reservation charges are collected by the pipelines and PGW then receives a credit on its bill. However, when the suppliers fail to obtain the capacity for several days, PGW ends up paying for capacity it is unable to use and is unable to recover the cost. Under this tariff provision, PGW would be able to recover the cost of the released capacity from the supplier.

Q. WHAT IS YOUR RECOMMENDATION?

A. I recommend modifying Section 7.2 so as to require suppliers to pick up released capacity before the start of each month and to enable PGW to bill the supplier directly for the capacity plus a penalty charge if the supplier fails to do so. Specifically, I propose modifying Section 7.2 to provide as follows:

> **Suppliers are required to accept released capacity through the pipeline electronic bulletin board before the beginning of each month. If a Supplier fails to do so, PGW reserves the right to bill the Supplier directly for the capacity plus a penalty charge ($50 per day per release).**

Q. IS THIS RECOMMENDATION REASONABLE AND IN THE PUBLIC INTEREST?

A. Yes. I've explained above why I believe this proposal is reasonable and appropriate.

Q. WHAT IS YOUR CONCERN WITH SUPPLIER POOL BALANCE CASH IN/OUT REQUIREMENTS?

A. I am concerned that PGW's current Supplier Tariff contains insufficient provisions related to a supplier's obligations to rectify its pool balance when a supplier leaves the market. Specifically, the current Tariff does not provide any guidance as to the price that is to be charged for the purchase of gas necessary to rectify the pool balance. This situation creates uncertainty for both PGW and suppliers when a supplier leaves the market and the supplier owes PGW gas, or vice versa.

Q. WHAT DO YOU RECOMMEND?

A. I recommend adding a provision to PGW's Supplier Tariff, clarifying that the appropriate price for the purchase of gas in this situation is the 12-month average of the Daily Market Index Price. Specifically, I recommend adding the following provisions:

> 13.6 Pool Balance Cash out/in
>
> When a Supplier has officially exited the market and no longer serves any customers in the Philadelphia Gas Works Service Area, the Supplier's pool balance must be settled. If the Supplier owes the Company gas, the Supplier must purchase the gas from the Company at a 12-month average of the Daily Market Index Price. If the Company owes the Supplier gas, the Company must purchase the gas from the Supplier at a 12-month average of the Daily Market Index Price.

Q. IS THIS RECOMMENDATION REASONABLE AND IN THE PUBLIC INTEREST?

A. Yes. These provisions will help to ensure that the pool balance will be rectified at a reasonable cost when a supplier leaves the market.

IV. ANNUAL MEETING WITH SUPPLIERS

Q. DOES PGW CURRENTLY HOLD ANNUAL MEETINGS WITH SUPPLIERS ON PGW'S CHOICE PROGRAM?

A. Yes. PGW holds an annual meeting to discuss the operation of PGW's Choice Program per the Settlement at Docket No. R-2009-2139884 regarding PGW's Purchase of Receivables (POR) Program.

Q. DO YOU HAVE ANY CONCERNS WITH THE ANNUAL MEETINGS?

A. Yes.

Q. WHAT DO YOU RECOMMEND?

A. I recommend that the annual meetings be discontinued. There does not appear to be sufficient interest in continuing these annual meetings. Instead, PGW is always willing to meet with suppliers to discuss specific concerns and to work together to find a mutually satisfactory solution.

V. <u>CONCLUSION</u>

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

I, Douglas A. Moser, hereby state that: (1) I am the Executive Vice President and Acting Chief Operating Officer for Philadelphia Gas Works ("PGW"); (2) the facts set forth in my testimony 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).

February 28, 2020
Dated

Douglas A. Moser
Executive Vice President, Acting Chief Financial Officer
Philadelphia Gas Works

Exhibit DAM-1

Brown & Brown Consulting

November 27, 2019

Mr. Gregory Stunder
Philadelphia Gas Works
800 W. Montgomery Avenue
Philadelphia, PA 19122

Re: Philadelphia Gas Works Healthcare Plan

Dear Greg:

We analyzed the cost savings that PGW realized over the period 2012 through 2019 due to the changes it made to its healthcare plan. Effective September 1, 2011, the plan went from fully insured to self-funded with respect to non-Medicare retirees, and Effective January 1, 2012, PGW implemented an Employer Group Waiver Plan and Wrap Plan for Medicare retirees. These changes generated an estimated savings over the fiscal period 2012 through 2019 of $68,698,509.

This savings equals the difference between the projected fully insured premiums over the period less the actual healthcare costs during the period. We estimated the fully insured premiums based on the following assumptions and methodology:

- We estimated the annual healthcare trend rates with respect to self-funded benefits by taking the average of the trend rate projections from the KFF Employer Health Benefits Survey and the Milliman Medical Index.
- For the fully insured Medicare Supplement trend rates, we used the actual increase in annual premium rates.
- In determining the projected savings, we projected the 2011 fully insured cost based on the above projection trend rates and adjusted the projection for the average change in plan subscribers over the period.

The attached exhibits provide additional details regarding the projected savings.

The above results have been conducted in accordance with generally accepted actuarial principles and practice. The undersigned credentialed actuary of Brown & Brown Consulting meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained in this report. There is no relationship between the Plan Sponsor and Brown & Brown Consulting that impacts our objectivity.

Sincerely,

Curt Evans, FSA
Senior Consulting Actuary

cc: Bill Ambrose
Rob Heller
Todd Hons

PHILADELPHIA GAS WORKS HEALTHCARE PLAN: SELF-FUNDED COST SAVINGS ANALYSIS

HISTORICAL INFORMATION

Actual premium	2008	34,225,765		
Actual premium	2009	37,061,279	2,835,514	8.28%
Actual premium	2010	42,274,524	5,213,245	14.07%
Actual premium	2011	46,249,790	3,975,266	9.40%
Actual self insured	2012	44,343,201	(1,906,589)	-4.12%
Actual self insured	2013	42,787,010	(1,556,191)	-3.51%
Actual self insured	2014	46,483,298	3,696,287	8.64%
Actual self insured	2015	51,051,486	4,568,188	9.83%
Actual self insured	2016	53,368,113	2,316,627	4.54%
Actual self insured	2017	48,669,851	(4,698,262)	-8.80%
Actual self insured	2018	49,195,440	525,589	1.08%
Actual self insured	2019	49,498,622	303,182	0.62%
		385,397,020		
Annual average 2012 to 2019		48,174,628		
	2011	(46,249,790)		
		1,924,837		

Estimated savings using average trend rates Kaiser/HRET Survey and Milliman Medical Index

Cost increase %			Proj'd cost	Enrollees Pre-65	Post-65	Cum Incremental Pre-65	Post-65	Cum % Pre-65	Cum % Post-65	Proj'd Cost plus Enrollment Incr
Actual premium	2011		46,249,790	2272	1320					
	2012	4.9%	48,527,120	8.5	-11.25	8.50	-11.25	0.4%	-0.9%	48,649,156
	2013	4.9%	50,888,914	8.5	-11.25	17.00	-22.50	0.7%	-1.7%	51,148,423
	2014	3.7%	52,773,619	8.5	-11.25	25.50	-33.75	1.1%	-2.6%	53,182,832
	2015	4.7%	55,261,180	8.5	-11.25	34.00	-45.00	1.5%	-3.4%	55,840,242
	2016	3.6%	57,260,635	8.5	-11.25	42.50	-56.25	1.9%	-4.3%	58,020,659
	2017	3.7%	59,367,328	8.5	-11.25	51.00	-67.50	2.2%	-5.1%	60,325,362
	2018	3.1%	61,208,809	8.5	-11.25	59.50	-78.75	2.6%	-6.0%	62,376,160
	2019	3.2%	63,158,425	8.5	-11.25	68.00	-90.00	3.0%	-6.8%	64,552,695
			448,446,030	2340	1230					454,095,529

448,446,030		454,095,529
(385,397,020)		(385,397,020)
63,049,010	Estimated Savings	68,698,509

Notes:
Approximately 10% of plan benefits are provided to retirees over age 65 through a fully-insured Medicare Supplemental Plan
The annual trend rate for the Medicare Supplement Plan is 0.45%.
Trend analysis is an average from KFF Employer Health Benefits Survey, 2018-2019 and Milliman Medical Index. See attached for details.

PHILADELPHIA GAS WORKS HEALTHCARE PLAN: SELF-FUNDED COST SAVINGS ANALYSIS

HISTORICAL INFORMATION

Actual premium	2008	34,225,765		
Actual premium	2009	37,061,279	2,835,514	8.28%
Actual premium	2010	42,274,524	5,213,245	14.07%
Actual premium	2011	46,249,790	3,975,266	9.40%
Actual self insured	2012	44,343,201	(1,906,589)	-4.12%
Actual self insured	2013	42,787,010	(1,556,191)	-3.51%
Actual self insured	2014	46,483,298	3,696,287	8.64%
Actual self insured	2015	51,051,486	4,568,188	9.83%
Actual self insured	2016	53,368,113	2,316,627	4.54%
Actual self insured	2017	48,669,851	(4,698,262)	-8.80%
Actual self insured	2018	49,195,440	525,589	1.08%
Actual self insured	2019	49,498,622	303,182	0.62%
		385,397,020		
Annual average 2012 to 2019		48,174,628		
	2011	(46,249,790)		
		1,924,837		

Estimated savings using Kaiser/HRET Survey

Kaiser/HRET cost increase %			Proj'd cost	Enrollees Pre-65	Post-65	Cum Incremental Pre-65	Post-65	Cum % Pre-65	Cum % Post-65	Proj'd Cost plus Enrollment Incr
Actual premium	2011		46,249,790	2272	1320					
	2012	3.6%	47,911,525	8.5	-11.25	8.50	-11.25	0.4%	-0.9%	48,032,013
	2013	4.0%	49,837,048	8.5	-11.25	17.00	-22.50	0.7%	-1.7%	50,091,193
	2014	2.5%	51,084,038	8.5	-11.25	25.50	-33.75	1.1%	-2.6%	51,480,150
	2015	3.7%	52,980,425	8.5	-11.25	34.00	-45.00	1.5%	-3.4%	53,535,588
	2016	3.0%	54,549,378	8.5	-11.25	42.50	-56.25	1.9%	-4.3%	55,273,416
	2017	3.4%	56,427,656	8.5	-11.25	51.00	-67.50	2.2%	-5.1%	57,338,251
	2018	3.5%	58,430,094	8.5	-11.25	59.50	-78.75	2.6%	-6.0%	59,544,451
	2019	4.2%	60,910,029	8.5	-11.25	68.00	-90.00	3.0%	-6.8%	62,254,664
			432,130,193	2340	1230					437,549,726

432,130,193			437,549,726
(385,397,020)			(385,397,020)
46,733,173		Estimated Savings	52,152,706

Notes:
Approximately 10% of plan benefits are provided to retirees over age 65 through a fully-insured Medicare Supplemental Plan
The annual trend rate for the Medicare Supplement Plan is 0.45%.
Trend analysis is per KFF Employer Health Benefits Survey, 2018-2019. See attached for details.

PHILADELPHIA GAS WORKS HEALTHCARE PLAN: SELF-FUNDED COST SAVINGS ANALYSIS

HISTORICAL INFORMATION

Actual premium	2008	34,225,765		
Actual premium	2009	37,061,279	2,835,514	8.28%
Actual premium	2010	42,274,524	5,213,245	14.07%
Actual premium	2011	46,249,790	3,975,266	9.40%
Actual self insured	2012	44,343,201	(1,906,589)	-4.12%
Actual self insured	2013	42,787,010	(1,556,191)	-3.51%
Actual self insured	2014	46,483,298	3,696,287	8.64%
Actual self insured	2015	51,051,486	4,568,188	9.83%
Actual self insured	2016	53,368,113	2,316,627	4.54%
Actual self insured	2017	48,669,851	(4,698,262)	-8.80%
Actual self insured	2018	49,195,440	525,589	1.08%
Actual self insured	2019	49,498,622	303,182	0.62%
		385,397,020		
Annual average 2012 to 2019		48,174,628		
	2011	(46,249,790)		
		1,924,837		

Estimated savings using Milliman

Milman cost increase %			Proj'd cost	Enrollees Pre-65	Post-65	Cum Incremental Pre-65	Post-65	Cum % Pre-65	Cum % Post-65	Proj'd Cost plus Enrollment Incr
Actual premium	2011		46,249,790	2272	1320					
	2012	6.3%	49,142,715	8.50	-11.25	8.50	-11.25	0.4%	-0.9%	49,266,299
	2013	5.7%	51,951,221	8.50	-11.25	17.00	-22.50	0.7%	-1.7%	52,216,147
	2014	4.9%	54,499,428	8.50	-11.25	25.50	-33.75	1.1%	-2.6%	54,922,024
	2015	5.7%	57,614,070	8.50	-11.25	34.00	-45.00	1.5%	-3.4%	58,217,788
	2016	4.3%	60,077,072	8.50	-11.25	42.50	-56.25	1.9%	-4.3%	60,874,479
	2017	3.9%	62,429,089	8.50	-11.25	51.00	-67.50	2.2%	-5.1%	63,436,532
	2018	2.7%	64,086,582	8.50	-11.25	59.50	-78.75	2.6%	-6.0%	65,308,817
	2019	2.1%	65,449,127	8.50	-11.25	68.00	-90.00	3.0%	-6.8%	66,893,966
			465,249,304	2340	1230					471,136,052

465,249,304			471,136,052
(385,397,020)			(385,397,020)
79,852,284		Estimated Savings	85,739,032

Notes:
approximately 10% of plan benefits are provided to retirees over age 65 through a fully-insured Medicare Supplemental Plan
The annual trend rate for the Medicare Supplement Plan is 0.45%.
Trend analysis is per Milliman Medical Index. See attached for details.

PHILADELPHIA GAS WORKS HEALTHCARE PLAN: SELF-FUNDED COST SAVINGS ANALYSIS

Year	Annual Premium		Healthcare Trend Rates				
	Single Coverage	Family Coverage	Single Coverage	Family Coverage	Pre-65*	Post-65	Overall**
2011	5,429	15,073					
2012	5,615	15,745	3.43%	4.46%	3.94%	0.45%	3.59%
2013	5,884	16,351	4.79%	3.85%	4.32%	0.45%	4 02%
2014	6,025	16,834	2.40%	2.95%	2.68%	0.45%	2 50%
2015	6,251	17,545	3 75%	4.22%	3 99%	0.45%	3.71%
2016	6,435	18,142	2 94%	3 40%	3.17%	0.45%	2.96%
2017	6,690	18,764	3 96%	3 43%	3 70%	0 45%	3 44%
2018	6,896	19,616	3 08%	4 54%	3 81%	0.45%	3 55%
2019	7,188	20,576	4 23%	4.89%	4 56%	0.45%	4 24%

SOURCE KFF Employer Health Benefits Survey, 2018-2019, Kaiser/HRET Survey of Employer-Sponsored Health Benefits, 1999-2017

Annual	Healthcare Trend Rates		
Typical Family of Four	Pre-65	Post-65	Blended**
19,393			
20,731	6 90%	0.45%	6.26%
22,037	6.30%	0.45%	5 85%
23,227	5.40%	0.45%	5.02%
24,690	6.30%	0 45%	5.85%
25,851	4 70%	0.45%	4.37%
26,963	4 30%	0.45%	4.00%
27,744	2 90%	0.45%	2.71%
28,386	2 31%	0.45%	2.17%

SOURCE Milliman Medical Index***

* 50% Single Coverage and 50% Family Coverage

** initially, 90% pre-65 and 10% post-65, grading to 92% pre-65 and 8% post-65

*** Milliman Index details·

Family coverage cost is an actuarial analysis of the projected total cost of healthcare for a hypothetical family of four covered under an employer-sponsored PPO plan. It does not include health plan adminsitrative expenses or insurance company profit loads, nor reflect the savings from prescription drug manufacturer rebates. The "typical family of four" consist of a male age 47, a female age 37, a child age 4, and a child under age 1

KFF Employer Health Benefits Survey 2018-2019 Report:
https://www kff org/report-section/ehbs-2019-section-1-cost-of-health-insurance/

Milliman Medical Index Reports·
http·//www.milliman.com/insight/?pfld=2413

Exhibit DAM-2

Philadelphia Gas Works
Budget & Financial Forecasting Department
Health Insurance Monthly Actual
Month Ended: August 2018

	Y-T-D TOTAL	Sep-17	Oct-17	Nov-17	Dec-17	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	Jul-18	Aug-18
ACTIVE EMPLOYEES													
Blue Cross	$0	$0	$20,609	($20,609)	$0	$0	$0	$0	$0	$0	$0	$0	$0
Blue Shield	0	0	23,109	(23,109)	0	0	0	0	0	0	0	0	0
Major Medical	0	0	23,990	(23,990)	0	0	0	0	0	0	0	0	0
Prescription Drugs	5,351,253	406,164	835,439	401,296	52,188	553,780	624,514	112,731	491,063	489,530	167,570	633,288	583,690
Keystone PA	14,837,916	956,745	1,502,571	811,124	1,082,490	1,410,575	1,125,121	953,348	1,251,204	2,142,090	1,187,235	1,069,697	1,345,716
Amerihealth	8,044	103	(174)	726	(51)	506	1,528	3,426	656	795	459	614	(545)
Personal Choice BC	821,344	45,217	42,837	149,836	21,436	67,557	186,020	62,446	23,800	15,231	32,314	101,341	73,311
Basic Dental	102,217	6,568	12,142	7,413	10,669	9,777	1,425	9,075	7,099	8,914	11,352	9,727	8,056
Dental Rider	735,036	63,859	57,243	60,794	61,182	61,182	50,036	80,604	63,300	55,883	57,365	50,644	72,943
Employee Contribution	(473,077)	(44,809)	(36,193)	(36,457)	(46,798)	(36,094)	(35,447)	(44,307)	(35,130)	(51,308)	(44,185)	(35,218)	(27,131)
Health Plan Opt Out	152,631	10,963	10,789	11,436	14,351	11,372	11,851	15,286	11,961	11,995	15,286	12,134	15,208
Stop-Loss Insurance	706,796	51,575	51,397	51,451	51,548	51,372	51,404	58,860	104,781	58,907	58,476	58,638	58,386
Total Active Emp Health Costs	$22,242,159	$1,496,385	$2,543,759	$1,389,911	$1,247,015	$2,130,028	$2,016,453	$1,251,469	$1,918,733	$2,732,037	$1,485,871	$1,900,864	$2,129,634
RETIRED EMPLOYEES													
Blue Cross	$2,248,451	$185,789	$238,335	$138,667	$186,122	$182,164	$188,990	$186,982	$191,354	$184,065	$188,229	$192,348	$185,404
Blue Shield	2,592,773	214,173	239,003	196,240	214,685	209,655	216,881	216,029	219,399	212,002	217,238	222,518	214,949
Major Medical	109,273	9,051	9,100	9,143	9,098	9,021	9,117	9,084	9,179	9,050	9,129	9,222	9,079
Prescription Drugs	10,910,330	696,156	1,640,226	505,312	(120,013)	960,988	833,073	567,118	782,957	1,528,632	579,704	1,220,942	1,715,236
Keystone PA	8,535,000	550,201	1,363,266	441,401	857,432	620,635	916,359	432,929	725,582	753,824	518,576	554,311	800,484
Amerihealth	192,452	31,749	42,863	(835)	13,030	22,394	8,463	8,943	4,259	66,059	(21,835)	2,173	15,190
Personal Choice BC	993,285	86,833	42,176	174,680	103,845	69,725	91,092	58,839	52,618	57,463	88,612	38,147	129,254
PC 65 - Personal Choice 65	217,820	17,095	22,545	0	17,649	0	81,155	30,286	0	0	37,908	0	11,181
Basic Dental	114,198	5,366	5,414	4,026	4,999	4,923	(1,859)	5,708	8,481	6,081	60,021	5,006	6,032
Dental Rider	668,685	60,690	64,111	49,691	60,815	60,815	11,935	63,261	74,933	57,567	29,289	65,444	70,136
Health Plan Opt-Out	69,242	0	0	0	0	67,800	1,442	0	0	0	0	0	0
Retired Employee Contribution	(405,024)	(33,758)	(33,667)	(33,707)	(33,781)	0	(69,006)	64	(68,755)	(34,032)	(34,032)	(32,266)	(32,085)
Stop-Loss Insurance	706,796	51,575	51,397	51,451	51,548	51,372	51,404	58,860	104,781	58,907	58,476	58,638	58,386
Total Retired Emp Health Costs	$26,953,281	$1,874,921	$3,684,769	$1,536,071	$1,365,430	$2,259,493	$2,339,047	$1,638,102	$2,104,787	$2,899,618	$1,731,314	$2,336,482	$3,183,247
Total Health Insurance Costs	$49,195,440	$3,371,306	$6,228,528	$2,925,983	$2,612,445	$4,389,522	$4,355,499	$2,889,571	$4,023,520	$5,631,655	$3,217,185	$4,237,346	$5,312,880

Philadelphia Gas Works
Budget & Financial Forecasting Department
Health Insurance Monthly Actual
Month Ended: August 2019

	Y-T-D TOTAL	Sep-18	Oct-18	Nov-18	Dec-18	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19
ACTIVE EMPLOYEES													
Blue Cross	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Blue Shield	$0	0	0	0	0	0	0	0	0	0	0	0	0
Major Medical	$0	0	0	0	0	0	0	0	0	0	0	0	0
Prescription Drugs	$4,042,572	66,387	556 468	414,973	99,717	421,614	465,925	47,771	417,440	498,753	(62,235)	655,631	460,130
Keystone PA	$16,118,646	1,059,376	1,114 810	1,520,966	1,349 911	1,530,931	1,337,023	959,873	1,391,201	1,257,939	1,368,367	1,335,947	1,892,301
Amerihealth	$7,255	243	38	701	3,081	(2,465)	458	440	1,839	1,239	1,676	926	(921)
Personal Choice BC	$640,449	45,412	74,873	102,020	30,078	49,470	20,372	7,743	11,176	130,400	39,484	36,795	92,628
Basic Dental	$106,968	8,733	9,865	9,321	9,274	6,619	7,297	5,586	16,609	13,285	5,538	5,001	9,841
Dental Rider	$725,267	66,076	62,677	62,677	50,960	52,886	61,309	61,309	65,240	64,076	55,977	50,967	71,112
Employee Contribution	($475,563)	(36,999)	(37,336)	(46,997)	(37,303)	(36,865)	(36,883)	(45,548)	(32,264)	(45,190)	(37,414)	(36,834)	(45,931)
Health Plan Opt Out	$163,244	12,822	12,547	16,592	12,311	12,540	12,135	15,360	12,106	14,985	12,433	13,141	16 272
Stop-Loss Insurance	$750,892	59,799	83,822	120,282	875	59,114	59,875	2,701	123,059	56,946	61,435	60,560	62,424
Total Active Emp Health Costs	**$22,079,730**	**$1,281,849**	**$1,877,765**	**$2,200,535**	**$1,518,903**	**$2,093,844**	**$1,927,510**	**$1,055,235**	**$2,006,407**	**$1,992,433**	**$1,445,261**	**$2,122,133**	**$2,557,855**
RETIRED EMPLOYEES													
Blue Cross	$2,204,928	$184,048	$183,215	$183,748	$182,274	$181,246	$183,643	$182,691	$179,289	$188 624	$187,303	$189,173	$179,673
Blue Shield	$2,711,194	224,987	224,304	224,741	222,893	222,587	227,215	225,759	220,602	232 237	230,708	233,423	221,740
Major Medical	$146,425	10,939	12,234	12,244	12,221	12,203	12,252	12,285	12,199	12,425	12,477	12,558	12,389
Prescription Drugs	$11,944,684	84,762	1,495,087	1,211,418	361,042	1,397,452	1,406,150	420,899	913,335	1,846,461	141,342	1,222,211	1,444,526
Keystone PA	$8,668,045	980,446	785,066	839,003	472,774	573,495	563,170	670,560	662,925	851,065	748,982	578,411	942,148
Amerihealth	$106,791	3,830	3,738	13,027	19,485	(20 101)	1,308	26,592	5,852	(1,440)	21,746	22,071	10,683
Personal Choice BC	$807,808	105,562	45,719	57,998	40,569	102,784	63,297	39,459	107 427	164,621	96,379	70,037	(86,043)
PC 65 - Personal Choice 65	$0	0	0	0	0	0	0	0	0	0	0	0	0
Basic Dental	$44,409	4,230	3,348	3 719	6,447	1,700	3,281	33,089	(26,070)	3 719	3,976	3,097	3,874
Dental Rider	$781,865	60,351	68 682	68 682	62,425	57,903	61 328	61,599	83,764	61,309	72,758	61,791	61,273
Health Plan Opt-Out	$9,369	(750)	0	0	0	0	0	0	0	0	0	0	10,119
Retired Employee Contribution	($352,068)	0	0	0	(28,904)	(116,341)	(29,677)	(29,351)	(29,859)	(29,799)	(29,435)	(29,465)	(29,238)
Stop-Loss Insurance	$345,440	29,785	39,492	58,734	1,446	27,389	28,720	5,097	46,659	23,631	32,448	27,046	24,992
Total Retired Emp Health Costs	**$27,418,892**	**$1,688,190**	**$2,860,884**	**$2,673,313**	**$1,352,672**	**$2,440,317**	**$2,520,686**	**$1,648,680**	**$2,176,122**	**$3,352,853**	**$1,518,684**	**$2,390,355**	**$2,796,136**
Total Health Insurance Costs	**$49,498,622**	**$2,970,039**	**$4,738,649**	**$4,873,848**	**$2,871,575**	**$4,534,160**	**$4,448,196**	**$2,703,915**	**$4,182,529**	**$5,345,286**	**$2,963,945**	**$4,512,488**	**$5,353,991**

Exhibit DAM-3

(See Volume III)

Exhibit DAM-4

(See Volume III)

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

DIRECT TESTIMONY OF

FLORIAN TEME

ON BEHALF OF
PHILADELPHIA GAS WORKS

Docket No. R-2020-3017206

Philadelphia Gas Works

General Rate Increase Request

TOPICS:
Technology and Economic Development Rider
Micro-Combined Heat and Power Incentive Program
Back-Up Service

February 28, 2020

Table of Contents

Page

I. INTRODUCTION

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

A. My name is Florian Teme. My position with PGW is Vice President, Marketing and Sales.

Q. WHAT ARE YOUR JOB RESPONSIBILITIES?

A. In my present position, I am responsible for the direction of all the marketing sales efforts and new business development, while continuing to strengthen business relations and increase customer service initiatives.

Q. PLEASE SUMMARIZE YOUR BACKGROUND AND EXPERIENCE.

A. I have been employed with PGW since August 2003. I became PGW's Vice President, Marketing and Sales in September 2016. Prior to that, I had various positions with PGW: Director, Marketing and Sales (April 2013 – September 2016), Manager, Residential and Commercial Sales, Marketing (March 2012 – April 2013); Manager, Controls and Analytics, Supply Chain (January 2010 – March 2012); Project Manager, Information Services (January 2007 – January 2010); Supply Analyst, Gas Planning (April 2005 – January 2007); and Technical Project Administrator, Marketing (August 2003 – March 2005).

I received my Bachelor of Business Administration (Management Information Systems) from Temple University - Fox School of Business and Management in 2003 and my Master of Business Administration (Business Intelligence, Six Sigma) from Saint Joseph's University - Erivan K. Haub School of Business in 2011.

Q. HAVE YOU EVER PROVIDED TESTIMONY BEFORE THIS COMMISSION?

A. Yes, I have provided testimony in PGW's last base rate case (Docket No. R-2017-2586783) and in PGW's most recent Gas Cost Rate proceeding (Docket No. R-2019-3007636).

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

A. My testimony will explain and provide support for the Company's proposed: (1) Technology and Economic Development ("TED") Rider; (2) Micro-Combined Heat and Power ("Micro-CHP") Incentive Program; and (3) Back-Up Service – Rate BUS.

II. PILOT TECHNOLOGY AND ECONOMIC DEVELOPMENT RIDER

Q. PLEASE EXPLAIN PGW'S PILOT TECHNOLOGY AND ECONOMIC DEVELOPMENT ("TED") RIDER.

A. In its last base rate case the Commission approved PGW's proposal to implement, on a pilot basis, a TED Rider, which would increase access and expand the use of natural gas by giving commercial customers more options to obtain natural gas services, including combined heat and power ("CHP") projects, natural gas vehicles ("NGVs") and fuel cells. As proposed, the TED Rider permits PGW to negotiate the delivery charges, as well as the customer contribution to the development and service of the infrastructure, for firm service non-residential customers on Tariff Rate Schedules for General Service ("Rate GS"), Municipal Service Rate ("Rate MS"), Philadelphia Housing Authority Service ("Rate PHA") and Developmental Natural Gas Vehicle Service ("Rate NGVS-Firm"). PGW's TED Rider can be found at page 155 of PGW's Gas Service Tariff – Pa. P.U.C. No. 2.

Q. WHERE THERE ANY REPORTING REQUIREMENTS IMPOSED BY THE RATE CASE SETTLEMENT REGARDING THE TED RIDER?

A. Yes, the Rate Case Settlement obligated PGW to "report on the economics of the TED Rider" six months before the end of the three-year pilot (Settlement, Paragraph 19). The Settlement also obligated PGW "[i]n the event that PGW files a general base rate case during the three-year TED Rider pilot program following the effective date of rates established in this proceeding, PGW will provide information, as part of its initial filing, showing the *pro forma* rate of return on incremental investment for TED Rider customers as a sub-class in its filed cost of service study)." (*Id*).

Q. CAN YOU PLEASE PROVIDE THE INFORMATION THAT PGW AGREED TO PROVIDE IN THE RATE CASE SETTLEMENT?

A. Certainly. PGW currently has one customer utilizing the TED Rider rate.[1] The economics associated with this customer illustrate how the TED Rider can be beneficial to the TED Rider customer and to PGW as well as its remaining customers. The customer was interested in the TED Rider because it is currently on firm service and was looking for an economical way in which it could reduce its energy bill. The TED Rider prospect of a discounted delivery charge provided the necessary economic incentive to the customer to install combined heat and power (CHP) equipment because the CHP equipment was more costly than the alternative being considered by the customer. The customer's CHP equipment provides both electricity and domestic hot water which is heated from the waste heat that is produced while the CHP equipment generates electricity. The alternative equipment for this customer would have been a natural gas or electric hot water. The electricity generated by the CHP equipment would have

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[1] PGW began providing natural gas service to the customer in September 2019 and the customer has used 4,475 Mcf of natural gas from September 2019 to December 2019.

alternatively been provided by the local electric distribution company and the customer would have had to pay for the generation (to an electric supplier) and the EDC's electric delivery charge. But if the customer had chosen to install natural gas or electric hot water heating equipment, the equipment would have cost less; therefore, the customer needed an incentive to spend more on up-front capital costs. As a result of incenting the customer to install the CHP unit by offering it a discounted gas delivery charge, the total amount of gas delivered to the customer will be larger than it would have been if the customer had not installed the CHP unit. As a result, even at the discounted TED Rate, PGW's margin revenues are greater than they would have been had the customer chosen the alternatives. Additionally, had the customer installed an electric hot water heater, PGW would not have realized any revenue from that energy use. The net result is that the customer reduced its total energy costs significantly, PGW realized sales margins that it would not have realized and PGW's remaining customers will benefit because the realized margins will contribute to the cost of operating the distribution system (100% of the margins from this and any other TED customer will be treated as operating revenue).

Q. WHAT IS PGW PROPOSING WITH RESPECT TO THE TED RIDER?

A. PGW is proposing the continuation of the TED Rider beyond the initial three-year pilot period based on the foregoing and also because it anticipates that it will add one TED customer per year with potential annual margin revenue growth from approximately $90,000 in FY 2021 to $240,000 in FY 2026.

With respect to the *pro forma* rate of return on incremental investment for TED Rider customers as a sub-class, please see PGW Statement No. 5 – Constance E. Heppenstall and accompanying schedules, and PGW's Cost of Service Study.

III. PILOT MICRO-CHP INCENTIVE PROGRAM DETAILS

Q. PLEASE DESCRIBE PGW'S PROPOSED MICRO-CHP INCENTIVE PROGRAM.

A. In its last base rate case, PGW was authorized to initiate a pilot Micro-CHP Incentive Program for small and medium sized commercial properties to incent market development and market acceptance of small targeted fuel-switching projects to increase the ability of these customers to expand natural gas usage. Proposed projects were required to satisfy an economic test (consistent with PGW's line extension provisions set forth in Section 10.1.B of its Gas Service Tariff) that require the anticipated incremental revenue to justify the incentive to be provided to the customer to undertake the project. For projects that qualify, PGW was authorized to offer up to $750 per kW for units between 20 kW and 50 kW and up to $1,000 for any units below 20 kW. Any Micro-CHP incentive awards must satisfy an economic test to justify the incentive. PGW agreed that the economic test that will be utilized by the Company to determine eligibility for participation will include the costs of the incentives. The Micro-CHP Incentive Program is set out on page 155 of PGW's Gas Service Tariff – Pa. P.U.C. No. 2.

Q. CAN YOU PROVIDE ANY RESULTS OF THE MICRO-CHP INCENTIVE PROGRAM TO DATE?

A. PGW has promoted the micro-CHP incentive program to customers, architects, engineers and other interested parties; however, we currently do not have any customers participating in this program. PGW believes that this program should continue as there is interest from smaller commercial customers in utilizing micro-CHP in their businesses.

Q. ARE YOU PROPOSING ANY CHANGES TO THE EXISTING TARIFF?

A. Yes. PGW wants to modify the incentives offered as follows: $1000 per kW installed up to 20 kW; $750 per kW installed greater than 20 kW and less than or equal to 50 kW.

For example if a customer wants to install a 25 kW micro-CHP unit and the economics of the project are justified, the customer would qualify for a total of: (20 kW * $1000)+(5 kW * $750) = $23,750.

Q. PLEASE EXPLAIN WHY YOU ARE PROPOSING THIS CHANGE.

A. This program is intended to incentivize customers to install micro-CHP equipment of various sizes up to 50 kW. We believe that given the non-standard unit sizes for micro-CHP and feedback from potential customers, architects and engineers, it will be helpful to clarify the micro-CHP incentives so that customers will continue to find the incentives worthwhile.

IV. BACK-UP SERVICE – RATE BUS

Q. COULD YOU PROVIDE SOME BACKGROUND WITH RESPECT TO PGW'S BACK-UP SERVICE (RATE BUS)?

A. Yes. In its last base rate case filing, PGW proposed a tariff provision that would permit PGW to negotiate a rate with a customer installing any type of operable back-up or emergency equipment and that, from time to time, would require natural gas from the Company for the customer's operation of that equipment. This service differs from existing services because the customer will not be required to purchase an unlimited amount of gas from PGW. Customers select the back-up level of service that is needed, and pay a negotiated standby (or reservation) charge that collects those costs that PGW incurs to stand ready to serve the customer when it needs natural gas to fuel its stand-by generation equipment imposes on the system. The customer also pay the previously negotiated delivery and commodity charges for the Back-Up Service.

The Rate Case Settlement accepted PGW's filed Rate BUS; PGW agreed that as part of its annual GCR filings, PGW agreed to provide data on the number of customers, sales levels and costs incurred for BUS customers. PGW also agreed to provide an analysis of the BUS rate and provide a recommendation as to whether it should continue.[2]

Q. CAN YOU PROVIDE PGW'S ANALYSIS OF THE BUS RATE AND STATE WHETHER, IN PGW'S OPINION, IT SHOULD CONTINUE?

A. PGW has been successfully offering the BUS Rate to its customers and below you will find the updated customer and revenue analysis. PGW believes that there is interest in the program and that this program should continue because it anticipates that it will add ten BUS customers per year with potential annual margin revenue growth from approximately $130,000 in FY 2021 to $330,000 in FY 2026.[3]

Customer	BUS Meter Charge, Monthly	Meter Charge Billed to 12/31/2019
Customer 1	$100	$1,500
Customer 2	$151	$2,114
Customer 3	$347	$4,511
Customer 4	$565	$7,345
Customer 5	$565	$6,215
Customer 6	$292	$2,920
Customer 7	$112	$896
Customer 8	$100	$600
Customer 9	$1,712	$8,560
Customer 10	$100	$300
Customer 11	$100	$300
Customer 12	$100	$200
Customer 13	$180	$360
Customer 14	$104	$104

[2] PGW agreed to provide this analysis "[i]n two years (or PGW's next base rate case, whichever is sooner). Settlement, ¶21. PGW is providing this analysis now for administrative efficiency. PGW has previously discussed this approach with the statutory advocates (I & E, OCA and OSBA) and no objections were raised by them.

[3] It is important to note that the BUS is for back-up service, therefore, the service being provided is not the primary energy source for BUS customers. Should a customer use the BUS service, PGW reasonably anticipates that the customer usage will not be regular. As an example, BUS customers used only 278 Mcf during FY 2019. It is also important to note that BUS customers are billed a delivery charge and the GCR.

Summary of BUS Customers 12/01/2017 - 12/31/2019	
Total Customers enrolled	14
Total Meter Charges Billed to 12/31/2019	$35,925

Q. ARE YOU PROPOSING ANY CHANGES TO THE EXISTING TARIFF?

A. Yes, we want to make sure that it is clear to customers that the BUS tariff provision applies in any instance in which an applicant is seeking to obtain firm gas service to run any type of operable back-up, supplementary, standby, emergency, electric or heat generation equipment. The BUS rate is intended for customers who, from time to time, will require firm gas from PGW for the customer's operation of their back-up equipment. The BUS rate will ensure that all of PGW's large commercial and industrial customers are paying a fair share for the delivery of natural gas to their facility. Importantly, PGW recovers the cost of serving a typical firm industrial customer through delivery rates that assume that a customer will use an average amount of natural gas throughout the year. If a customer only uses gas for a few hours during the year, the regular firm delivery rate will not recover the significant cost of the distribution capacity the PGW must reserve for that firm customer. For example, if a customer uses electricity as its primary energy source but has a gas fired back-up generator for use in instances in which there is an interruption in the electric grid or a distribution outage then the BUS rate would be applied. In order to qualify for the BUS rate, a customer must have installed any type of operable back-up, supplementary, standby, emergency, electric or heat generation equipment fueled by natural gas.

V. CONCLUSION

Q. DOES THAT COMPLETE YOUR DIRECT TESTIMONY?

A. Yes.

VERIFICATION

I, Florian Teme, hereby state that I am the Vice President – Marketing and Sales for Philadelphia Gas Works ("PGW"), I am authorized to make this verification on its behalf, and that the facts set forth in the attached discovery responses which I am sponsoring are true and correct to the best of my knowledge, information and belief. I understand that the statements herein are made subject to the penalties of 18 Pa. C.S. § 4904 (relating to unsworn falsification to authorities).

February 28, 2020
Dated

Florian Teme
Vice President – Marketing and Sales
Philadelphia Gas Works